

**CH2MHILL**

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September 30, 2010

383194.AP.PM

Ms. Felicia Miller  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512

<b>DOCKET</b>	
<b>09-AFC-2</b>	
DATE	SEP 30 2010
RECD.	SEP 30 2010

Subject: Almond 2 Power Plant (09-AFC-02)  
Applicant's Revised Testimony and Additional Expert Witness Declarations

Dear Ms. Miller:

Attached please find 1 hard copy and 1 electronic copy on CD-ROM of the Almond 2 Power Plant's Applicant's Revised Testimony. This package includes the following:

- Declarations and resumes for the following additional expert witnesses (Attachment 1):
  - Susan Strachan, Project Description
  - George Davies, Project Description and Water Resources
  - Matt Franck, Water Resources
  - Vijay Kumar, Water Resources
- Revised September 20, 2010 Testimony Package (Attachment 2)
  - Changes to testimony package include the addition of page numbers to the testimony

If you have any questions about this matter, please contact me at (916) 286-0249 or contact Susan Strachan at (530) 757-7038.

Sincerely,

CH2M HILL

Sarah Madams  
AFC Project Manager

Attachment

cc: S. Strachan, Strachan Consulting  
R. Baysinger, TID

ATTACHMENT 1

# Additional Declarations and Resumes

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Amended Declaration of  
SUSAN STRACHAN

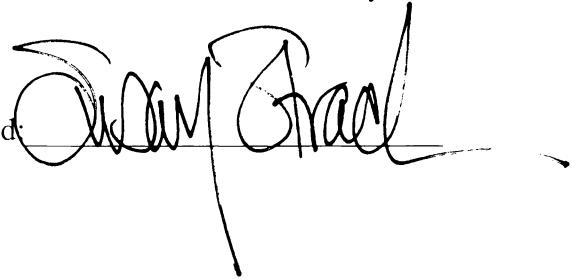
I, Susan Strachan, declare as follows:

1. I am presently employed by Strachan Consulting as Principal Consultant.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I assisted in the preparation of the attached testimony on the Project Description for the Almond 2 Power Plant project and the September 29<sup>th</sup>, 2010 letter regarding "Almond 2 Power Plant Project: Hughson-Grayson 115-kV Transmission Line and Substation Project" (hereinafter "September 29<sup>th</sup>, 2010 Letter"). These documents were either prepared by me or under my direction for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and the September 29<sup>th</sup> 2010 letter are valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 29 September 2010

Signed:

A handwritten signature in black ink, appearing to read "Susan Strachan", written over a horizontal line. The signature is stylized and cursive.

At: Davis, California

# SUSAN STRACHAN

Susan Strachan has 22 years of both public and private sector project management experience in the permitting and compliance activities associated with large industrial projects. She has extensive experience managing the environmental permitting of power plant, transmission, and pipeline projects. Her experience includes conducting due diligence investigations and fatal flaw analyses, permitting strategies, preparing permit applications and other project environmental documentation, negotiating permit conditions and other project related issues with regulatory agencies, conducting public outreach, developing compliance plans, and managing compliance activities.

## PROFESSIONAL HISTORY

Strachan Consulting  
Principal, June 1998-Present

Sacramento Municipal Utility District  
Mgr., Project Permitting and Licensing - March 1992-May 1998

Assemblymember Lloyd Connelly  
Senior Assistant - 1990 to 1992

Santa Barbara County  
Hazardous Materials Section Manager - 1987 to 1990  
Environmental Planner 1985 to 1987

## PROFESSIONAL EXPERIENCE

**Pacific Gas & Electric** – Ms. Strachan served as Environmental Project Manager for the Humboldt Bay Generating Station project (HBGS). The HBGS is a 163 MW power plant located in Humboldt Co. Her responsibilities included: overseeing the preparation of the application to the California Energy Commission (CEC); responding to Data Requests; interfacing with the regulatory agencies, reviewing the Preliminary and Final Staff Assessments; preparing for and participating in Evidentiary Hearings; and managing initial construction compliance activities. Ms. Strachan also prepared CEC license amendments for the project.

Mr. Strachan is serving as permit coordinator for the decommissioning of the PG&E Humboldt Bay Power Plant.

**Praxair Inc.** Ms. Strachan represented Praxair Inc. as Environmental Project Manager for its Contra Costa Pipeline Project, a 21.5 mile hydrogen pipeline in Contra Costa County.

Her responsibilities include: conducting the fatal flaw analysis and permitting strategy, overseeing the preparation of the application materials to the applicable local, state, and federal agencies, advising the client on environmental permitting and CEQA issues; coordinating with local, state, and federal agencies and the County's EIR consultant, participating in public environmental meetings; ensuring proper compliance with CEQA; participating in agency meetings.

**Turlock Irrigation District** – Ms. Strachan provided Environmental Project Management Services to the Turlock Irrigation District for its Walnut Energy Center, a 250 MW power plant, located in Stanislaus Co. Her responsibilities included: assisting in site selection, overseeing the preparation of the application to the CEC; participating in public outreach activities; responding to Data Requests; interfacing with the regulatory agencies, reviewing the Preliminary and Final Staff Assessments; and preparing for and participating in Evidentiary Hearings.

Ms. Strachan also served as Environmental Compliance Manager for the Walnut Energy Center Project. Her responsibilities included: preparing and processing CEC license amendments, ensuring compliance with all environmental regulatory requirements; managing the activities of the environmental monitors; and maintaining communication with the environmental regulatory agencies.

Ms. Strachan is currently serving as Environmental Project Manager for TID's Almond 2 Power Plant in Ceres, CA. She is also managing the preparation of an EIR for the Hughson-Grayson 115-kV Transmission Line and Substation Project.

**Modesto Irrigation District** - Ms. Strachan provided Environmental Project Management services to the Modesto Irrigation District for the Woodland 2 Generation Station, an 80 MW combined cycle power plan, located in San Joaquin Co. She also prepared CEC amendments for the Woodland 2 project. Ms. Strachan also managed the permitting of the Modesto Irrigation District Electric Generation Station Ripon project, a 95 MW simple-cycle power plant, located in San Joaquin Co. Her responsibilities included: managing the preparation of the application, providing project coordination with regulatory agencies, and resolving issues/concerns of the agencies. Ms. Strachan continues to provide compliance support to MID.

**Calpine Corporation** – Ms. Strachan served as the Environmental Project Manager for several natural gas-fired power plants developed by Calpine Corporation. These include the following:

- Delta Energy Center – Contra Costa Co.
- King City LM600 Project – Monterey Co.
- Gilroy City Phase I LM6000 Project – Santa Clara Co.
- East Altamont Energy Center – Alameda Co.

Her responsibilities included obtaining the CEC licenses for the projects and obtaining permits from other regulatory agencies such as the U.S. Fish and Wildlife Service, California Department of Fish and Game, State Lands Commission and U.S. Bureau of Reclamation. She has also provided permitting assistance to Calpine on its Sutter and Metcalf Energy Center projects.

**Calpine Corporation – Compliance** Ms. Strachan also assisted Calpine Corporation in compliance activities associated with projects licensed before the CEC. Her activities have included the preparation of several amendments to the project licenses for the Delta Energy Center and Los Medanos Energy Center.

**Calpine Corporation – Due Diligence** Ms. Strachan conducted the environmental due diligence investigation for Calpine’s acquisition of the Los Medanos Energy Center and Otay Mesa projects.

**Sacramento Municipal Utility District -** Ms. Strachan served as the Manager, Project Permitting and Licensing, responsible for overseeing permitting activities before the California Energy Commission (CEC) for the following projects:

- Sacramento Cogeneration Authority at Procter & Gamble – Sacramento, Co.
- Sacramento Power Authority at Campbell Soup – Sacramento Co.
- Carson Ice-Gen – Sacramento Co.
- SEPCO – Sacramento Co.
- SMUD Cogeneration Pipeline – Sacramento Co., and Yolo Co.

In this position, Ms. Strachan worked closely with the CEC while the projects moved through the licensing process. Her responsibilities included preparation of the Applications for Certification, responding to data requests, negotiating permit

conditions, working with members of the public, and participating in hearings.

Ms. Strachan was also responsible for acquiring permits from other agencies including the Sacramento Metropolitan Air Quality Management District, Regional Water Quality Control Board, U.S. Fish and Wildlife Service, and Army Corps of Engineers.

**Construction Compliance** - As project manager for Sacramento Power Authority at Campbell Soup project, Ms. Strachan managed the compliance activities associated with the CEC's conditions of certification for the project. This included preparation of CEC license amendments, interface with the CEC during construction of the project, preparation of submittals to the CEC in compliance with permit conditions, and responding to and addressing local community concerns associated with the project.

***Cosumnes Power Plant*** – Ms. Strachan provided environmental project management support/advice to SMUD for the CEC licensing of the Cosumnes Power Plant project, located in Sacramento Co.

## **EDUCATION**

B.A., Political Science  
University of California, Santa Barbara

Declaration of  
George Davies

I, George Davies, declare as follows:

1. I am presently employed by Turlock Irrigation District as the Combustion Turbine Department Manager.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. The Applicant's Testimony regarding "Project Description" filed September 20, 2010 (hereinafter "Project Description Testimony") and the letter dated September 27, 2010 regarding "Almond 2 Power Plant Project (09-AFC-2): Water Supply and Discharge Hypotheticals - City of Ceres and the Central Valley Regional Water Quality Control Board" (hereinafter "September 27, 2010 letter") were prepared under my direction for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the Project Description Testimony and September 27, 2010 letter is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the Project Description Testimony and the September 27, 2010 letter and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/29/2010

Signed: George Davies TD

At: \_\_\_\_\_



# George Davies

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## Education

Attended Delta Junior College in Stockton, and Modesto Junior College in Modesto.

## Professional Registrations

none

## Relevant Experience

As the Combustion Turbine Department Manager for the Turlock Irrigation District, George Davies has an extensive range of experience in the areas of: Operations & Maintenance management of combustion turbine generating facilities, permitting, project management, equipment reliability, equipment failure analysis and RCA, water treatment process / water chemistry, power plant performance analysis and modeling, and provision of technical support to operations/maintenance personnel and others.

For nearly 17 years, Mr. Davies has also held a supervisor/manager position at TID with oversight, training, and technical responsibility for professional and technical personnel within the Combustion Turbine Department. Mr. Davies participated in the development of the TID's Almond Power Plant, Walnut Energy Center (WEC), and the Almond 2 Power Plant (A2PP).

Currently, Mr. Davies serves as the Combustion Turbine Department Manager within TID's Power Supply Administration, responsible for the maintenance and operation management of all TID's thermal power generation resources, including: simple cycle combustion turbine, combined cycle combustion turbine and Fuel Cell.

## Representative Projects

- **Almond 2 Power Plant**- Participated in project equipment specification, selection, and project design review. Supported the project permitting efforts before the San Joaquin Valley Air Pollution Control District (SJVAPCD) and CEC.
- **Walnut Energy Center** - Participated in project equipment specification, selection and project design review. Supported the project permitting efforts for the SJVUAPCD and CEC. Reviewed, supervised, and provided technical support to staff managing this 258 MW Combined Cycle combustion turbine facility. Served as Project Manager for the Steam Turbine Generator overhaul in November of 2009. Served as Project Manager for the Micro-Filter modification project within the Zero Liquid Discharge (ZLD) plant.
- **TID's Fuel Cell** - Operations & Maintenance management of the TID's Fuel Cell Project.
- **Walnut Power Plant** - (O&M Supervision) Reviewed, supervised, and provided technical support to staff managing this 50 MW Simple Cycle combustion turbine facility. Served as Project Manager for the BLFN conversion which resulted in a near 50% reduction in gas

turbine NOx emissions at this facility. Served as Project Manager for the Mark VI control system modernization.

- **Almond Power Plant** – (O&M Supervision) Reviewed, supervised, and provided technical support to staff managing this 50 MW Steam Injected Gas turbine facility. Provided Technical support of the LM-5000 to LM-6000 conversion project. Provided direct supervision & management of the SCR/CO catalyst replacement project in conjunction with this conversion project. Served as project manager for the addition of a “perforated plate” upstream of the SCR catalyst. This project resulted in improved catalyst performance, reduced ammonia slip, and a 40% reduction in ammonia feed rates. Results of this project were published in multiple trade journals.

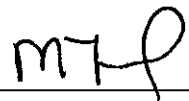
Declaration of  
Matthew Franck

I, Matthew Franck, declare as follows:

1. I am presently employed by CH2M Hill as Senior Project Manager.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. The Water Resources testimony filed on September 20, 2010 was either prepared by me or under my direction for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and Record of Conversation are valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 09/29/10

Signed: 

At: Sacramento

# Matthew Franck

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## Water Resources

### Education

Bachelor of Science, Environmental Policy Analysis and Planning, University of California at Davis, 1989

### Years Experience

15

### Relevant Experience

Mr. Franck is an environmental planner with CH2M HILL. He has 15 years of experience in managing and writing environmental impact assessment documents in compliance with NEPA and CEQA. He also coordinates local, state, and federal regulatory processes. Mr. Franck's education and multidisciplinary experience, as well as his expertise in land use and resource planning, provide a solid background for evaluating complex environmental policy issues.

### Representative Projects

**Humboldt Bay Repowering Project, PG&E. Task Manager for Water Resources.** Prepared Water Resources analysis for a project to repower the existing Humboldt Bay Power Plant south of Eureka, California, using ten natural gas powered reciprocating engine generators. Key water resources issues of concern included stormwater quality to an extended detention basin, process wastewater discharges to a municipal system, and the decrease in lagoon flows because of reduced use of the existing once-through cooling system.

**Ivanpah Solar Electric Generating System, Bright Source Energy, Inc.** Senior Technical Reviewer for Water Resources. Assisted in the preparation of a Water Resources analysis as a Senior Technical Reviewer. Project is a concentrated solar thermal facility proposed on 1,843 acres of land in the Mojave Desert. Key water resources issues of concern included availability of groundwater for the thermal facility and the disturbance to hydrology from the large construction site.

**Carlsbad Energy Center Project, NRG, Inc.** Task Manager for Water Resources. Prepared Water Resources analysis for a project to repower the existing Encina Power Station in Carlsbad, California, using natural gas turbines. Project involved the use of reclaimed water from the nearby wastewater treatment plant, with an alternative source to use desalinated seawater. Key issues included marine impacts from seawater intake, brine disposal, and the capacity of the existing reclaimed water distribution system.

**Lompoc Wind Energy Project, Pacific Renewable Energy Generation, LLC.** Task Manager for Water Resources. Prepared Water Resources analysis for a project to install 60-80 wind turbines and ancillary facilities on 2,950 acres in Santa Barbara County, California. Key water resources issues of concern included disturbance to onsite water resources from the large extent of

construction activities, stormwater quality control, and development of an onsite facilities (including a well and septic system) for the operations units.

**Eastshore Energy Project, Tierra Energy, Inc.** Task Manager for Water Resources. Prepared Water Resources analysis for a new natural gas power plant in Hayward, California, using fourteen reciprocating engine generators. Key water resources issues of concern included the development of structural features for onsite stormwater quality control, and process wastewater discharges to a municipal system.

**Westley-Marshall Substation and Transmission Line Project, Turlock Irrigation District.** Task Manager for Water Resources. Prepared Water Resources analysis for a transmission line project (approximately 12 miles) in rural Stanislaus County, California. The project also involved nine potential substation sites. Key water resources issues of concern included floodplain risks and stormwater quality control during construction.

**AFCs for Walnut Creek Energy Park and Sun Valley Energy Project, Edison Mission Energy, City of Industry/Romoland, California (200 to 2006).** Provided support for two Applications for Certification before the California Energy Commission for similarly designed 500-MW natural gas-fired peaking power plants using the GE LMS100 advanced gas turbine technology. These applications were prepared in parallel and were filed at the Energy Commission within one week of one another. The AFCs were filed in December of 2005 and the projects are scheduled to begin construction in 2007.

**AFC for Roseville Energy Park, Roseville Electric, Roseville, California (2003 to 2005).** Provided support for Application for Certification before the California Energy Commission for a 160-MW natural gas-fired power plant in Roseville, California.

**Natomas Basin Habitat Conservation Plan, City of Sacramento and Sutter County, California.** Assistant Project Manager for the environmental evaluation of the revised Natomas Basin HCP. The EIS/EIR evaluated the environmental consequences associated with implementing the activities covered by the HCP, including 17,500 acres of urban development, management of canals and drains by local water agencies, and development and management of an 8,750-acre system of habitat reserves by the Natomas Basin Conservancy.

Declaration of  
Vijay Kumar, P.E.

I, Vijay Kumar, declare as follows:

1. I am presently employed by CH2M HILL as Vice President and Area Manager.
2. I am a Registered Professional Engineer (P.E.) in the State of California and I have 20 years of experience in water and wastewater projects.
3. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
4. The Record of Conservation between Vijay Kumar and the Central Valley Regional Water Quality Control Board filed on September 27, 2010 were either prepared by me or under my direction for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
5. It is my professional opinion that the prepared testimony and Record of Conversation are valid and accurate with respect to the issue(s) addressed herein.
6. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/29/10

At: SAN FRANCISCO, CA

Signed: 

# Vijay C Kumar, P.E.

Vice President, CH2M HILL, Oakland, CA

## Executive Summary

- 20 years of engineering and program management experience
- Led 45 people design team to complete \$100M project design in 9 months
- Program Manager for City of Tracy's \$200M WWTP Expansion
- Served as Regional WW Market Service Team Lead for CH2M HILL's Southwest Region
- Provided Regional Marketing and Growth Strategy for 15 offices in Southwest Region
- Completed water and wastewater planning, pre-design, preliminary design, final design, construction management, and program management
- Led staffing studies, utility rate studies, WWTP start up, NPDES permitting, treatment wetlands, recycled water and conveyance pipeline projects.
- Managed CMOM, GIS projects, asset management, SCADA, security systems and electronic O & M manual projects
- Expertise in traditional design, bid and build as well as design-build and DBO

## Detailed Qualifications

Mr. Kumar specializes in implementation of large utility infrastructure projects. He is CH2M HILL's Program Manager for City of Tracy's \$200 million wastewater treatment plant upgrade program that is being implemented in four phases. In this role, Vijay led a large design team of 45 staff that completed Phase 1B design consisting of 570 drawing sheets in a record time of 9 months. Completion of design well ahead of the initial design saved approximately \$4 to \$5 Million in escalation costs for this phase of the project. Vijay Kumar also led environmental and permitting tasks for City of Stockton's \$60 million DBO program. In this role, he led a team of planners, engineers and scientist who prepared and procured 12 various Federal, State and local permits for implementation of ten separate utility projects such as WWTP upgrade and pump station upgrades. Vijay was also the engineer of record for City of Tracy's Wastewater Utility Rate that was completed in early 2006. Due to State mandates, Tracy's WWTP needed upgrades to Tertiary treatment level and required a 39% rate increase to pay for existing users obligations. In addition, Vijay has experience working with SRWTP, SRCSD, City of West Sacramento, City of Woodland, City of Modesto, City of Merced, Yolo County, and City of Auburn.

Vijay served as Regional Market Service Leader for CH2M HILL's Southwest Region. In this role, he is responsible for preparation of strategic market plan for professional services provided by CH2M HILL. He is responsible for coordinating marketing and business development activities in 15 offices located in the Southwest Region.

## Relevant Experience

**City of Tracy WWTP Upgrade/Expansion Program—Program Manager** responsible for developing and implementing an expansion/upgrade program to provide wastewater treatment capacity from 9 mgd to 16 mgd. This analysis included complex flow and solids modeling since food process water from a cheese factory enters the treatment

facility at different locations. The overall program with an estimated cost of \$180 million is being implemented in four phases. Phase 1 is anticipated to be complete by 2007 and consists of upgrading facilities to provide tertiary treatment with ammonia removal.

**City of Tracy NPDES Permit Studies** – Program Manager for the following studies required by the Central Valley Regional Water Quality Control Board as part of the City of Tracy WWTP's NPDES Permit.

1. Effluent Dissolved Oxygen Evaluation
2. Toxicity Reduction Evaluation (TRE)
3. Electrical Conductivity Studies (Salinity Plan)
4. Evaluation of thermal Impacts (first year)
5. Best Practicable Treatment or Control (BPTC) of Salinity
6. Pollution Prevention Plan for Mercury
7. Treatment Feasibility Study for Copper
8. Compliance Schedule for Final Effluent Limitations for Aluminum
9. Pollution Prevention Plan (PPP) for Aluminum
10. Pollution Prevention Plan for Copper
11. Copper Corrective Action Plan
12. Pollution Prevention Plan for Salinity
13. Salinity Reduction Goal
14. Groundwater Monitoring Work plan and Well Installation

**City of Tracy Sewer Rate Study—Technical Lead** for preparation of capital improvement projects and associated phasing. Prepared a 4-phase implementation plan for \$200 million in Capital improvements. Successfully completion the breakdown between existing and new users and the analysis was reviewed and accepted by developers and their consultants.

**East County Water Supply Management Study—Project Engineer** for development of water supply alternatives for eleven water agencies in the East County area. This study developed alternatives for providing cost-effective and reliable water supplies to meet the East County's future water demand (from 37,000 acre-feet per year in 1990 to 98,000 acre- feet per year in 2040).

**City of Tracy Northeast Industrial Area Connection Fee Study—Project Manager** responsible for developing wastewater system requirements for the proposed Northeast Industrial area located on the east-side of the City. This project included identification of proposed sewer collection, transmission and treatment systems and associated costs. Financial analysis and determination of nexus requirement meeting the Assembly Bill 1600 were performed as part of this study.

**Wastewater Connection Fee for City of Tracy South MacArthur Planning Area: Project Manager** for Wastewater connection fee analysis for South MacArthur Planning area to evaluate and prepare wastewater connection fees for 800-unit subdivision called South MacArthur planning area. The challenge was to analyze existing system capacity and determine required improvements to the existing system to provide service to the



new development and complete a benefit and burden analysis complying with AB 1600 requirements.

**Lihue-Puhi Water Reclamation Facility, Kauai—Project Manager** for planning and design of a 6-mgd water reclamation facility for reclaiming water for golf course and sugarcane irrigation.

**City of Tracy Food Process Water Reuse Project—Project Engineer** for responsible developing implementation strategies for treating food process water using land application. Approximately 3 mgd of food process water from Heinz plant will be treated using a dedicated land use application site.

**City of Auburn WWTP Filter Design Project—Project Reviewer** for the City of Auburn WWTP filter design project. This project involves addition of tertiary filters to improve effluent quality since the effluent is being discharged to a sensitive stream.

**Puhi Reclaimed Water Conveyance Project, Kauai—Project Engineer** responsible for the planning and design of Puhi reclaimed water conveyance system. The project was designed in phases to carry 6,000 gallons per minute of reclaimed water to a storage reservoir located 250 feet above the reclamation facility using 600 horsepower vertical turbine pumps.

**Sacramento County Water Reclamation and Reuse Project—Project Engineer** responsible for developing issues and constraints associated with reclaiming water from the Sacramento Regional WWTP with an average flow of 180 mgd.

**City of Woodland Wastewater Master Plan—Project Manager** responsible for managing the wastewater master plan for the City of Woodland. This master plan includes analysis of wastewater collection system, treatment system evaluation, odor assessment and review of City's existing sanitary sewer design standards.

**City of Tracy WWTP Biosolids Drying Bed Paving Design Project—Project Manager** responsible for developing layout and design of asphalt pavement for biosolids drying beds to minimize the amount of time required to qualify for Class A biosolids.

**Sacramento Regional Wastewater Treatment Plant Odor Control Master Plan—Assistant Project Manager** for a state-of-the art odor control master plan for SRWTP with a capacity of 180-mgd. This odor control master plan estimated emissions from all sources at SRWTP using the Bay Area Sewer Toxic Emissions (BASTE) model. Air toxic emissions from BASTE model were conveyed to an ISCST model for air dispersion modeling. This model predicted intensity of odor emissions around SRWTP.

**City of Tracy Wastewater Collection Systems Master Plan—Project Manager** responsible for field testing the capacity of City of Tracy's wastewater collection system to document existing flows and system's hydraulic capacity.

**City of Las Vegas WPCF Odor Assessment—Project Engineer** responsible for developing odor emissions from the City of Las Vegas WPCF with a current capacity of 66 mgd. This project evaluated current odor control strategies and recommended improvements to the odor control equipment and its operations.

**Tahoe-Truckee Sanitation Agency Air Toxic Emissions Inventory Project—Project Manager** responsible for developing an Air Toxic Emissions Inventory Study as required by the Northern Sierra Air Quality Management District. This is the first study that complied with the new air toxic regulations promulgated in 1997 that are applicable to POTWs.

**Deer Creek Hills Water Supply Project—Project Engineer** for developing water supply alternatives for a large housing project proposed on the northern side of Rancho Murieta community. This project involves diverting surface water from Cosumnes River during the periods of high flows (approximately 3 to 4 months per year) and treating and storing it in groundwater aquifers in the vicinity of the Folsom South Canal and Grant Line Road. This conjunctive use concept minimizes raw water storage in huge reservoirs and eliminates evaporation losses.

**City of Auburn Inflow/Infiltration Evaluation Project—Project Engineer** responsible for analyzing peak flows at Auburn wastewater treatment plant. The peak flows were 10 times the average flow. Evaluated collection system and computed the storage volume required at the WWTP to store and treat the wastewater flows during peak wet weather events.

**Pearl Harbor Ship Wastewater Collection System—Project Engineer** responsible for analysis and evaluation of Pearl Harbor Ship Wastewater System in Pearl Harbor, Hawaii. Due to changes in the Navy's berthing plans, 75 berths of the Ship Wastewater collection and treatment system needed to be evaluated for possible upgrade or expansion alternatives.

### **Education**

M.S., Civil/Environmental Engineering, University of Hawaii, 1989

B.S., Civil Engineering, University of Mysore, 1985

**Professional Registrations--Professional Engineer, California**

### **Professional Activities**

Represents CH2M HILL at CASA, CWEA and CVCWA

Past President, Sacramento Area Section of California Water Environment Association

Member, Water Environment Federation (WEF)

Member, National Society of Professional Engineers (NSPE)

Awarded Select Society of Sanitary Sludge Shovelers (5-S) by WEF

Awarded the 1995 Young Engineer of the Year by the National Society of Professional Engineers

Presented technical talks in international, national, state, and local level conferences organized by WEF, CWEA and HWEA

ATTACHMENT 2

**Revised Testimony (Page Numbers Included)**

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# Almond 2 Power Plant

(09-AFC-2)

## Applicant's Testimony

Submitted to  
**California Energy Commission**

Submitted by  
**Turlock Irrigation District**

With Assistance from

**CH2MHILL**  
2485 Natomas Park Drive  
Suite 600  
Sacramento, CA 95833

September 2010

# Contents

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Project Description

Air Quality

Alternatives

Electric Transmission

Biological Resources

Cultural Resources

Geologic Hazards and Resources

Hazardous Materials Handling

Land Use

Noise and Vibration

Paleontological Resources

Public Health

Socioeconomics

Soils

Traffic and Transportation

Visual Resources

Waste Management

Water Resources

Worker Health and Safety

# Project Description

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## I. Introduction

- A. Name:** Sarah Madams, Les Mathine, Jeff Hologa, Brian Lafollette, Susan Strachan
- B. Qualifications:** The panel's qualifications are as noted in their resumes contained in Appendix A.
- C. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification (Vol. 1), Section 1 Executive Summary and Section 2 Project Description [Exhibit 1]
  - Application for Certification (Vol. 2), Appendices 1 and 2. [Exhibit 1]
  - Applicant's Proposed Schedule, dated July 23, 2009. [Exhibit 5]
  - Applicant's Informational Hearing Powerpoint Presentation, dated July 31, 2009. [Exhibit 6]
  - Applicant's Communication between CURE and TID, dated November 16, 2009. [Exhibit 7]
  - Comments on the CEC Staff Assessment, dated June 1, 2010. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated January 14, 2008. Responses to Data Requests 1 through 6 [Exhibit 4].

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Summary

The A2PP will be a nominal 174-megawatt (MW) facility consisting of three General Electric (GE) Energy LM6000PG SPRINT natural gas-fired turbine generators and associated equipment. The facility will be located in Ceres, Stanislaus County, California, on an approximately 4.6-acre parcel adjacent to the existing 48-MW TID Almond Power Plant.

The project site is adjacent to the existing 48-MW Almond Power Plant to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and various industrial facilities (mobile building distributor and drilling equipment storage laydown areas) to the east. The project address is 4500 Crows Landing Road, Modesto, California. Although the address identifies the site in Modesto, it is located within the city limits of Ceres, and is approximately 2 miles from the Ceres city center. Modesto is approximately 5 miles to the north. The project site was previously used by WinCo as a borrow pit during construction of its distribution center,

and was backfilled and graded in 2008 using commercially available fill. The construction laydown and parking area will be adjacent to the western border of the proposed site, within the WinCo property. The approximately 6.4-acre parcel will be used for both construction parking and laydown areas.

The A2PP will be interconnected to the TID transmission system via two 115-kilovolt (kV) transmission lines (Corridor 1, approximately 0.9 mile long, and Corridor 2, approximately 1.2 miles long), which will extend south to the proposed Grayson Substation. The project will also require that TID rerate 2.9 miles of an existing 69-kV sub-transmission line from the Almond Power Plant to the TID Crows Landing Substation that currently serves parts of the cities of Ceres and Modesto as well as surrounding rural areas.

Process water will be obtained by tying into the existing process water line for the Almond Power Plant from the City of Ceres Wastewater Treatment Plant (WWTP). Service water for the facility will be provided by an existing well at the southeast corner of the Almond Power Plant property. Potable water will be delivered to the A2PP by a commercial water service.

The alignment for natural gas service for the A2PP includes an 11.6-mile-long natural gas line, which would generally extend in a southerly direction from the existing Almond Power Plant boundary and join with Pacific Gas and Electric's (PG&E) existing natural gas pipeline, Line #215, at West Bradbury Road. In addition, a 1.8-mile-long segment of Line #215 (referred to as the Reinforcement Segment) will be reinforced along Prune Avenue on the western side of the San Joaquin River. No work is planned within or under the river, or on its banks. The construction right-of-way (ROW) for the pipeline would be 85 feet wide and the permanent pipeline easement would be 50 feet wide.

Because the existing Almond Power Plant and the A2PP will be adjacent to each other and both will be owned and operated by TID, some existing facilities will be shared between the two plants without modification, while other shared facilities will require minor modification to allow for the A2PP. A new retention pond will be constructed that will serve both the A2PP and the existing facility.

Shared facilities will include:

- The anhydrous ammonia system, including the 12,000-gallon storage tank and unloading facilities
- The fire protection system, including the fire water storage tank and diesel-fired emergency fire pump
- The well water for service water and emergency shower / eyewash stations
- The water treatment system
- The process water supply and wastewater discharge system
- The instrument and service air systems
- The oil/water separator
- The demineralized and reverse osmosis water storage tanks
- The administration building, including the control room and office space

The generating facility will consist of three LM6000PG SPRINT combustion turbine generators (CTGs) and associated support equipment. The new facility will provide a nominal generating capacity of 174 MW at average annual ambient conditions of 60 degrees Fahrenheit (°F) with evaporative cooling and SPRINT power augmentation.

Each CTG will generate approximately 58 MW (gross) at base load under average ambient conditions. The project is expected to have an overall annual availability of 92 to 98 percent.

## **B. Major Electrical Equipment and Systems**

This section describes the major electrical equipment and systems of the A2PP.

### **AC Power- Transmission**

Power will be generated by the three CTGs at 13.8 kV and then stepped up by three 2-winding transformers to 115 kV. Surge arresters will be provided at the high-voltage bushings to protect the transformers from surges on the 115-kV system caused by lightning strikes or other system disturbances. Each transformer will be set on a concrete foundation with barrier walls and surrounding containment designed to contain transformer oil in the event of a leak or spill. Fire protection systems will be provided for the transformer. The high-voltage side of the step-up transformers will be connected through a switchyard to a single 3-phase, 0.9-mile-long, 115-kV transmission line; and a single, 3-phase, 1.2-mile-long, 115-kV transmission line. The connections to the 115-kV transmission line will be made through a 5-element ring-bus. From the A2PP switchyard, both 115-kV transmission lines will then connect to the proposed Grayson Substation.

### **AC Power- Distribution to Auxiliaries**

Auxiliary power to the combustion turbines will be supplied at 4.16-kV and 480-volt alternating current (AC). One double-ended, 4.16-kV switchgear lineup and two double-ended, 480-volt switchgear lineups will distribute the auxiliary power to plant loads. Two oil-filled, 13.8- to 4.16-kV unit auxiliary stepdown transformers will supply primary power to the 4.16-kV switchgear and then subsequently to the fuel gas compressors and to the 4.16 kV side of the 4.16-kV/480-volt, oil-filled transformers. Generator circuit breakers will be located on the 13.8-kV output of each CTG. These circuit breakers are used to isolate and synchronize the generators, and will be located between the generators and the connections to the generator step-up transformers (GSU). Each auxiliary transformer will be connected to one of two 13.8-kV buses between the generator circuit breakers and the GSUs. These connections will allow the switchgear to be powered from the local grid whenever the CTGs are not running or from the output of the CTGs when they are running. An emergency generator will not be needed for the A2PP. The 4.16-kV switchgear lineup supplies power to the fuel gas compressors, the combustion turbine starting system, and to the station service transformers, rated 4.16 kV to 480 volts, for 480-volt power distribution. The 4.16-kV switchgear will have vacuum interrupter circuit breakers for the main incoming feeds and for power distribution.

The station service transformers will be oil-filled and will supply 480-volt, 3-phase power to the plant 480-volt motor control centers (MCCs). The MCCs will provide power through feeder breakers to the various 480-volt motor loads, and other low-voltage plant loads including 480-volt power distribution panels, and lower voltage lighting and distribution panel



transformers. Power for the AC power supply (120-volt/208-volt) system will be provided by the 480-volt MCCs and 480-volt power panels. 480-120/208-volt dry-type transformers will provide transformation of 480-volt power to 120/208-volt power.

### **125-Volt DC Power Supply System**

One common 125-volt DC power supply system consisting of one 100-percent-capacity battery bank, two 100-percent static battery chargers, a switchboard, and two or more distribution panels will be supplied for balance-of-plant and CTG equipment. Each CTG will be provided with its own separate battery systems and redundant chargers.

Under normal operating conditions, the battery chargers supply DC power to the DC loads. The battery chargers receive 480-volt, three-phase AC power from the AC power supply (480-volt) system and continuously charge the battery banks while supplying power to the DC loads.

Under abnormal or emergency conditions, when power from the AC power supply (480-volt) system is unavailable, the batteries supply DC power to the DC system loads. Recharging of a discharged battery occurs whenever 480-volt power becomes available from the AC power supply (480-volt) system. The rate of charge depends on the characteristics of the battery, battery charger, and the connected DC load during charging. The anticipated maximum recharge time will be 12 hours.

The 125-volt DC system will also be used to provide control power to the 4,160-volt switchgear, the 480-volt load centers, critical control circuits, the plant control system, and the emergency DC motors.

### **Uninterruptible Power Supply System**

The combustion turbines and power block will also have an essential service 120-volt AC, single-phase, 60-hertz (Hz) uninterruptible power supply (UPS) to supply AC power to essential instrumentation to critical equipment loads and to unit protection and safety systems that require uninterruptible AC power.

## **C. Fuel System**

The CTGs will be designed to burn natural gas only. The natural gas requirement during base load operation at annual average ambient temperature is approximately 1,405 million British thermal units per hour (MMBtu/hr) (lower heat value [LHV] basis, total for three CTG units). The maximum natural gas requirement, experienced during low ambient temperature operation, is approximately 1,503 MMBtu/hr (LHV basis).

Natural gas will be delivered to the site via an 11.6-mile-long natural gas line, which would generally extend in a southerly direction from the existing Almond Power Plant boundary and join with Pacific Gas and Electric's (PG&E) existing natural gas pipeline, Line #215, at West Bradbury Road. In addition, a 1.8-mile-long segment of Line #215 (referred to as the Reinforcement Segment) will be reinforced along Prune Avenue on the western side of the San Joaquin River. At the plant site, the natural gas will flow through a flow metering station, gas scrubber/filtering equipment, a gas pressure-control station, electric-driven booster compressors (when required), and an electric fuel gas heater (if necessary) prior to entering the combustion turbines.

Historical data indicate that the pressure on the PG&E Line #215 is generally greater than 600 pounds per square inch, gauge. Three, 50-percent-capacity, electric-driven, fuel gas compressors will be provided to boost the pressure to that required by the combustion turbines. The gas compressors will be located outdoors and an acoustical wall will be provided, if necessary, to reduce the compressor noise level.

## **D. Water Supply and Treatment**

The A2PP will receive process water provided by the City of Ceres Wastewater Treatment Plant (WWTP). The project will access this water through an existing pipeline in the utility corridor connecting the existing Almond Power Plant and the WWTP. Service water for domestic use will be provided by an existing onsite water well located at the existing Almond Power Plant. Potable drinking water will be provided by an outside drinking water delivery service. The majority of the plant process wastewater will be collected in a sump and pumped to the existing wastewater tank; from there it is returned to the WWTP through an existing pipeline.

## **E. Wastewater Management**

The process wastewater collection system will collect process wastewater in a sump and pump it to the existing wastewater tank. Reverse osmosis reject (from their first pass) and wastewater from backwashing the reverse osmosis media also go to the wastewater trench. From there it is returned to the WWTP through an existing pipeline. Stormwater runoff will be routed to the onsite retention pond.

General plant drains will collect containment area washdown, sample drains, and drainage from facility equipment drains. Water from these areas will be collected in a system of floor drains, hub drains, sumps, and piping and routed to the wastewater collection system. Drains that potentially could contain oil or grease will first be routed through an existing oil/water separator at the Almond Power Plant. Wastewater from combustion turbine water washes will be collected in a holding tank and will be trucked offsite for disposal at an approved wastewater disposal facility.

A2PP will produce maintenance and plant wastes typical of power generation operations. Generation plant wastes include oily rags, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers, and other solid wastes, including the typical refuse generated by workers. Solid wastes will be trucked offsite for recycling or disposal.

Several methods will be used to properly manage and dispose of hazardous wastes generated by A2PP. Waste lubricating oil will be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters will be disposed of in a Class I landfill. Spent SCR and oxidation catalysts will be recycled by the supplier or disposed of in accordance with regulatory requirements. Workers will be trained to handle hazardous wastes generated at the site.

Chemical cleaning wastes will consist of alkaline and acid cleaning solutions used during pre-operational chemical cleaning and turbine washwaters. These wastes, which are subject to high metal concentrations, will be temporarily stored onsite in portable tanks or sumps, and disposed of offsite by the chemical cleaning contractor in accordance with applicable regulatory requirements.

A variety of chemicals will be stored and used onsite during construction and operation of the A2PP. The storage, handling, and use of all chemicals will be conducted in accordance with

applicable laws, ordinances, regulations, and standards. Chemicals will be stored in appropriate chemical storage facilities. Bulk chemicals will be stored in storage tanks, and most other chemicals will be stored in returnable delivery containers. Drain piping for reactive chemicals will be trapped and isolated from other drains to eliminate noxious or toxic vapors.

The existing anhydrous ammonia storage and delivery area currently has both spill containment and ammonia vapor detection equipment.

Safety showers and eyewashes will be provided adjacent to, or in the vicinity of, chemical storage and use areas. Plant personnel will use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release. Adequate supplies of absorbent material will be stored onsite for spill cleanup.

## **F. Interconnect to Electrical Grid**

The three CTGs will connect to the TID electrical grid through the proposed Grayson Substation. This substation is a component of the TID Hughson-Grayson 115-kV Transmission Line and Substation Project. Two new 115-kV transmission lines (one 1.2 miles long, the other 0.9 mile long) from the A2PP will connect the A2PP to the proposed Grayson Substation. The 115-kV transmission lines will follow two separate routes for reliability purposes. Corridor 1 is a 0.9-mile-long route and Corridor 2 is a 1.2-mile-long route. Additionally, an existing 2.9-mile, 69-kV sub-transmission line from the existing Almond Power Plant to the existing TID Crows Landing Substation will be re-rated.

Corridors 1 and 2 will be on common poles as they leave the A2PP switchyard and head south. In order to comply with the North American Electric Reliability Council reliability standards as enforced by the Western Electricity Coordinating Council, and Corridor 1 and Corridor 2 will split at the TID Lower Lateral 2. Corridor 1 will cross the TID Lower Lateral 2, turn west, and parallel the lateral for approximately 800 feet, and then head directly south into the proposed Grayson Substation, within a 30-foot-wide electrical easement. Corridor 2 will continue west along the north side of the lateral for approximately 740 feet and then cross the lateral near an existing 230-kV transmission tower. Once across the lateral, Corridor 2 will proceed west within an existing 30-foot-wide electrical easement until it reaches Crows Landing Road. At Crows Landing Road, Corridor 2 will head south approximately 1,850 feet, within a 10-foot-wide electrical easement, and then turn east, within a 30-foot-wide electrical easement before turning south into the Grayson Substation.

The proposed interconnecting 115-kV transmission circuits will be designed in both single- and double-circuit configurations, depending on location, each supported by tubular steel angle poles and wood or steel tangent poles at appropriate intervals. Each transmission line will consist of a single 954 kcmil AA, Magnolia conductor (diameter of 1.124 inches made of all aluminum alloy) per phase, consistent with most of the other transmission lines in this area.

The proposed lines will exit the A2PP onsite switchyard in a slack span configuration from the take-off structures, approximately 30 feet in height. The exit spans will vary in length to accommodate the route option selected and will connect the take-off structures to a new dead-end (heavy angle) steel pole. The heavy-angle structure will be constructed to accommodate the angle necessitated by the selected option. Tubular steel angle structures and wood or steel

tangent structures will be spaced based on engineering criteria, and will be approximately 70 to 80 feet tall. The steel structures will be “weathering steel,” which will appear brown in color similar to wood poles. The poles for Corridor 2 will also be equipped with a cross-arm to allow for a future 12-kV distribution line, because it is more economical and efficient to manufacture the poles with the cross arm than to retrofit the poles in the future. At this time, it is not known if or when the 12-kV distribution line will be constructed.

**Telecommunication Line**

Digital communication for differential protection between substations will be provided through fiber optic communication. The fiber optic communication cable will be attached to the poles on Corridor 1 at a height of approximately 20 feet aboveground.

**G. Facility Reliability**

A2PP will be designed for an expected operating life of 30 years. Reliability and availability projections are based on this operating life. Operation and maintenance procedures will be consistent with industry standard practices to maintain the useful life status of plant components.

**Facility Availability**

The percent of time that the simple-cycle power plant is projected to be operated is defined as the “service factor.” The service factor considers the amount of time that a unit is operating and generating power, whether at full or partial load. The projected service factor for the simple-cycle power block, which considers projected percent of time of operation, differs from the equivalent availability factor (EAF), which considers the projected percent of energy production capacity achievable.

The EAF may be defined as a weighted average of the percent of full energy production capacity achievable. The projected equivalent availability factor for the A2PP is estimated to be approximately 92 to 98 percent.

The EAF, which is a weighted average of the percent of energy production capacity achievable, differs from the “availability of a unit,” which is the percent of time that a unit is available for operation, whether at full load, partial load, or standby.

**Redundancy of Critical Components**

A summary of equipment redundancy is shown below.

Major Equipment Redundancy at A2PP

<b>Description</b>	<b>Number</b>
Simple-cycle CTGs	Three
Fuel gas booster compressors	Three 50 percent capacity
Demineralizer water tanks	Two 100 percent capacity
Generator step-up transformers	Three
Auxiliary transformers	2 x Two 100 percent capacity
Station service transformers	2 x Two 100 percent capacity

The major components of the plant process consist of the following subsystems.

### **Combustion Turbine Generator Subsystems**

The combustion turbine subsystems include the combustion turbine, inlet air filtration and evaporative coolers, SPRINT, generator and excitation systems, turbine lube oil system, hydraulic system, and turbine control and instrumentation. Each combustion turbine will produce thermal energy through the combustion of natural gas and the conversion of the thermal energy into mechanical energy through rotation of the combustion turbine that drives the compressor and generator.

The generator excitation system will be a solid-state static system. Combustion turbine control and instrumentation interfaced with the Supervisory Control System (SCS) will cover the turbine governing system, and the protective system.

### **Supervisory Control System**

The SCS will have functionally distributed architecture comprising a group of similar redundant processing units linked to a group of operator consoles and an engineer workstation by redundant data highways. Each processor will be programmed to perform specific dedicated tasks for control information, data acquisition, annunciation, and historical purposes.

Plant operation will be controlled from the operator panel located in the control room. The operator panel will consist of two individual video/keyboard consoles. Each video/keyboard console will be an independent electronic package so that failure of a single package does not disable more than one video/keyboard.

### **Demineralized Water System**

Demineralized water will be stored in two existing 240,000-gallon demineralized water storage tanks (an existing reverse osmosis tank will be used to store demineralized water). The tanks will provide more than a 24-hour supply of demineralized water at peak load. Two 100-percent-capacity, horizontal, centrifugal, demineralized water pumps will also be provided.

### **Compressed Air**

The compressed air system provides instrument air and service air to points of use throughout the facility. The existing Almond Power Plant compressed air system will be used, which includes two 100-percent-capacity, motor-driven air compressors; two 100-percent-capacity air dryers with prefilters and after filters; an air receiver; instrument air header; and service air header. A control valve will be provided in the service air header to prevent high consumption of service air from reducing the instrument air header pressure below critical levels.

### **Fuel Availability**

Fuel will be delivered via a new 11.6-mile-long natural gas pipeline that will connect into PG&E's Line #215 south of the project site and a 1.8-mile-long segment of Line #215 (referred to as the Reinforcement Segment). PG&E has confirmed that its system has enough capacity to supply the A2PP from this location.

### **Water Availability**

The A2PP project, at 60°F, will use up to approximately 167 million gallons per year of water for turbine inlet air evaporative cooling, turbine water injection, compressor water washes, and other process uses. Service water for facility wash water and sanitary uses will be served from

the existing onsite well. Process water will be provided from the City of Ceres WWTP through an existing connection.

### **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that 14 Conditions of Certification (COCs) be adopted to address general conditions including compliance monitoring and closure plan issues: COMPLIANCE-1 through COMPLIANCE-14. The applicant has reviewed the recommended COCs and finds them acceptable.

### **IV. Correlation to RSA and Hearing Topics:**

- Executive Summary, Introduction, Project Description, Facility Design, Power Plant Efficiency, Power Plant Reliability and General Conditions

# Air Quality and Greenhouse Gas Emissions

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## I. Introduction

- A. **Name:** Jeffrey Adkins
- B. **Qualifications:** The qualifications of the author are as noted in his resume contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volumes 1&2, Section 5.1 and Appendix 5.1, Air Quality. [Exhibit 1]
  - AFC Air Quality Modeling and Screening Health Risk Assessment Files [Exhibit 2]
  - Applicant's comments on the CEC Staff Assessment, dated June 7, 2010 [Exhibit 8]
  - Air Dispersion Modeling Protocol for TID's Proposed New A2PP in Ceres, dated December 24, 2008. [Exhibit 9]
  - SJVAPCD Notice of Complete Application, dated May 21, 2009 [Exhibit 10]
  - SJVAPCD Notice of Potential Federal PSD Applicability, dated May 21, 2009 [Exhibit 11]
  - Letter to US EPA Regarding Nonapplicability of PSD, dated June 2, 2009 [Exhibit 12]
  - Acid Rain Permit Application for the Almond 2 Power Plant, dated June 16, 2009 [Exhibit 13]
  - Data Response Set 1A, Air Modeling Files, Response to CEC Staff Request DR9, [Exhibit 14]
  - Data Response Set 1A, Response to CEC Staff Requests #1 – 15, dated September 14, 2009 [Exhibit 15]
  - TID Certification of Compliance for Existing Facilities, dated September 15, 2009 [Exhibit 16]
  - Applicant Email Communication between Sierra Research and SJVAPCD Regarding Draft PDOC, dated September 17, 2009. [Exhibit 17]
  - Data Response Set 1B, Response to CEC Workshop Queries WSQ-2 and WSQ-3, dated October 12, 2009. [Exhibit 18]
  - Staff Query Set 2, Responses to CEC Staff Queries 2 and 3, dated October 22, 2009. [Exhibit 19]

- CURE Data Responses Set 1A, dated November 20, 2009 [Exhibit 20]
- Data Response Set 1D, Response to CEC Data Request #18, dated November 25, 2009. [Exhibit 21]
- SJVAPCD Notice of Preliminary Determination of Compliance, dated December 2, 2009 [Exhibit 22]
- Applicant's Comments on Preliminary Determination of Compliance, dated December 29, 2009 [Exhibit 23]
- SJVAPCD Final Determination of Compliance, dated February 22, 2010. [Exhibit 24]
- Avenal Energy Power Plant PMPD, dated November 11, 2009. [Exhibit 41]

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## **II. Summary of Testimony**

### **A. Affected Environment**

Air pollutant emissions from the proposed Almond 2 Power Plant result from operation of the natural-gas-fired simple-cycle turbines. These emissions will be controlled through the use of the best available pollution control technology. This project is an important component of the State's renewable energy program, as it will provide firming power for TID's existing and future intermittent renewable resources in support of TID's Renewable Portfolio Standard (RPS) and GHG goals. The project will be located in the San Joaquin Valley, where air quality levels are within most (but not all) air quality standards. The project makes use of infrastructure and auxiliary equipment at the existing Almond Power Plant, which eliminates the need to construct additional air pollutant-emitting equipment such as an emergency generator or a Diesel fire pump engine as part of the project. The air quality impacts of the Project were evaluated and shown to satisfy all state and federal air quality requirements. This conclusion was confirmed, after extensive review by the San Joaquin Valley Air Pollution Control District (SJVAPCD, or Air District), in the Final Determination of Compliance issued on February 16, 2010.

### **A. Existing Air Quality**

The U.S. Environmental Protection Agency (USEPA) and California Air Resources Board have each established ambient air quality standards to protect public health and welfare. Both state and national ambient air quality standards consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of pollutants on human health, crops, and vegetation. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance) or to a relatively lower average concentration over a longer period.



Air quality standards have been set for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate sulfates, respirable particulate matter (PM<sub>10</sub>), and fine particulate matter (PM<sub>2.5</sub>). Three ambient air monitoring stations were used to characterize air quality at the project site. These stations were used because of their proximity to the project site and because they record area-wide ambient conditions rather than the localized impacts of any particular facility. All of the ambient air quality data that were relied upon were taken from publications and data sources prepared by the California Air Resources Board (CARB). Ozone, carbon monoxide (CO), respirable particulate matter (PM<sub>10</sub>), and fine particulate matter (PM<sub>2.5</sub>) are recorded at the Modesto-14<sup>th</sup> Street monitoring station. Nitrogen dioxide (NO<sub>2</sub>) was monitored at the Modesto-14<sup>th</sup> Street station through 2005 and is also recorded at the Turlock-S Minaret Street monitoring station. Ambient concentrations of sulfur dioxide and sulfates were measured in Contra Costa County. The monitoring stations for each pollutant are summarized in Table 1:

TABLE 1  
Ambient Air Monitoring Station Locations

Pollutant	Station	Distance from Project Site
Ozone	Modesto	4.9 miles
Nitrogen Dioxide	Modesto, Turlock	4.9 miles, 10 miles
Carbon Monoxide	Modesto	4.9 miles
PM <sub>10</sub>	Modesto	4.9 miles
PM <sub>2.5</sub>	Modesto	4.9 miles
Sulfates	Bethel Island	46 miles
Sulfur Dioxide	Bethel Island	46 miles

All of these monitoring stations (except the Bethel Island monitoring station in Contra Costa County) are located in the San Joaquin Valley Air Basin, the same air basin in which the project is located. Each of these monitoring stations is the closest station to the project site for the pollutant monitored. Because these stations are the closest to the project site, and are generally located in or just downwind of more heavily developed areas, the concentrations recorded at these stations are believed to be representative of, or more conservative (higher) than, concentrations expected to be found at the project site.

### Ozone

Ozone is generated by a complex series of chemical reactions between VOC and NO<sub>x</sub> in the presence of ultraviolet radiation. Ambient ozone concentrations follow a seasonal pattern: higher in the summertime and lower in the wintertime. At certain times, the general area can provide ideal conditions for the formation of ozone due to the persistent temperature inversions, clear skies, mountain ranges that trap the air mass, and exhaust emissions from millions of vehicles and stationary sources. For purposes of state and federal air quality planning, the San Joaquin Valley Air Basin is a nonattainment area for ozone.

## Carbon Monoxide

CO is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from wood-burning stoves and fireplaces can also be measurable contributors to ambient CO levels. Industrial sources typically contribute less than 10 percent of ambient CO levels. Peak CO levels usually occur during winter due to a combination of higher emission rates and calm weather conditions with strong, ground-based inversions. The San Joaquin Valley Air Basin is classified as an attainment area for CO with respect to both state and national standards.

There have been no violations of either the state or federal CO standards since 1998.

## Nitrogen Dioxide

Atmospheric NO<sub>2</sub> is formed primarily from reactions between nitric oxide (NO) and oxygen or ozone. NO is formed during high temperature combustion processes, when the nitrogen and oxygen in the combustion air combine. Although NO is less harmful than NO<sub>2</sub>, it can be converted to NO<sub>2</sub> in the atmosphere within minutes to hours, depending on the composition and temperature of the atmosphere. For purposes of state and federal air quality planning, the San Joaquin Valley Air Basin is in attainment for NO<sub>2</sub>.

There have been no violations of either the state one-hour standard or the federal annual average NO<sub>2</sub> standard since at least 1998. The new federal 1-hour NO<sub>2</sub> standard took effect on April 12, 2010, and EPA has not yet promulgated attainment designations for the new standard.

## Sulfur Dioxide and Sulfates

SO<sub>2</sub> is produced when any sulfur-containing fuel is burned. It is also emitted by chemical plants that treat, or refine, sulfur or sulfur-containing chemicals. Natural gas contains only a small amount of sulfur, typically about 0.2 grains per 100 standard cubic feet, while fuel oils contain larger amounts, typically in the range of 15 ppm (for ultra-low sulfur Diesel fuel) to 4 percent (for marine bunker fuels). Peak, but low, concentrations of SO<sub>2</sub> occur at different times of the year in different parts of California, depending on local fuel characteristics, weather, and topography. The San Joaquin Valley Air Basin is considered to be in attainment for SO<sub>2</sub> for purposes of state and federal air quality planning.

Particulate sulfates result from the further oxidation of sulfur dioxide in the atmosphere. Sulfate levels have also been well below state standards (there are no federal standards for sulfates).

## PM<sub>10</sub>

Particulates in the air are caused by a combination of wind-blown fugitive dust; particles emitted from combustion sources and manufacturing processes; sea salts; and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and nitrogen oxides, respectively. In 1984, CARB adopted standards for PM<sub>10</sub> and phased out the total suspended particulate (TSP) standards that had been in effect previously. PM<sub>10</sub> standards were substituted for TSP standards because PM<sub>10</sub> corresponds to the size range of particulates that can be inhaled into the lungs (respired) and, therefore, is a better measure to use in assessing potential health effects. In 1987, USEPA also replaced national TSP standards with PM<sub>10</sub> standards. The San Joaquin Valley Air Basin is considered to be in nonattainment of state 24-hour and annual PM<sub>10</sub> standards and in attainment of the federal 24-hour PM<sub>10</sub> standard.

The maximum 24-hour and the annual average PM<sub>10</sub> levels exceed the state standards, but the 24-hour average PM<sub>10</sub> levels have remained below the federal standards since 2002.

## PM<sub>2.5</sub>

The NAAQS for particulates were revised by USEPA with new standards that went into effect on September 16, 1997; two new PM<sub>2.5</sub> standards were added at that time. In June 2002, CARB established a new annual standard for PM<sub>2.5</sub>. Maximum 24-hour average readings have exceeded EPA's federal standard (35 µg/m<sup>3</sup>), which is applied to the 3-year average 98th percentile reading, since 2001. Peak 24-hour average PM<sub>2.5</sub> concentrations have been declining, but remain above the federal standard. Annual average PM<sub>2.5</sub> levels have exceeded the state standard since 1998, but were below the federal standard in 2005 and 2006. The San Joaquin Valley Air Basin is considered a nonattainment area for both the state PM<sub>2.5</sub> standard and the 2006 PM<sub>2.5</sub> federal 24-hour and annual standards (effective in 2009).

## B. Environmental Impacts

Air emissions will result from the operation of the gas turbines. Fugitive dust emissions will occur during the construction period. Air pollutant emissions from the A2PP are shown in the Application for Certification and in the Revised Staff Assessment (RSA). These emissions have been calculated based on the maximum capacity of the equipment, consistent with operating limits expected to be imposed as permit conditions, and thus represent a worst case. Actual emissions during plant operation are expected to be lower than the levels shown in the RSA.

## C. Regulatory Requirements

The project's emissions and air quality impacts are required to comply with various local, state, and federal laws, regulations, and standards. In addition to the California Energy Commission's review, the air quality impacts of the A2PP have been reviewed by SJVAQCD.

The requirements applicable to the A2PP include new source review (NSR) requirements and a number of prohibitory rules.<sup>1</sup> The NSR program applies to the facility as a whole, and is designed to ensure that new projects and project modifications are developed in a manner that will not interfere with meeting health- and welfare-based ambient air quality standards. Prohibitory rules apply to specific pieces of equipment, rather than to the facility as a whole. They impose specific limits on emissions, including opacity and odors, and are enforced through permit conditions. Compliance with all of these rules is demonstrated in the Application for Certification, and has been confirmed in the Final Determination of Compliance issued by the SJVAQCD.

The A2PP is not required to obtain a federal Prevention of Significant Deterioration (PSD) permit because the A2PP is not a "major source" or "major modification" as defined by 40 CFR 52.21(b).

The main air quality requirements applicable to the A2PP are summarized below.

- Best Available Control Technology (BACT): Emissions of all pollutants will be kept as low as possible by using clean natural gas as the fuel for the turbines. Because natural gas is a clean-burning fuel, emissions of sulfur dioxide (SO<sub>2</sub>), precursor organic compounds (POC or hydrocarbons), and particulate matter (PM<sub>10</sub>) will be very low. To minimize emissions of

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<sup>1</sup> The A2PP is not subject to federal PSD review, since emissions from the project do not exceed federal PSD trigger levels.

oxides of nitrogen (NO<sub>x</sub>) and carbon monoxide (CO), the turbines will also be equipped with water injection, selective catalytic reduction systems, and oxidation catalysts.

- **Offsets:** Both Air District and Energy Commission rules require that overall air quality does not deteriorate as a result of the project. Air Districts have set emission thresholds for each pollutant. Projects above the thresholds must mitigate emission increases by providing emission offsets. Projects below the thresholds are generally deemed by the District to be too small to require project-by-project offsets; the District mitigates these through its regional air quality planning process. TID has acquired emission reduction credits (ERCs) adequate to offset the emissions increases that will result from the A2PP.
- **Ambient Air Quality Impacts:** The impact of the A2PP on ambient air quality was evaluated using dispersion models approved by the USEPA. Worst-case ground-level impacts were assessed for various meteorological and operating conditions (flat terrain, elevated terrain/hillsides where applicable, fumigation, part-load and full-load operations, and startups). The worst-case ground-level impacts were added to existing (background) concentrations from nearby monitoring stations to determine the total ambient concentrations. These total concentrations were then compared with the ambient air quality standards. As confirmed in the Revised Staff Assessment, the project will result in concentrations well below the most stringent air quality standards, including the new federal 1-hour NO<sub>2</sub> standard that took effect in April of this year. Even when combined with existing background levels, the proposed project will not cause a new violation of any state or federal air quality standard. The project will add a small amount (approximately one percent) to existing PM<sub>10</sub> concentrations at the point of maximum impact.
- **Screening Health Risk Assessment:** A screening level health risk assessment was performed to evaluate the potential impact of emissions of potentially toxic compounds that result from the combustion of natural gas. This assessment demonstrated that the facility will not pose a significant health risk. The worst-case cancer risk for the plant is well below the level of 10 in one million that is considered significant, and is also well below the level of 1 in one million that triggers additional control technology requirements.
- A protocol for a cumulative air quality impact analysis of the A2PP was prepared and included in the Application for Certification. Consultation with the Air District staff indicated that there were several sources of emissions that had the potential to contribute along with the Project to a significant air quality impact. TID performed a cumulative ambient air quality impact analysis that evaluated these potential cumulative impacts sources. This analysis demonstrates that the A2PP will not create any new cumulative impacts.

### III. Proposed Air Quality Licensing Conditions

The proposed conditions of certification include the conditions required by the SJVAQCD (AQ-1 to AQ-95). These conditions ensure compliance with state, federal, and local air quality standards. The applicant has reviewed these conditions, and finds them acceptable.

The proposed conditions of certification related to air quality also include those proposed by the California Energy Commission Staff (CEC Staff) (AQ-SC1 to AQ-SC8) as supplements to the requirements of the SJVAPCD, principally related to mitigation of construction-related impacts.

The Applicant has reviewed these conditions, and has no objections to the CEC Staff's proposed air quality conditions of certification.

Applicant and Staff have reached agreement on the issue of ammonia slip limit for the project. In the AFC the Applicant proposed a 10 ppm ammonia slip limit consistent with the limit required by the SJVAQCD and CEC staff for other simple-cycle projects located in the San Joaquin Valley. The SJVAQCD included a health-based 10 ppm ammonia slip limit in the Preliminary and Final Determinations of Compliance. Applicant and Staff agree that ammonia is a precursor to PM<sub>10</sub>/PM<sub>2.5</sub>, but that in the unique atmospheric conditions in the San Joaquin Valley Air Basin, ammonia is so abundant that it is not a rate limiting precursor. That is, reductions in ammonia do not result in measurable reductions in PM<sub>10</sub> formation because there is so much background ammonia that the reaction with nitrates and sulfates will occur anyway. As the Staff stated in both its original and Revised Staff Assessments,

[P]articulate formation in the San Joaquin Valley has been found to be limited by the availability of SO<sub>x</sub> and NO<sub>x</sub> in ambient air, rather than the availability of ammonia (SJVAPCD 2008 PM<sub>2.5</sub> Plan). Offsetting SO<sub>x</sub> and NO<sub>x</sub> emissions would both avoid significant secondary PM<sub>10</sub>/PM<sub>2.5</sub> impacts and reduce secondary pollutant impacts to a less than significant level<sup>2</sup>.

Therefore, since the NO<sub>x</sub> and SO<sub>x</sub> emissions that act as particulate precursors are being fully offset, there would be no significant secondary PM impacts due to ammonia slip, and therefore there is no basis for requiring a more stringent ammonia slip limit than the limit that was established on the basis of protecting public health.

The Applicant also provided information that a 5 ppm ammonia slip limit would have imposed significant additional costs on this publicly financed project. TID estimated that the catalyst material would need to be replaced up to twice as often, at a cost of over \$1 million per catalyst changeout. (See Applicant Comments on the CEC Staff Assessment, June 7, 2010.) The more frequent catalyst replacement would also generate additional waste catalyst material that must be disposed of in landfills.

In summary, the 10 ppm ammonia slip limit for A2PP has been found to be adequately protective of public health and ambient air quality by both the SJVAPCD and the Energy Commission Staff. Applicant further concurs with Staff that offsetting NO<sub>x</sub> and SO<sub>x</sub> emissions will reduce secondary pollutant impacts associated with ammonia slip to a less than significant level.

## IV. Greenhouse Gas Emissions

The Applicant supports the Commission Staff's conclusions in Appendix AIR-1. The Applicant agrees with the CEC Staff's assessment that the proposed project would displace other, less efficient and less flexible power plants and would facilitate the integration of renewable resources. The Applicant concurs in the CEC Staff's determination that "[b]ecause the project will improve the efficiency of existing system resources and provide quick starting and fast ramping power suitable for integrating renewable generation, the addition of A2PP would contribute to a reduction of the California and overall Turlock Irrigation District (TID) system

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<sup>2</sup> Revised Staff Assessment, p. 4.1-22

GHG emissions and GHG emission rate average.”<sup>3</sup> The CEC Staff also finds that A2PP would not be expected to cause a significant cumulative impact and furthers the state’s strategy to reduce fuel use and GHG emissions.

### **1. The A2PP Project Meets the “Avenal Test”**

In the Presiding Member’s Proposed Decision for the Avenal Energy Project (CEC-800-2009-006-PMPD), the Committee has established a three-part test to ensure that new natural gas-fired power plants approved by the CEC will support the goals and policies of AB 32 and the related parts of California’s GHG framework. The elements of this test are listed below:

- (1) The project must not increase the overall system heat rate for natural gas plants;
- (2) The project must not interfere with generation from existing renewable facilities nor with the integration of new renewable generation; and
- (3) Taking into account the factors listed in (1) and (2), the project must reduce system-wide GHG emissions and support the goals and policies of AB 32.<sup>4</sup>

A2PP’s consistency with these requirements has been demonstrated in various previously-submitted documents and is summarized below.

#### **a. The A2PP will not increase the overall system heat rate for natural gas plants.**

A2PP’s heat rate and resulting GHG emissions will be among the lowest in the state for gas-fired peaking power plants. In the AFC, TID presented the projected CO<sub>2</sub> emission rate from A2PP and compared that rate with CO<sub>2</sub> emissions from other peaking power plants in California.<sup>5</sup> This comparison showed that “CO<sub>2</sub> emissions in lb/MWh will be much lower from A2PP than the emissions from existing peaking turbines in California. [Therefore,] The project should not result in a net increase in global GHG emissions because it would operate to replace energy from existing, less efficient peaking power sources in the service territory. This would contribute to continued improvement of the overall Western Electricity Coordinating Council (WECC) system GHG average emission rate.” As stated in the Avenal PMPD, “...heat rate is directly correlated with emissions (including GHG emissions)...” (p. 104), so lower CO<sub>2</sub> emissions on a lb/MWh basis correspond to a lower heat rate.

The project would not increase the overall system heat rate for natural gas plants because it has a lower heat rate than, and would operate to replace energy from, existing, less efficient generating resources in the service territory. TID evaluated the effect of A2PP on its own generating resources:

Walnut Energy Center (WEC) will be able to operate more efficiently as a result of the proposed A2PP. TID evaluated 2008 system operations assuming A2PP had been available, and determined that WEC: (1) would have operated more at higher loads and better heat rates since it would not have had to provide spinning reserve; and (2) would have displaced conventional simple cycle units from outside the TID system that were dispatched to provide this marginal power. Under this scenario, TID calculated that CO<sub>2</sub> emissions from WEC and A2PP would have been approximately 56,000 metric

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<sup>3</sup> Revised Staff Assessment, p. 4.1-59.

<sup>4</sup> Exhibit 41 [Avenal PMPD], p. 111.

<sup>5</sup> Exhibit 1 [AFC], p.5.1-58 et seq; Figure 5.1-13.

tonnes/yr lower than actual CO<sub>2</sub> emissions in 2008 from WEC and conventional simple cycle units (with a heat rate of about 9,300 Btu/kWh (LHV)). Under this scenario, the heat rate for WEC improved from 7,900 to 7,600 Btu/kWh (LHV). Therefore, A2PP will allow TID to serve system needs more efficiently and will improve the overall efficiency of TID's generating resources.<sup>6</sup>

This analysis and conclusion by TID is consistent with the Staff's finding that "[t]he A2PP would not increase the overall system heat rate for natural gas plants because it would offer greater flexibility than the existing combined cycle Walnut Energy Center at a lower heat rate than existing peaker power plants in the area... it would provide local reliability and displace other power plants within the TID Balancing Authority area, which allows TID to better use the existing Walnut Energy Center, and A2PP allows displacement of energy from the existing, less-efficient Almond and Walnut power plants."<sup>7</sup>

The A2PP will not interfere with generation from existing renewable facilities or with the integration of new renewable generation.

The Avenal PMPD acknowledges the need for backup generation to foster renewables integration at p. 109:

Most new renewable generation in California will be wind and solar generated power... Unfortunately, the wind does not blow, nor does the sun shine, around the clock. As a result, in order to rely on such intermittent sources of power, utilities must have available other generating resources or significant storage that can fill the gap when renewable generation decreases... Indeed, because of this need for backup generation, or if and when utility-scale storage becomes feasible and cost-effective, nonrenewable generation will have to increase in order for the state to meet the 20 percent renewable portfolio standard.

A2PP will not "crowd out" renewables from the TID system. In fact, TID is aggressively pursuing its own RPS goals and has added 136.6 MW of wind generation to its electric system. In 2004, the TID Board adopted its own goal of providing 20 percent of its energy from renewable resources by 2017. The acquisition of the wind project brings the amount of renewable energy in TID's portfolio to 28 percent. Thus, TID has easily met its own internal renewable energy goals and is well on its way to meeting a 33 percent RPS standard.

However, because wind generation is an intermittent resource, TID must also firm this and other renewable energy sources with fully-dispatchable capacity to guarantee the District's ability to meet system demands. A2PP will serve as an important firming source for TID's existing and future intermittent renewable resources in support of TID's RPS and GHG goals. Increased levels of renewable generation in the TID service area will necessitate increases in flexible generation. Because many renewable resources are only intermittently available, Balancing Authorities like TID must be able to call upon generators with quick start, fast ramping and regulation capabilities, and a wider operating range (lower minimum operation) to successfully integrate high levels of renewables. The A2PP will provide this quick start, fast ramping and regulation capability for the TID Balancing Authority, allowing TID to make full

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<sup>6</sup> Exhibit 15 [DR Set 1A], Response DR15.

<sup>7</sup> Revised Staff Assessment, p. 4.1-68.

use of its northwest wind resource and other renewable resources in the most efficient manner possible.

The Staff Assessment finds that the project “would provide TID with quick starting and fast ramping power that would be much more likely to foster integration of renewable energy than comparable non-renewable base load or intermediate energy resources.”<sup>8</sup>

All of these factors support a finding that the A2PP will not interfere with generation from existing renewable facilities or with the integration of new renewable generation – in fact, the project will assist in integrating renewables into the resource mix.

**b. Taking into account the factors listed in (a) and (b), the project will reduce system-wide GHG emissions and support the goals and policies of AB 32.**

As discussed above, the A2PP will have a lower heat rate and lower GHG emissions than those of other facilities serving a similar role. The CEC Staff compares the A2PP’s heat rate and GHG performance to those of other plants in San Joaquin and Stanislaus Counties in Greenhouse Gas Table 4 of the RSA and concludes that “[c]ompared to the other existing simple cycle and peaker power plants in the TID Balancing Authority area, the proposed A2PP would be more efficient, and emit fewer GHG emissions during any hour of operation.”<sup>9</sup>

The project will also facilitate the integration of new and existing renewable generation into the TID generating portfolio. Therefore, the project is consistent with and supports the goals and policies of AB 32.

#### **IV. Correlation to RSA and Hearing Topics:**

- Air Quality
- Greenhouse Gases

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<sup>8</sup> Revised Staff Assessment, p. 4.1-60.

<sup>9</sup> Revised Staff Assessment, p. 4.1-68.



# Alternatives

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## I. Introduction

- A. **Name:** Sarah Madams
- B. **Qualifications:** Ms. Madams' qualifications are as noted in her resume contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1, Section 6 Alternatives [Exhibit 1]

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

A range of reasonable alternatives were identified and evaluated in the AFC Alternatives section including the "no project" alternative (that is, not developing a new power generation facility), alternative site locations for constructing and operating the A2PP, alternatives to the linear facilities (transmission lines and natural gas), alternative configurations to the combustion turbine arrangement currently proposed for the A2PP, and alternative power generation technologies.

These alternatives were then compared to the basic project objectives. Some of TID's basic project objectives for the A2PP include the following:

- Safely construct and operate a 174-MW, natural gas-fired, simple-cycle generating facility within the TID service territory.
- Provide operating reserves and thus reliability for TID's Balancing Authority requirements.
- Allow for better economic dispatch of TID's existing generation fleet system-wide.
- Provide fast-starting, load-following peaking generating units to help maintain TID's Balancing Authority tie line (interconnection) schedules with neighboring Balancing Authorities (the California Independent System Operator and Sacramento Municipal Utility District).
- Help provide firming sources for TID's existing and future intermittent renewable resources in support of TID's Renewable Portfolio Standard and greenhouse gas goals.
- Provide additional generation to meet TID's growing load and meet the demands of customers within TID's service territory.

- Achieve economies of scale and maximize the use of TID assets by locating the project on an industrial site, with the ability to use existing TID assets and power plant infrastructure.
- Minimize environmental and air quality impacts.
- Assist the State of California in developing increased local generation projects, thus reducing dependence on imported power.
- Contribute to the diversification of the City of Ceres and Stanislaus County's economic base by providing increased employment opportunities and a reliable power supply.

The AFC examined three alternative site locations for a natural gas-fired generating facility. They were Alternative Site #1 (Modesto WWTP Site), Alternative Site #2 (Washington Road Site), and Alternative #3 (Morgan Road).

The key screening criteria used to select the A2PP site and alternative sites included:

- Location within TID's service territory.
- Ability to gain site control.
- Availability of sufficient land area.
- Ability to share facilities and infrastructure with existing generating facilities.
- Proximity to existing transmission and distribution lines and close to a substation.
- Location near a source of water supply of sufficient quantity and water quality.
- Consistency with the City of Ceres and Stanislaus County General Plans, zoning ordinances, and existing land uses.
- The ability to avoid or minimize potentially significant impacts on the environment
- Location in an area appropriate for industrial development, preferably a previously disturbed site.

Although each of the alternative sites could feasibly attain most of the project's basic objectives, the A2PP site clearly became the preferred alternative for a variety of reasons, including the ability to use a previously disturbed site, the best and cost effective use of existing facilities and infrastructure, and the least environmental impacts. (Ex. 1, Section 6.3.) Taken all together, the A2PP site best meets the project objectives without resulting in any adverse environmental impacts as compared to the Morgan Road, Washington Road, and Modesto WWTP sites.

Based on the analyses presented in Section 6 of the AFC, the No Project Alternative would have the least potential for significant impacts. However, the No Project Alternative would not meet the basic project objectives and would not provide the benefits of the project. If the project were not constructed, TID's basic project objectives would not be met. A new natural gas-fired generating facility would not be constructed within the TID service territory. Instead, to meet TID's growing load, TID would need to obtain additional generation from other sources, which are potentially older, less efficient and release larger quantities of air pollutants than the A2PP. Additionally, if the A2PP is not constructed, TID will not be able to rely on its own generating resources to provide needed additional operating reserves and thus reliability for TID's

Balancing Authority requirements would not be met with local resources, and there would not be better economic dispatch of TID's existing generation fleet system wide.

The no project alternative could result in greater fuel consumption, air pollution, and other environmental impacts in the state because older, less efficient plants with higher air emissions would continue to generate power instead of being replaced with cleaner, more efficient plants, such as the A2PP. Also, the no project alternative would fail to meet the objective of assisting the state of California in reducing dependence on unreliable imported power. During limited availability of in-state generated electricity, such imported electrical energy has proven to be expensive and inconsistently available. Further, under the no project alternative, TID's Balancing Authority requirements would require uneconomic dispatch of TID's existing generation fleet, as well as reliance on imported energy. This alternative would fail to improve the County's economic base because no new jobs would be created and the reliability of the regional power supply would not be increased. . (Ex. 1, Section 6.2.)

### **III. Proposed Licensing Conditions**

There are no Conditions of Certification related to Alternatives.

### **IV. Correlation to RSA and Hearing Topics:**

- Alternatives

# Biological Resources

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## I. Introduction

- A. **Name:** Bridget Canty and Debra Crowe
- B. **Qualifications:** The qualifications of both authors are as noted in their resumes contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1, Section 5.2 Biological Resources. [Exhibit 1]
  - Application for Certification, Volume 2, Appendices 5.2A through 5.2E. [Exhibit 1]
  - Comments on the CEC Staff Assessment, dated June 7, 2010. [Exhibit 8]
  - Applicant's Response to Intervener's Data Request, CURE Data Responses Set 1A dated November 20, 2009. Response to Data Requests 68 through 76. [Exhibit 20]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18. [Exhibit 21]
  - Applicant's Response to Data Adequacy Discussions, dated May 27, 2009. [Exhibit 25]
  - Applicant's Delineation of Wetlands & Waters of the U.S. for Line 7216-03 Project, Draft Report, dated April 23, 2010. [Exhibit 26]
  - Technical Memorandum - Description of Suspected Special Status Species Habitat along PG&E Line, dated July 2, 2010. [Exhibit 27]

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The A2PP will be a nominal 174-megawatt (MW) facility consisting of three natural gas-fired turbine generators and associated equipment. The facility will be located in Ceres, Stanislaus County, California, on an approximately 4.6-acre parcel.

The project site is adjacent to the existing 48-MW Almond Power Plant to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and various industrial facilities (mobile building distributor and drilling equipment storage laydown areas) to the east.

The project site was previously used by WinCo as a borrow pit during construction of its distribution center and was backfilled and graded in 2008 using commercially available fill. The construction laydown and parking area will be adjacent to the western border of the proposed site, within the WinCo property. An approximately 6.4-acre parcel immediately adjacent to the western border of the proposed site will be used for both construction parking and laydown areas.

The A2PP will be interconnected to the Turlock Irrigation District (TID) system via two 115-kilovolt (kV) transmission lines (Corridor 1, approximately 0.9 mile long, and Corridor 2, approximately 1.2 miles long), which will extend south to the proposed Grayson Substation. The project will also require that TID rerate 2.9 miles of an existing 69-kV sub-transmission line from the Almond Power Plant to the TID Crows Landing Substation that currently serves parts of the cities of Ceres and Modesto as well as surrounding rural areas.

Natural gas for the A2PP will be provided via an 11.6-mile-long natural gas line, which would generally extend in a southerly direction from the existing Almond Power Plant boundary and would join with Pacific Gas and Electric's (PG&E's) existing natural gas pipeline, Line #215, at W. Bradbury Road. In addition, a 1.8-mile-long segment of Line #215 (Reinforcement Segment) needs to be reinforced along Prune Avenue on the western side of the San Joaquin River. The construction right-of-way (ROW) for the pipeline would be 85 feet wide, and the permanent pipeline easement would be 50 feet wide. The pipeline would be installed in a relatively shallow trench; however, to cross under TID drains and canals and improvement district pipelines, a trenchless construction method would be used.

The A2PP project site is located in the northern part of the San Joaquin Valley in Stanislaus County. The San Joaquin Valley occupies the southern half of California's Central Valley, between the Sierra and Coast ranges, extending from Stockton south to Bakersfield. The foothills that rise to the Sierra Nevada are approximately 55 miles east of the project. The Diablo Range portion of the Coast Range is approximately 20 miles to the west. The San Joaquin River drains the northern half of the valley and is approximately 7.5 miles southwest of the site. The San Joaquin River flows north and drains to the Sacramento-San Joaquin River delta, approximately 55 miles northwest of the site. The Tuolumne River is located approximately 3 miles northwest of the site and the Merced River is about 15 miles to the south.

There are no significant biological resource areas in the immediate project vicinity. Regionally significant areas include the San Joaquin River National Wildlife Refuge located approximately 10 miles west-northwest of the site and the California Department of Fish and Game's (CDFG) West Hilmar Wildlife Area located approximately 12 miles to the south.

The project site was previously used by WinCo as a borrow pit during construction of the WinCo distribution warehouse; however, in 2008 the site was filled and graded to the current site elevation and is now devoid of vegetation. The laydown area is a depressed area that is vegetated with a variety of weedy species that are common in highly disturbed sites. Both 115-kV transmission lines (Corridor 1 and Corridor 2) are within agricultural areas consisting of winter oats/wheat and alfalfa crops, as well as almond and walnut orchards, and a small area of vineyards. Most of the rerated 69-kV sub-transmission line parallels a railroad line that is highly disturbed from maintenance as well as irregular access by motorized vehicles; the remainder of the line parallels a paved roadway (Hatch Road) that is similarly disturbed.

The natural gas line will be located largely on adjacent to paved county roads and on dirt farm access roads along the edges of cultivated agricultural fields where natural vegetation is absent. Biological surveys determined that the natural gas line area contained potentially suitable habitat for the giant garter snake (*Thamnophis gigas*); western pond turtle (*Actinemys marmorata*); active nesting habitat for Swainson's hawk (*Buteo swainsoni*); and active nesting habitat for the red-tailed hawk (*Buteo jamaicensis*). Additionally, potentially suitable habitat was documented for Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley steelhead (*O. mykiss*), green sturgeon (*Acipenser medirostris*), Sacramento splittail (*Pogonichthys macrolepidotus*) and hardhead (*Mylopharodon conocephalus*). However, further surveys identified no special-status species within the project area.

The natural gas pipeline would be owned and operated by PG&E. In addition to supplying the A2PP project with natural gas, the pipeline will be built to upgrade and enhance reliability for the existing PG&E gas transmission and distribution system. The pipeline will begin in the south, extending north, and the natural gas line will end at the south fenceline of the existing Almond Power Plant.

Wildlife that may use the narrow fringes of vegetation along drains (which the natural gas pipeline will parallel) include western pond turtle (*Emys marmorata*), giant garter snake (*Thamnophis gigas*), egrets, herons, song birds, raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and coyotes (*Canis latrans*) that feed on crayfish, tadpoles, and mosquito fish. Ducks and other migratory waterfowl may use irrigation canals that have some remaining cover, and red-winged blackbirds (*Agelaius phoeniceus*) could use patches of vegetation in drains and other vegetated channels as nest sites. Western pond turtles and giant garter snakes may also use the aquatic habitat in the drains and other vegetated channels; however, no special-status species were observed or are known to inhabit these drainages. None of the other canals in the project impact area contain suitable vegetation for special-status wildlife use and no special-status species were observed or are known or expected to inhabit these other drainages in the project impact area.

## B. Special-Status Species

The A2PP is within a developed area surrounded by highly managed lands (agricultural fields) and would have minimal impacts to natural habitats and communities. Given the existing development in the area, the potential for special-status species to occur on site is considered relatively low; however, some species are more tolerant to human disturbance and others may incidentally occur in the area as a result of suitable habitat in adjacent areas. Special-status species that are considered to have some potential to occur in the A2PP project area include: big tarplant (*Blepharizonia plumosa*), conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*B. longiantenna*), vernal pool fairy shrimp (*B. lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), western pond turtle, giant garter snake, cackling Canada goose (*Branta hutchinsii leucopareia*), western burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), tricolored blackbird (*Agelaius tricolor*), and San Joaquin kit fox (*Vulpes macrotis mutica*).

Surveys for wildlife species and their habitats in the A2PP project area, natural gas pipeline corridor, and transmission line corridors were conducted by CH2M HILL biologists in 2009 and 2010. Pedestrian and driving surveys included the proposed A2PP site, adjacent laydown areas and linear corridors. Surveys for rare plants were conducted by Virginia Dains in 2009 and 2010

in the A2PP project area, natural gas pipeline corridor, and transmission line corridors. No threatened or endangered plants or wildlife were observed in the agricultural fields or developed and disturbed lands within or adjacent to the project features during the field surveys. In addition, no records of historical sightings were included in the CNDDDB for the area.

The only special-status species observed during the field surveys for the pipeline alignment were two Swainson's hawks, which were observed flying to the west of the natural gas pipeline alignment in the vicinity of CNDDDB-documented nests of this species. No other special-status species were observed in agricultural fields or developed and disturbed lands along the pipeline alignments during the field surveys. No records of historical sightings were included in the CNDDDB for the area.

### **C. Construction Impacts**

Because of the current land use surrounding the proposed A2PP site, the construction laydown area, and the rerouted 69-kV sub-transmission line, and the highly disturbed and degraded nature of the habitat, development of these project features are not expected to result in direct or indirect impacts to special-status plants or wildlife species.

Construction for the natural gas pipeline would result in temporary impacts to the corridor (e.g., vegetation clearing, trench excavation, compaction, dust generation, and restoration). The temporary construction corridor would be restored to after construction and therefore would sustain no long-term adverse impacts. The impacts from construction in the pipeline area would be temporary and less than significant.

Within the pipeline project area, the Harding Drain is a dirt-lined canal that supports emergent vegetation. This and other similar canals provide potentially suitable habitat for western pond turtles and giant garter snakes. No western pond turtles or giant garter snakes were observed in these areas during the field surveys. However, because both the Harding Drain would be crossed by the horizontal directional drill method and other similar features would be crossed by the jack and bore method, no effects are expected to these species.

Because of the current land use surrounding the proposed project and highly disturbed and degraded nature of the habitat, the pipeline is not expected to result in significant direct or indirect impacts to special-status wildlife species.

### **D. Operational Impacts**

Direct and indirect impacts to birds including potential for collision with structures (stacks and transmission lines) are expected to be minimal given the project location in an infill area between the existing Almond Power Plant and other industrial developments. It is expected that resident and migrating wildlife in the area would be accustomed to maneuvering around such features and the potential for avian collisions is expected to be minimal. As a precautionary measure, TID has developed an avian protection plan that is designed to avoid or minimize the risk of avian collision and electrocution to migratory birds including special-status species.

The expected stack height for the A2PP will be similar to the stack height of the existing Almond Power Plant and any lighting, if required, will be pointed down to reduce light pollution. Generally, noise from construction and operation of these project features would not

cause significant adverse impacts on wildlife, as wildlife can be expected to acclimate to routine background noise.

## **E. Summary of Cumulative Impacts**

Because the A2PP is a permitted use at the proposed site and would not result in significant adverse impacts that cannot be mitigated, impacts would not likely combine with those from the projects being processed in the city limits to result in cumulative significant impacts. Similarly, because the A2PP site is in a primarily agricultural area of the county, it is unlikely the A2PP's project impacts would combine with those of projects occurring elsewhere in the County to result in significant cumulative impacts.

As described previously, the A2PP will not cause any adverse impacts to biological resources, fill any wetlands, or affect biological resources habitat. The potential impact to nesting birds will be mitigated by conducting preconstruction surveys and either avoiding active nests during the nesting season or rescheduling construction activities outside of the nesting season. Existing projects have been considered as part of the project's ambient noise monitoring. New projects in this area are unlikely to be important sources of noise that could disturb wildlife. Any potentially significant adverse impacts to biological resources are considered and mitigated, if necessary. For these reasons, the A2PP will not cause any significant adverse cumulative impacts to biological resources.

## **F. Mitigation Measures**

Proposed conservation protection measures to avoid and minimize impacts to biological resources within and adjacent to the TID A2PP project area would include:

1. Prior to construction, conduct clearance surveys for special-status species including Swainson's hawks, burrowing owls, other nesting migratory birds, and denning San Joaquin kit fox.
2. Conduct Worker Environmental Awareness Training for all construction personnel.
3. Conduct construction monitoring by a qualified Designated Biologist and onsite Biological Monitors during construction activities near sensitive habitats.

## **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that 15 Conditions of Certification (COCs) be adopted to address Biological Resource issues: BIO-1 through BIO-15. The Applicant has reviewed the COCs and finds them acceptable.

## **IV. Correlation to RSA and Hearing Topics:**

- Biological Resources



# Cultural Resources

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## I. Introduction

A. **Name:** Clint Helton

B. **Qualifications:** Mr. Helton's qualifications are as noted in their resumes contained in Appendix A.

C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification, Volume 1: Section 5.3, Volume 2: Appendices 5.3A through 5.3F [Exhibit 1]
- Data Adequacy Supplement A, Cultural Resources [Exhibit 3]
- Comments on the CEC Staff Assessment. [Exhibit 8]
- Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated September 14, 2009. Responses to Data Requests 16 through 24 and Staff Query 1. [Exhibit 15]
- Applicant's Response to CEC Staff Requests, Data Response Set 1B, dated October 12, 2009. Responses to Data Request 19. [Exhibit 18]
- Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Responses to Data Request 18. [Exhibit 21]
- Data Adequacy Discussions, dated May 27, 2009 [Exhibit 25]
- Data Adequacy Responses DA5.3-5, Supplement B [Exhibit 28]
- Applicant's Revised Conditions of Certification, dated August 6, 2010. [Exhibit 29]

D. **Submitted With a Request for Confidential Treatment:**

- Confidential Cultural Resources - Appendix 5.3E and 5.3C of the Application for Certification, dated May 11, 2009
- Confidential Cultural Resources - Attachment DA5.3-1 of the Data Adequacy Supplement, dated June 10, 2009
- CEC Response to Application for Confidentiality - Cultural Technical Report, dated June 11, 2009
- Repeated Cultural Application for Confidential Designation, dated January 28, 2010

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The project site is located in Ceres, California, in Stanislaus County. The existing TID Almond Power Plant is south of the A2PP site, a WinCo distribution warehouse is to the west, a farm supply facility is north of the project site, and a modular building distributor and drilling equipment storage facility is to the east.

The two transmission line corridors run south from the project site for approximately 1 mile, while a 69-kV sub-transmission line, which will be rerated, runs north through industrial buildings and near residences situated along Hatch Road. This line is located adjacent to the Union Pacific Railroad (UPRR), historically the Tidewater Southern Railroad (TSRR), and connect to the Crows Landing Substation.

Natural gas for the A2PP will be provided via an 11.6-mile-long natural gas line, which would generally extend in a southerly direction from the existing Almond Power Plant boundary and would join with Pacific Gas and Electric's (PG&E's) existing natural gas pipeline, Line #215, at W. Bradbury Road. In addition, a 1.8-mile-long segment of Line #215 (Reinforcement Segment) needs to be reinforced along Prune Avenue on the western side of the San Joaquin River. The construction right-of-way (ROW) for the pipeline would be 85 feet wide, and the permanent pipeline easement would be 50 feet wide. The pipeline would be installed in a relatively shallow trench; however, to cross under TID drains, canals, and improvement district pipelines, a trenchless construction method would be used. The proposed pipeline crosses several historic laterals and one historic drain within the TID.

A cultural resources inventory, which included archival research, reconnaissance, and a surface pedestrian survey, was conducted for the project. The archaeological survey area included the A2PP plant site, the construction laydown/parking area, the two transmission line corridors, the rerated 69-kV sub-transmission line corridor, the natural gas pipeline route, a 200-foot buffer around the plant site and laydown area, and a 50-foot buffer around all project linears.

CH2M HILL commissioned a literature search for the A2PP from staff of the CHRIS Central California Information Center using a definition of a 1-mile buffer zone around the A2PP plant site, associated laydown/parking area, and a 0.5-mile buffer zone around the transmission lines and the natural gas pipeline corridor. This search radius encompasses the entire research area required by the CEC for both the archaeological and architectural surveys. No cultural resources have been previously recorded within the immediate project area or within a 1-mile radius of the A2PP. One cultural resource find was identified in the vicinity of the gas pipeline Reinforcement Segment; however, due to the age of the record, it is unknown the actual location of the find. There are no historic districts, cultural landscapes, NRHP-listed or eligible properties within the search radius.

A cultural resources survey of the proposed A2PP APE was conducted in 2009 on January 15 and 16, February 5, March 16 and 17, and in September, 2009 by CH2M HILL Cultural Resources Specialists. Exposed soils, consisting mainly of previously disturbed agricultural sediments and road bed material, were inspected carefully, and no evidence of cultural materials was noted. Given the local topography, distance to major stream drainages or other archaeologically sensitive features, and the scale and scope of previous ground disturbance in

the area, archaeological sensitivity of the surface soils of the A2PP APE is considered moderate to low.

A cultural resource survey of the built environment of the A2PP APE was conducted on January 15 and 16, 2009. The literature search revealed there are no known NRHP- or CRHR-listed properties located in the A2PP APE. A windshield survey was undertaken and buildings that appeared to be more than 45 years of age were recorded within the area. None of the properties identified as potentially historic appear to meet any of the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) criteria. There is no pattern of development or use of style in any of the three areas or neighborhoods where these properties are located.

CH2M HILL contacted the Native American Heritage Commission (NAHC) to request information about traditional cultural properties such as cemeteries and sacred places in the A2PP APE. The NAHC responded with a list of Native Americans interested in consulting on development projects. Each of these individuals/groups was contacted. No concerns have been expressed by those contacted.

The NAHC record search of the Sacred Lands file did not indicate the presence of Native American cultural resources in the immediate A2PP APE. The record search conducted at the CHRIS Central California Information Center also did not indicate the presence of Native American traditional cultural properties.

Additionally, CH2M HILL contacted historical societies in the Ceres and Modesto areas, including the Ceres Historical Society, the McHenry Museum and Historical Society, and the Turlock Historical Society on February 4, 2009. As of this printing, no responses have been received regarding historic structures from the societies.

CH2M HILL will also conduct a geoarchaeological study in the reinforcement segment of the natural gas pipeline to determine the potential for surface and subsurface prehistoric archaeological resource in the area prior to construction.

## **B. Construction Impacts**

No NRHP- or CRHR-eligible prehistoric or historical archaeological resources are anticipated to be affected by project construction. The surface and subsurface prehistoric archaeological potential of the proposed project area is considered very low. It is unlikely that construction-related ground disturbance of the project would directly impact surface or subsurface archaeological resources. Moreover, a geoarchaeological study performed by CH2M HILL prior to ground disturbance in the natural gas pipeline Reinforcement Segment will identify any potential surface or subsurface prehistoric archeological resources within that area.

Due to the low number of archaeological resources in the A2PP APE, with the exception of Reinforcement Segment, it is unlikely that the project would encounter buried intact cultural resources that have not previously been disturbed or destroyed in sediments near the ground surface. The required geoarchaeological study to be performed prior to construction of the Reinforcement Segment will however identify any potential surface or subsurface prehistoric archeological resources within that area. For areas outside of the Reinforcement Segment, some limited potential does exist for intact cultural resources to be discovered in soils below the plow

zone. With the incorporation of mitigation described in the Revised Staff Assessment, construction impacts to cultural resources will be less than significant.

### **C. Operational Impacts**

No ground disturbance would be required during project operation; therefore, significant impacts to cultural resources are not anticipated during A2PP operation. Maintenance of project facilities will not cause any effects outside of the initial construction area of impact. No significant impacts to cultural resources will result from operations.

### **D. Summary of the Cumulative Impacts**

Although environmental analyses for most of these projects have not been completed at the time the AFC was prepared, standard mitigation measures exist to reduce impacts to cultural resources to a less-than-significant level, and it is anticipated that impacts to cultural resources from the cumulative projects, if any, would be mitigated to a less-than-significant level. The project is unlikely, therefore, to have impacts that would combine cumulatively with other closely related past, present, and reasonably foreseeable future projects. With the incorporation of mitigation described in the AFC, the project will not contribute to a cumulatively considerable significant impact to cultural resources.

### **E. Mitigation**

Although significant archaeological and historical sites were not found during the survey for the A2PP plant site, laydown areas, and associated linear features, it is possible that subsurface construction could encounter buried archaeological remains. For this reason, the A2PP will include measures to mitigate any potential adverse significant impacts that could occur if there were an inadvertent discovery of buried cultural resources. These measures include, but are not limited to: (1) designation of a CRS to investigate any cultural resources finds made during construction, (2) implementation of a construction worker training program, (3) monitoring during initial clearing of the power plant site and excavation at the plant site, (4) procedures for halting construction in the event that there is an inadvertent discovery of archaeological deposits or human remains, (5) procedures for evaluating an inadvertent archaeological discovery, and (6) procedures to mitigate adverse significant impacts on any inadvertent archaeological discovery determined significant.

Once the A2PP is operational, it is anticipated that no additional disturbance will occur at the A2PP plant site, laydown area, or associated linear features.

## **III. Proposed Licensing Conditions**

The Revised Staff Assessment for the project filed by the CEC recommends that nine Conditions of Certification be adopted to address Cultural Resources, CUL-1 and CUL-9. On Thursday September 16, 2010 staff and the Applicant reviewed the Staff's proposed COCs, and with the changes from the September 16<sup>th</sup> workshop, the Applicant finds them acceptable. The revised CUL-1 through CUL-3, and CUL-9 as agreed to during the September 16<sup>th</sup> workshop is provided below.

### **September 16, 2010 Workshop Revisions to CUL-1 through -3 and CUL-9**

**CUL-1** Prior to the start of ground disturbance (includes "preconstruction site mobilization," "construction ground disturbance," and "construction grading, boring, and trenching,"

as defined in the General Conditions for this project) for the reinforced segment of the natural gas pipeline on the west side of the San Joaquin River (hereinafter referred to as the "Reinforcement Segment"), the project owner shall obtain the services of a Project Geoarchaeologist (PG).

The resume for the PG shall include information demonstrating to the satisfaction of the CPM that the PG's training and background conform to the U.S. Secretary of Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and showing the completion of graduate-level coursework in geoarchaeology or Quaternary science.

The resume of the PG shall include the names and telephone numbers of contacts familiar with the work of the PG, as a professional geoarchaeologist, on referenced projects and demonstrate to the satisfaction of the CPM that the PG has the appropriate training and experience to undertake the required geoarchaeological study.

No ground disturbance related to the Reinforcement Segment shall occur prior to CPM approval of the PG, unless specifically approved by the CPM.

**Verification:** 1. At least 135 days prior to the start of ground disturbance related to the Reinforcement Segment, the project owner shall provide the resume of the PG to the CPM, for review and approval.

**CUL-2** The PG shall conduct geoarchaeological pre-construction fieldwork research on the Reinforcement Segment construction right-of-way (ROW) and the San Joaquin River fluvial system landforms (floodplain, alluvial terraces, and various overbank deposits) in the immediate vicinity, using available geoarchaeological technical literature, remote imagery, site records, and observations from a field reconnaissance of the area. Review of the cultural resources data compiled during the AFC review process shall precede the field reconnaissance.

1. The results of the geoarchaeological pre-construction excavation geoarchaeological research and field reconnaissance shall be submitted to the CPM in a Geoarchaeological Pre-Excavation Research Report report that shall also include:
  - A large scale ( $\geq 1:12,000$ ) map portraying the Reinforcement Segment pipeline trench and surrounding landforms,
  - Descriptions of identified landforms in and immediately around the construction ROW of the Reinforcement Segment,
  - The geomorphic history of the study area,
  - The hypothesized distribution of potentially sensitive subsurface conditions,
  - The age, to the extent feasible, of the landforms on which the Reinforcement Segment would be located,
  - The postulated distribution of Modesto Formation (Pleistocene and possible early Holocene) landforms versus post-Modesto Formation (postglacial or Holocene) landforms,

- Recommendations for the optimal location of pre-construction geoarchaeological excavations of a portion of the Reinforcement Segment pipeline trench(CUL-3)and
- A research design for these excavations, to follow the guidance below.

~~The report filed by the Project Owner on June 7, 2010 titled, Surficial Geology of the PG&E Gas Pipeline in the Vicinity of the San Joaquin River, satisfies these requirements, and As part of the Geoarchaeological Pre-Excavation Research Report, the Project owner shall also prepare a research design for the preconstruction se excavations, which to follows the guidance below:~~

The research design shall include, but is not limited to the following elements:

- Geoarchaeological preconstruction excavations shall be located along the pipeline centerline to avoid additional impacts to buried cultural resources beyond that which would occur during construction along the Reinforcement Pipeline Segment ROW.
- Unless otherwise specified in the approved Geoarchaeological Pre-Excavation Research Report, ~~report~~, the excavations shall consist of backhoe trenches.
- The total depth of excavations shall be to the water table, or to the anticipated depth of the proposed pipeline installation, whichever is encountered first. The number of backhoe trenches appropriate to this study shall in no case exceed 4 trenches. Excavation methods shall include:
  - a. the recordation of one measured profile from each backhoe trench to include reasonably detailed written descriptions of each lithostratigraphic and pedostratigraphic unit, a measured profile drawing, and a profile photograph with a metric scale and north arrow;
  - b. b. the screening through ¼-inch hardware cloth of a small (three 5- gallon buckets) sample of sediment from the major lithostratigraphic units in each profile or from two arbitrary levels in each profile;
  - c. c. collection of radiocarbon or TL (thermoluminescence) samples to date and/or correlate stratigraphic units and time horizons, with processing of these samples at the discretion of the PG, in consultation with the CPM; and
  - d. d. implementation of a protocol to immediately inform the project owner of any buried prehistoric archaeological deposits encountered during geoarchaeological data collection and to facilitate informing the CPM.
- 2. At the conclusion of ~~the excavations~~ reconnaissance field work and initial data review, a meeting or teleconference with the CPM, the PG, and the project owner shall be held to review the results of the Geoarchaeological Pre- Excavation Research Report of pre-construction excavations. ~~Decisions on whether or not to radiocarbon date or otherwise date some or all of the samples shall be made at this meeting.~~
- 3. ~~The PG shall provide a Geoarchaeological Excavation Results Report report to the project owner and the CPM that describes the results of the~~

geoarchaeological pre-construction excavations and the subsurface geomorphology along the Reinforcement Segment Pipeline Section ROW. This report shall include:

- a. presents, in graphic and written form, a master column that characterizes the stratigraphy of the subject portion of the Reinforcement Pipeline Segment ROW, including a geologic interpretation of the approximate age of the stratigraphic subdivisions reflecting shifts in depositional history and time ranges that correspond to the prehistory and history of the region;
- b. the results of the study placed in the context of what is known of the area's Quaternary geomorphology and environmental history;
- c. descriptions of any encountered archaeological deposits, including an assessment of the lateral and vertical extents of each such deposit, descriptions of the material culture content and the character of the sedimentary matrix for each deposit, and an assessment of the approximate age of each deposit;
- d. a preliminary interpretation of the character of the prehistoric or historic land use that each encountered archaeological deposit represents;
- e. an interpretation, with reference to the information gathered and developed above, of the likelihood that buried archaeological deposits are present, and, on the basis of the current understanding of the prehistory and history of the geoarchaeological study area region, what site types are most likely to be found;
- f. recommendations, on the basis of the conclusions in "e" where and to what depth archaeological monitoring should be done during construction in all project construction areas of the Reinforcement Segment;
- g. an assessment of the potential necessity and the approximate cost of mitigating project impacts to any CRHR-eligible buried archaeological deposits found during the geoarchaeological study, and recommended options for project re-design to avoid any potential CRHR-eligible deposits found;
- h. appendices to the report to include completed DPR 523 forms for any archaeological deposits encountered and recorded.

No ground disturbance related to the Reinforcement Segment shall occur prior to CPM approval of the Geoarchaeological Pre-Excavation Research Report research design, unless specifically approved by the CPM.

**Verification:** 1. At least 120 days prior to the start of ground disturbance related to the Reinforcement Segment, the project owner shall provide the AFC, data responses, all confidential cultural resources documents, maps and drawings, and the Staff Assessment to the PG.

2. At least 90 days prior to the start of ground disturbance related to the Reinforcement Segment, the project owner shall submit the Geoarchaeological Pre-Excavation Research Report and research design to the CPM for review and approval.

~~3. At least 45 days after the completion of the excavations, the project owner shall submit to the Geoarchaeological Excavation Results Report to the CPM for review and approval.~~

**CUL-3** Geoarchaeological preconstruction excavations along the Reinforcement Pipeline Segment ROW shall occur under the direction of the PG. The PG may elect to obtain specialized technical services beyond the requisite radiometric dating to assist in data-gathering and data-interpreting activities.

~~The project owner shall ensure that the PG conducts the geoarchaeological excavations field study according to the CPM approved Geoarchaeological Pre-Excavation Research Report research design and completes and submits the Geoarchaeological Excavation Results Report. geoarchaeological field study report.~~

The PG shall provide a Geoarchaeological Excavation Results Report report to the project owner and the CPM that describes the results of the geoarchaeological preconstruction excavations and the subsurface geomorphology along the Reinforcement Segment Pipeline Section ROW. This report shall include:

- a. ~~presents,~~ in graphic and written form, a master column that characterizes the stratigraphy of the subject portion of the Reinforcement Pipeline Segment ROW, including a geologic interpretation of the approximate age of the stratigraphic subdivisions reflecting shifts in depositional history and time ranges that correspond to the prehistory and history of the region;
- b. the results of the study placed in the context of what is known of the area's Quaternary geomorphology and environmental history;
- c. descriptions of any encountered archaeological deposits, including an assessment of the lateral and vertical extents of each such deposit, descriptions of the material culture content and the character of the sedimentary matrix for each deposit, and an assessment of the approximate age of each deposit;
- d. a preliminary interpretation of the character of the prehistoric or historic land use that each encountered archaeological deposit represents;
- e. an interpretation, with reference to the information gathered and developed above, of the likelihood that buried archaeological deposits are present, and, on the basis of the current understanding of the prehistory and history of the geoarchaeological study area region, what site types are most likely to be found;
- f. recommendations, on the basis of the conclusions in "e" where and to what depth archaeological monitoring should be done during construction ~~in all project construction areas~~ of the Reinforcement Segment;
- g. an assessment of the potential necessity and the approximate cost of mitigating project impacts to any CRHR-eligible buried archaeological deposits found during the geoarchaeological study, and recommended options for project re-design to avoid any potential CRHR-eligible deposits found;
- h. appendices to the report to include completed DPR 523 forms for any archaeological deposits encountered and recorded.

The project owner shall review the ~~geoarchaeological~~ Geoarchaeological Excavation Results Report ~~field study report~~ and evidence consideration of any project design changes recommended by the PG.



No ground disturbance related to the Reinforcement Segment shall occur prior to CPM approval of the ~~geoarchaeological~~ Geoarchaeological Excavation Results Report. ~~field study report~~.

**Verification:** 1. At least 90 days prior to the start of ground disturbance related to the Reinforcement Segment, the project owner ~~shall ensure that the PG initiates the approved geoarchaeological study~~ and shall notify the CPM by letter or in an e-mail that the PG has initiated the CPM-approved Geoarchaeological Excavation Research Report ~~geoarchaeological study~~.

2. No later than 3 weeks after the geoarchaeological pre-construction excavations conclude, the project owner, the PG, and the CPM shall meet or teleconference to review the results of pre-excavations and decide on the need for radiocarbon or other dating.

3. At least 20 days prior to the start of ground disturbance related to the Reinforcement Segment, the project owner shall submit the Geoarchaeological Excavation Results Report ~~RPG's~~ Report to the CRS and the CPM for review and approval.

**CUL-9** The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor full time all ground disturbance ~~along the linear facilities routes~~ related to the Reinforcement Segment, according to the recommendations of the Geoarchaeological Excavation Result Report ~~field study~~ required in CUL-4 2 and CUL-3, and as approved by the CPM, to ensure there are no impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner.

Full-time archaeological monitoring ~~for this project~~ related to the Reinforcement Segment shall be the archaeological monitoring of the earth-removing activities in the areas specified in the previous paragraph, for as long as the activities are ongoing. Full-time archaeological monitoring related to the Reinforcement Segment shall require at least one monitor per excavation area where machines are actively disturbing native soils. If an excavation area is too large for one monitor to effectively observe the native soil disturbance, one or more additional monitors shall be retained to observe the area.

The project owner shall obtain the services of a Native American monitor to monitor ground disturbance in any areas where Native American artifacts are discovered in native soils. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. After finding those efforts to be satisfactory, the CPM may either identify other potential monitors or allow ground disturbance to proceed without a Native American monitor.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of noncompliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

**Verification:**

1. At least 30 days prior to the start of ground disturbance related to the Reinforcement Segment, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.
2. Monthly while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.
3. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.
4. Daily and as long as no cultural resources are found related to the Reinforcement Segment, the CRS shall provide a statement that "no cultural resources over 50 years of age were

discovered” to the CPM as an e-mail or in some other form of communication acceptable to the CPM.

5. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS’s justification for reducing or ending daily reporting.

#### **IV. Correlation to RSA and Hearing Topics:**

- Cultural Resources.

# Electric Transmission

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## I. Introduction

- A. **Name:** Gregory Tucker and Ron Daschmans
- B. **Qualifications:** Mr. Tucker's and Mr. Daschmans' qualifications are as noted in the resumes contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1; Section 3, Volume 2: Appendix 3A. [Exhibit 1]
  - Data Adequacy Supplement A, Electrical Transmission. [Exhibit 2]
  - Supplement A- Data Adequacy Response, Section 3, dated June 9, 2009. [Exhibit 3]
  - Comments on the CEC Staff Assessment dated June 7, 2010. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1A dated September 14, 2009. Responses to Data Requests 72 through 74. [Exhibit 15]
  - Applicant's Response to Intervener's Data Request, CURE Data Responses Set 1A dated November 20, 2009. Responses to Data Requests 5 through 62. [Exhibit 20]
  - Applicant's Data Adequacy Discussion, dated May 27, 2009. [Exhibit 25]
  - Applicant's e-mail regarding the Revised Study Plan Outline & Map, dated September 17, 2009. [Exhibit 30]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1C dated October 30, 2009. Response to Data Request 72. [Exhibit 31]

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The A2PP site is adjacent to the existing 48-MW Almond Power Plant to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and various industrial facilities (modular building distributor and drilling equipment storage laydown areas) to the east.

The proposed A2PP site is located in Ceres, California. This location was selected, in part, for its proximity to the existing Turlock Irrigation District (TID) Almond Power Plant, the TID Ceres load area, and existing and planned transmission and substation facilities.

## **B. Proposed Transmission Interconnection**

The A2PP will be interconnected with the TID electrical grid via two new 115-kV transmission lines (one 0.9 mile long, the other 1.2 miles long) from the A2PP to the proposed Grayson Substation. The 115-kV transmission lines will follow two separate corridors for reliability purposes. In addition, the existing 2.9-mile-long 69-kV single-circuit transmission line will be rerated to prevent possible thermal overloads under certain contingencies.

### **A2PP 115-kV Switchyard Characteristics**

The interconnection 115-kV switchyard will use 115-kV gas-insulated circuit breakers in a ring bus arrangement to obtain a high level of service reliability. The switchyard and all equipment will be designed for an interrupting capacity of at least 15,000 kiloamperes (kA). The main buses, as well as the bays, will be designed to carry at least 1,200 amperes on a continuous basis.

Station service power will be provided via the local TID/A2PP distribution facilities near the switchyard or by a 13.8/4.16-kV step-down transformer.

### **Almond-Crows Landing 69-kV Line Re-rating**

The 2.9-mile-long 69-kV sub-transmission line (Almond-Crows Landing) will require work to increase clearances so thermal loading and resulting sag can be increased for emergency loading conditions. The existing 636 kcmil AA, orchid conductor will be re-rated to 105° C operating temperature for emergency operations. Construction will involve lowering underbuilt 12kV conductors to increase the clearance required for the increased sag at the higher operating temperature. A new hole will be drilled in the pole and the crossarm that supports the 12kV conductors will be lowered.

## **C. Transmission Interconnection System Impact Study and Facility Study Reports**

A System Impact Study Report has been completed for A2PP. Interconnection of the A2PP requires that the existing 2.9-mile long Almond-Crows Landing 69kV single-circuit transmission line be rerated to prevent possible thermal overloads under certain contingencies. Aside from the aforementioned Almond-Crows Landing 69kV rerate, no additional mitigation measures were identified as part of the initial interconnection system impact study for the A2PP.

## **D. Transmission System Safety and Nuisances**

This section discusses safety and nuisance issues associated with the proposed electrical interconnection of the A2PP.

### **Electrical Clearances**

The transmission interconnection for the A2PP will be designed to meet appropriate clearance requirements. The minimum ground clearance for 69-kV and 115-kV transmission (per GO-95) is 30 feet in this area (may be reduced 10 percent to 27 feet due to loading). Under normal conditions, the line operates well below maximum conductor temperature, and thus, the average clearance is greater than the minimum. Regardless of design height, the magnetic and electric field calculations are based on these minimum conductor clearances for the lowest-level

conductor and the design spacing of the higher-level conductors relative to the lower-level conductors. This is expected to be the worst-case scenario with actual design conductor heights exceeding those used for this analysis.

### **Electric and Magnetic Fields and Audible Noise**

The AFC discusses in detail the Electrical Effects, Magnetic Fields, and Audible Noise issues. This testimony will only reiterate the conclusions. The discussions in the AFC are incorporated by reference.

### **Transmission Line EMF Reduction**

While the State of California does not set a statutory limit for electric and magnetic field levels, the CPUC, which regulates electric transmission lines, mandates EMF reduction as a practicable design criterion for new and upgraded electrical facilities. As a result of this mandate, the regulated electric utilities have developed their own design guidelines to reduce EMF at each new facility. The CEC, which regulates transmission lines to the first point of connection, requires generators to follow the existing guidelines that are in use by local electric utilities or transmission-system owners.

### **EMF and Audible Noise Conclusions**

The construction and operation of the A2PP, including the interconnection of the A2PP with TID's transmission system, are not expected to result in significant increases in EMF levels, corona, audible noise, or radio and television interference.

## **E. Cumulative Impacts**

Compliance with LORS and codes in the design of A2PP will not create any significant adverse cumulative impacts.

## **F. Mitigation**

There are no significant adverse impacts and the project is in compliance with all applicable laws, ordinances, regulations, and standards. As such no additional mitigation is required. .

## **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) recommends that six Conditions of Certification (COCs) be adopted to address transmission system engineering (TSE) issues, TSE-1 through TSE-6. The Applicant has reviewed the TSE COCs and finds them acceptable. The RSA for the project filed by the CEC recommends that five COCs be adopted to address transmission line safety and nuisance (TLSN) issues, TLSN-1 through TLSN-5. The Applicant has reviewed the proposed TLSN COCs and finds them acceptable.

## **IV. Correlation to RSA and Hearing Topics:**

- Transmission Line Safety and Nuisance
- Transmission System Engineering

# Geologic Resources

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## I. Introduction

**A. Name:** Thomas A. Lae

**B. Qualifications:** Mr. Lae's qualifications are as noted in his resume contained in Appendix A.

**C. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification, Volume 1; Section 5.4 Geologic Resources, Volume 2; Appendices 5.4A and 5.4B. [Exhibit 1]
- Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Responses to Data Requests 18. [Exhibit 21]
- Comments on the CEC Staff Assessment. [Exhibit 8]

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The A2PP is located off of Crows Landing Road, in Ceres, California, Stanislaus County. The site is adjacent to the existing Almond Power Plant to the south, a WinCo distribution warehouse to the west, industrial businesses to the north and east, and the Ceres Wastewater Treatment Plant farther east. The site parcel is approximately 4.6 acres and is relatively flat and rectangular. The proposed A2PP site and proposed transmission and utility lines would run across flat plains.

No geologic resources of recreational or scientific value were identified in the vicinity of the project site.

### B. Construction Impacts

Construction of the TID A2PP Project will require minor grading and excavation; thereby, minimizing alteration of the terrain of the project site. Impacts to the geologic conditions involve dust generation, changes in drainage, cuts, and fills. Since the site is generally level, site grading is not expected to adversely impact the geologic environment. The generating facility and all of the associated linear facilities will be designed and constructed in accordance with the requirements of all applicable federal, state, regional, and local laws, ordinances, regulations, and standards.

### **C. Operational Impacts**

The project will be designed and constructed in accordance with the requirements of all applicable federal, state, regional and local laws, ordinances, regulations, and standards. This will minimize any operational impacts to a level of insignificance.

### **D. Summary of the Cumulative Impacts**

The construction and operation of the TID A2PP Project will not produce any significant negative cumulative impacts to geologic resources.

### **E. Mitigation**

The following mitigation measures are proposed for the project:

- Structures will be designed to meet seismic requirements of the 2007 CBC. Moreover, the design of plant structures and equipment will be in accordance with CBC Seismic requirements to withstand the ground motion of a maximum credible earthquake (MCE) event.
- A geotechnical engineer will be assigned to the project to carry out the duties required to assess geologic conditions during construction and approve actual mitigation measures used to protect the facility from geologic hazards.
- If expansive soils are identified at the site, they can be mitigated by either removal or replacement with non-expansive soil or by blending with non-expansive soil under the supervision and direction of a geotechnical engineer.

With the implementation of these mitigation measures, the A2PP will not result in significant direct, indirect, or cumulative geology-related impacts.

## **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project recommends three conditions related to engineering geology. These are Conditions of Certification (COC) GEN-1, GEN-5, and CIVIL-1 in the Facility Design section. The Applicant has reviewed the Staff's proposed COCs and finds them acceptable.

## **IV. Correlation to RSA and Hearing Topics:**

- Geology and Paleontology
- Facility Design



# Hazardous Materials Handling

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## I. Introduction

A. **Name:** Megan Uttecht

B. **Qualifications:** Ms. Uttecht's qualifications are as noted in her resume contained in Appendix A.

C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification, Volume 1. [Exhibit 1]
- Comments on the CEC Staff Assessment. [Exhibit 8]
- Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated September 14, 2009. Responses to Data Requests 1-84 and Staff Query 1. [Exhibit 15]
- Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18, & 77-79. [Exhibit 21]
- Stanislaus County Comment Letter Regarding Department of Public Works date August 11, 2009 [Exhibit 32]
- ROC TID/ A. Greenberg, Site Visit Response, dated November 12, 2009. [Exhibit 33]
- ROC S. Strachan/A. Greenberg, Regarding Pipeline Information, dated December 3, 2009 [Exhibit 34]

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

The A2PP is located off of Crows Landing Road, in Ceres, California, Stanislaus County. The site is adjacent to the existing Almond Power Plant to the south, a WinCo distribution warehouse to the west, industrial businesses to the north and east, and the Ceres Wastewater Treatment Plant farther east. The site parcel is approximately 4.6 acres.

Land use in the area surrounding the project site is commercial, residential, and agricultural. Sensitive receptors within a 6-mile radius of the project site include 189 daycare centers (mainly small, in-home locations), and 37 schools. Additionally, there are three nursing homes, 64 medical facilities, and two colleges. Within a 1-mile radius of the project site, there are five daycare centers (small, in-home locations) and no schools, medical facilities, or nursing homes. The nearest sensitive receptor is a small-capacity, in-home daycare center approximately 0.5

mile north-northeast of the site. The nearest schools are Sinclair Elementary School, approximately 1.2 miles north-northeast of the project site at 1211 Hackett Road, Ceres, California, 95307, and Central Valley High School, approximately 1.5 miles north-northeast of the site at 4033 Central Avenue, Ceres, California, 95307. The nearest hospital is Memorial Medical Center, located at 1700 Coffee Road, Modesto, California, 95355, which is approximately 7 miles north of the site.

The A2PP will use hazardous materials both during construction and during project operation. Most of the hazardous materials that will be used for the project are required for facility operations and maintenance, such as lubrication of equipment, or will be contained within transformers and electrical switches. The project will comply with applicable laws and regulations for the storage of these materials to minimize the potential for a release of hazardous materials and will conduct emergency response planning to address public health concerns regarding hazardous materials storage and use. Storage locations for the hazardous materials that will be used during operation are described in Table 5.5-1 of the AFC.

## **A. Construction Impacts**

During construction of the project and linears, regulated substances, as defined in California's Health and Safety Code, Section 25531, will not be used.

Hazardous materials to be used during construction of the project and its associated linear facilities will include gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. There are no feasible alternatives to motor fuels and oils for operating construction equipment. The types of paint required are dictated by the types of equipment and structures that must be coated and by the manufacturers' requirements for coating.

The quantities of hazardous materials that will be onsite during construction are small and similar to the quantities used during operation. Construction personnel will be trained to handle the materials properly. The most likely possible incidents will involve the potential for fuels, oil, and grease dripping from construction equipment. The small quantities of fuel, oil, and grease that might drip from construction equipment will have relatively low toxicity and will be biodegradable. Therefore, the expected environmental impact will not be significant.

Small fuel spills may also occur during onsite refueling. The potential environmental effects from fueling operations are expected to be limited to small areas of contaminated soil. If a fuel spill occurs on soil, the contaminated soil will be placed into barrels or trucks for offsite disposal as a hazardous waste.

## **B. Operational Impacts**

Most of the hazardous substances that will be used by the project are required for facility maintenance and lubrication of equipment, or will be contained within transformers and electrical switches. One regulated substance will be used for the project, anhydrous ammonia.

The A2PP facility will utilize anhydrous ammonia (100 percent NH<sub>3</sub> by weight) from an existing single stationary aboveground storage tank (AST) currently in use at the Almond Power Plant. A new ammonia tank will not be built for the A2PP facility. The capacity of the tank is 12,000 gallons; however, the tank is only filled to 85 percent of its capacity, or 10,200 gallons. The tank is surrounded by a secondary containment structure capable of holding the full

contents of the tank and accumulated precipitation. Ammonia is currently delivered one to two times per year for Almond Power Plant operations. With the addition of the A2PP, ammonia will be delivered to the site approximately once per month, or a maximum of 12 times per year.

Storage and use of ammonia will be subject to the requirements of the California Fire Code, Article 80, as well as CalARP. Article 80 of the California Fire Code contains specific requirements for control of liquid and gaseous releases of hazardous materials. Secondary containment in the form of a bermed containment area under and surrounding the anhydrous ammonia tank must be provided for the ammonia storage tank and loading area. Additionally, the facility will follow the Risk Management Plan (RMP) that is currently in place for the existing anhydrous ammonia tank. The RMP is in accordance with CalARP, further specifying safe handling procedures for the ammonia as well as emergency response procedures in the event of an accidental release. The RMP measures, when followed, prevent injuries to staff at the facility and the surrounding community. The ammonia storage tank has had no releases since commercial operation began.

Project operation will require regular transportation of hazardous materials to the project site. Transportation of hazardous materials will comply with all California Department of Transportation (Caltrans), U.S. Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC), California Highway Patrol (CHP), and California State Fire Marshal regulations. Anhydrous ammonia, a regulated substance, will be delivered to the facility and transported in accordance with Vehicle Code Section 32100.5, which regulates the transportation of hazardous materials that pose an inhalation hazard. Ammonia will only be transported along approved transportation routes. No rail will be used for delivery.

Because of its hazardous properties, ammonia is classified as a regulated substance, and an accidental release of anhydrous ammonia could present a human health hazard. In a catastrophic accident, toxic ammonia gas could migrate off site and affect the health of humans at locations surrounding the facility. Facility design will minimize the potential for harm to humans located off site.

The A2PP will require construction of a natural gas pipeline that will interconnect to Pacific Gas & Electric's (PG&E's) high-pressure natural gas pipeline #215 (line #215), located south of the site in Bradbury Road. Natural gas for the A2PP will be provided via an 11.6-mile-long natural gas line, which would generally extend in a southerly direction from the existing Almond Power Plant boundary and would join with Pacific Gas and Electric's (PG&E's) existing natural gas pipeline, Line #215, at W. Bradbury Road. In addition, a 1.8-mile-long segment of Line #215 (Reinforcement Segment) needs to be reinforced along Prune Avenue on the western side of the San Joaquin River. Natural gas is composed mostly of methane, but also may contain ethane, propane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, tasteless, and lighter than air. Methane is flammable when mixed in air at concentrations of 5 to 14 percent, which is also the detonation range. Natural gas, therefore, poses a risk of fire and explosion if an accidental release were to occur. However, the risk of a fire and/or explosion would be reduced through compliance with applicable codes, regulations, and industry design/construction standards.

## C. Cumulative Effects

For 2008-2009, the City of Ceres has 19 public works projects, five commercial/industrial projects, 10 city-related plans or programs either planned or currently under way. Of these projects, three are within a 1-mile radius of the project site and/or transmission routes.

Numerous facilities in Stanislaus County handle, store, emit, or release ammonia. Ammonia is an ingredient in fertilizer and is sometimes used for refrigeration, making it a fairly common chemical in an agricultural and food-producing region such as Stanislaus County. It is commonly used in numerous other agricultural fields in the project vicinity.

The existing Almond Power Plant and the A2PP will share the existing 12,000-gallon anhydrous ammonia tank. Neighboring facilities also store and use ammonia in large quantities. The closest facility of concern is the WinCo Central Valley Distribution Center to the west of the A2PP site. The WinCo distribution facility uses a closed-loop anhydrous ammonia refrigeration system that was recently upgraded to 37,000 pounds (7,200 gallons). Stanislaus Farm Supply, north of the A2PP site, stores and sells ammonia for agricultural use. Storage capacity at the Stanislaus Farm Supply facility is 133,796 pounds (26,000 gallons) of anhydrous ammonia, 228,300 pounds (30,000 gallons) of aqueous ammonia, and 6,000 pounds of methyl bromide gas. All facilities are permitted and inspected. A simultaneous release of this chemical from two or more sources has the potential to cause a hazardous cumulative concentration of this chemical. Existing laws and regulations address the handling of hazardous materials and the transportation and use of anhydrous ammonia, an acutely hazardous material, and will ensure that all hazardous materials at the A2PP are safely managed.

## D. Mitigation

As outlined in the AFC, potential impacts during construction and operational phases will be mitigated through extensive implementation of engineered controls, training, best management practices, and the development of plans and procedures. With the implementation of the proposed project mitigation measures and the Conditions of Certification, the project will comply with all applicable federal, state, and local laws, ordinances, regulations, and standards (LORS).

All hazardous materials and one regulated substance, anhydrous ammonia, stored onsite during TID A2PP operation will be handled and stored in accordance with applicable codes and regulations. All containers used to store hazardous materials will be inspected regularly for signs of leaking or failure. Incompatible materials will be stored in separate storage and containment areas. Areas susceptible to potential leaks and/or spills will be paved and bermed. Containment areas may drain to a collection area, such as an oil/water separator or a waste collection tank. Piping and tanks will be protected from potential traffic hazards by concrete or pipe-type traffic bollards and barriers.

Hazardous materials will be delivered periodically to TID A2PP. Transportation will comply with the applicable regulations for transporting hazardous materials, including the US Department of Transportation, USEPA, California Department of Toxic Substances Control, California Highway Patrol, and California State Fire Marshal.

A worker safety plan, in compliance with applicable regulations, will be prepared and implemented. It will include training for contractors and operations personnel. Training programs will include safe operating procedures, the operation and maintenance of hazardous

materials systems, proper use of personal protective equipment, fire safety, and emergency communication and response procedures. All plant personnel will be trained in emergency procedures, including plant evacuation and fire prevention. In addition, designated personnel will be trained as members of a plant hazardous material response team; team members will receive the first responder and hazardous material technical training to be developed in the HMBP. In accordance with CalARP regulations, an RMP has already been prepared for the existing anhydrous ammonia tank at the Almond Power Plant. The RMP includes a hazard assessment to evaluate the potential effects of an accidental release, a program for preventing an accidental release, and a program for responding to an accidental release.

For emergency spills and hazardous materials, the Ceres Emergency Services – Fire Division and the City of Modesto Fire Department have firefighters who have completed formal training in Hazardous Materials Incident Response. These firefighters are members of a countywide Haz Mat Team, managed by the Stanislaus County Environmental Resources Hazardous Materials Division. The Haz Mat Team will identify the type and source of the hazardous material, oversee evacuation of people, and confine the spilled material, if possible. Cleanup of the material is the responsibility of the facility causing the spill. The closest fire station to the A2PP project site is Ceres Fire Division Station No. 3 at 420 East Service Road, Ceres, California, 95307. The station is approximately 0.3 mile north-northeast of the A2PP (1.2 miles driving distance) and would provide the first response to the project site. Response time would be approximately 2 to 3 minutes in daylight hours, and 3 to 4 minutes in nighttime hours. If hazardous materials were involved in the incident, Ceres Fire Division Station No. 3 would be the first on site, requesting additional resources from the other Ceres Fire Division stations, the City of Modesto Fire Department, and the Westport Fire Protection District. Because Westport is a volunteer fire department, the City of Modesto Fire Department would provide the primary source of mutual aid. Any mutual aid response for major incidents would also come from the other Ceres Fire Division stations, depending on situation and need.

### **III. Proposed Licensing Conditions**

The RSA for the project filed by the CEC recommends that 7 Conditions of Certification be adopted to address hazardous materials management issues: HAZ-1 through HAZ-7. On Thursday September 16, 2010 staff and the Applicant agreed that HAZ-2 should be applied before commissioning, not construction. The Applicant has reviewed the Staff's proposed COCs, and with the changes from the September 16<sup>th</sup> workshop, Applicant finds them acceptable.

### **IV. Correlation to RSA and Hearing Topics:**

- Hazardous Materials

# Land Use

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## I. Introduction

- A. **Name:** Aarty Joshi
- B. **Qualifications:** Ms. Joshi's qualifications are as noted in her resume contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1; Section 5.6 Land Use, Volume 2; Appendix 5.6A. [Exhibit 1]
  - Data Adequacy Supplement A, Land Use [Exhibit 3]
  - Comments on the CEC Staff Assessment. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Requests 18. [Exhibit 21]
  - Applicant's Revised Conditions of Certification, dated August 6, 2010. [Exhibit 29]
  - Letter to the CEC Discussing Irrigation District Legal Authorities Regarding Land Use, dated January 13, 2010. [Exhibit 35]
  - Applicant's Response to CEC Staff Requests, Staff Query Set 3, dated April 13, 2010. Responses to CEC Staff Query Set 4. [Exhibit 36]

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The project will occupy a 4.6-acre site, adjacent to the existing 48-MW TID Almond Power Plant (A1PP). The project site is bordered by the A1PP to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and various industrial facilities to the east. The site is zoned for industrial use approximately 0.3 miles south of the nearest residential uses, with several industrial buildings located nearby. The project site was previously used as a borrow pit and was filled and graded in 2008.

Lands within a 1-mile radius of the A2PP site are within the City of Ceres and Stanislaus County. These lands are primarily agricultural fields and almond orchards (west, south, and east of the project site), single-family residences (northeast of the project site), and a community agricultural center (northwest of the project site). The closest single-family residences are located approximately 0.3 mile northeast of the project site. The City of Ceres Wastewater Treatment Plant (WWTP) is approximately 0.5 mile east of the project site.

The alignment for natural gas service for the A2PP includes an 11.6-mile-long natural gas line, which would generally extend in a southerly direction from the existing Almond Power Plant boundary and join with Pacific Gas and Electric's (PG&E) existing natural gas pipeline, Line #215, at West Bradbury Road. In addition, a 1.8-mile-long segment of Line #215 (referred to as Reinforcement Segment) will be reinforced along Prune Avenue on the western side of the San Joaquin River. The pipeline will be constructed within existing TID or County road rights-of-way, and along property boundaries between agricultural fields and rural residences.

Two new 115-kV transmission lines will be constructed for the project (known as transmission Corridors 1 and 2) from the power plant site to the proposed Grayson Substation, and will exist primarily within rights-of-way and agricultural access roads.

The TID will also reroute an existing 69-kV sub-transmission line, extending from the A2PP site north along the UPRR and Pearson Avenue, and then west on East Hatch Road, terminating at the Crows Landing Substation. Existing land uses within 0.25 mile include industrial uses between the project site and East Service Road, and a mix of residential, commercial, and industrial uses between East Service Road and its termination point at Crows Landing Substation.

### **Current Land Use Plans for the Study Area**

The power plant site is located within the City of Ceres. The natural gas pipeline and transmission Corridors 1 and 2 are located within the jurisdiction of the City of Ceres and Stanislaus County. As such, the following documents were reviewed for project conformity:

- City of Ceres General Plan
- City of Ceres Title 18 Zoning
- Amendment No. 1 to the Redevelopment Plan for the Ceres Redevelopment Project
- Service Road Industrial Master Plan
- Stanislaus County General Plan
- Stanislaus County Title 21 Zoning

The rerouted 69-kV sub-transmission line is within the City of Ceres and the City of Modesto. As such, the following additional documents were reviewed for conformity:

- City of Modesto Final Urban Area General Plan
- City of Modesto Title 10 Planning and Zoning

## **B. Environmental Analysis**

The TID A2PP project was evaluated against CEQA Guidelines Appendix G, CEQA Checklist to evaluate the potential land use impacts associated with implementation of the project. For each of the appropriate checklist criteria, it was determined that implementation of the TID A2PP project would not result in any land use impacts. Specifically it was determined that the TID A2PP does not:

1. Physically divide an established community because it will be located on a site that has been zoned by the City of Ceres as General Industrial within an industrial master plan area, and will be located adjacent to other industrial uses. The natural gas pipeline and transmission Corridors 1 and 2 and the rerated 69 kV sub-transmission line will not physically divide established communities. The lines will be located within existing roadway rights-of-way, agricultural access roads, and utility corridors.
2. Conflict with applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. The Stanislaus County and the cities of Ceres and Modesto general plans and zoning ordinances, as well as the City of Ceres' Service Road Industrial Master Plan, identify several goals and policies that are applicable to the project. The project will conform to those goals and policies.

The current City of Ceres General Plan land use designation at the power plant site, construction laydown area, and a portion of the natural gas pipeline route and transmission Corridors 1 and 2, and the rerated 69-kV sub-transmission line is General Industrial, allowing for large-scale industrial uses, such as those proposed for the A2PP project. The City of Ceres zoning designation for this same area is PC-50, with a further designation of M-2 General Industrial pursuant to the Service Road Industrial Plan. Principal uses of General Industrial areas include heavy manufacturing and industrial, and public and quasi-public uses. Due to the nature of the allowable activities, a power plant is considered to be consistent with these plans and policies.

The current City of Modesto General Plan land use designation for the rerated 69 kV sub-transmission line route is Industrial and Residential. The current zoning designations for this area are M-2 Heavy Industrial and R-1 Low Density Residential, which allow utility development as a conditional use.

The current Stanislaus County General Plan land use designation for the remaining portion of the natural gas pipeline and transmission Corridors 1 and 2 is General Agriculture. The current zoning designation for this area is A-2-40 General Agriculture. The natural gas pipeline will be constructed within lands designated as A-2-40 General Agriculture likely within existing County road rights-of-way, and, therefore, will be consistent with existing County zoning.

3. Conflict with any applicable habitat conservation plan or natural community conservation plan, fall within the category of lands designated for prime farmland, unique farmland, or farmland of statewide importance or includes any lands that have Williamson Act or Farmland Security Act contracts. The alignment of the transmission corridors and natural gas pipeline alternates will intersect some parcels with Williamson Act or Farmland Security Act contracts; however, per Government Code §51238(a)(1) and County zoning (Stanislaus County, 2008), the erection, construction, alteration, or maintenance of gas lines are considered compatible uses on Williamson Act contracted lands, provided that the long-term productivity of the land is not compromised, agricultural uses are not significantly impaired or displaced, and the use does not result in significant removal of adjacent contracted land from agricultural use. Because the natural gas pipeline would be underground, construction would be temporary, the permanent easement area is narrow, the long-term productivity of the land is not compromised by the underground pipeline, agricultural uses are not significantly impaired or displaced due to temporary



construction-related and operations impacts, and the use does not result in significant removal of adjacent contracted land from agricultural use, the impacts would be less than significant.

### C. Cumulative Impacts

The CEQA Guidelines (Section 15355) defines cumulative effects as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” Cumulative land use impacts could occur if the development of the project and other related past, present, and reasonably foreseeable probable future projects will be inconsistent with applicable plans and policies. The Applicant examined past, present and reasonably foreseeable projects currently underway or in planning phases within the City of Ceres and Stanislaus County. (Ex. 1, Section 5.6.4.)

The project site, to be located on disturbed vacant industrial land, will not result in a cumulative impact on agricultural land uses. Development of the project is consistent with the City of Ceres’ General Plan, Service Road Industrial Master Plan, and City zoning policies. The short-term conversion of vacant industrial land north of the project site for use as construction parking and equipment laydown will also result in no cumulative impacts on agricultural uses. Additionally, the land where the A2PP and laydown areas will be located does not have a Williamson Act contract associated with it and thus will not result in any cumulative impacts to Williamson Act contract lands.

Construction of the natural gas pipeline and transmission Corridor 1 will occur adjacent to the County road right-of-way, existing TID right-of-way, or agricultural access roads. Construction could result in minor and temporary impacts to agricultural areas; agricultural land uses are expected to resume upon construction completion.

Transmission Corridor 2 would result in the long-term conversion of approximately 4 square feet of “Prime Farmland” to non-agricultural use. Agricultural uses surrounding this area could continue. TID consulted with Stanislaus County regarding the extent, duration, and severity of this conversion on agricultural land uses. TID confirmed with the County that because the project is not converting agricultural uses to residential uses or requiring a General Plan or Community Plan amendment, the County’s mitigation policy for agricultural conversion does not apply and no mitigation is required. The conversion of approximately 4 square feet of “Prime Farmland” will not result in any significant cumulative impacts to agricultural lands.

The project will occur in compliance with all LORS applicable to the construction and operation of a power plant and its ancillary facilities, including the City of Ceres General Plan and Municipal Code Title 18, the City of Modesto General Plan and Municipal Code Title 10, the Service Road Industrial Master Plan, the Stanislaus County General Plan and Zoning Regulations Title 21.

## III. Proposed Licensing Conditions

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that two Conditions of Certification be adopted to address land use issues, LAND-1 and LAND-2. LAND-1 as proposed in the Revised Staff Assessment is acceptable. On Thursday September 16,

2010 Staff and the Applicant agreed to revisions to LAND-2 regarding restoration of the pipeline route after construction. The Applicant has reviewed the Staff's proposed COCs, and with the changes from the September 16th workshop, Applicant finds them acceptable.

#### **IV. Correlation to RSA and Hearing Topics:**

- Land Use

# Noise and Vibration

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## I. Introduction

- A. **Name:** Mark Bastasch
- B. **Qualifications:** Mr. Bastasch's qualifications are as noted in their resumes contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1; Section 5.7. [Exhibit 1]
  - Comments on the CEC Staff Assessment. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18. [Exhibit 21]
  - Applicant's Revised Conditions of Certification, dated August 6, 2010. [Exhibit 29]
  - Applicant's Communication between CEC Noise Staff and Susan Strachan, dated July 26, 2010. [Exhibit 37]

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The proposed approximately 4.6-acre A2PP project site is located in Ceres, California, approximately 2 miles southwest from the Ceres city center. The A2PP site is located immediately north of the existing Almond Power Plant. The WinCo distribution warehouse is west of the A2PP site, a farm supply company is to the north, and lands to the east include various industrial facilities including a modular building distributor and drilling equipment storage laydown area. A railroad line owned by Union Pacific Railroad is aligned along the eastern boundary of the project site.

Lands within a one-mile radius of the A2PP site are within the City of Ceres and Stanislaus County. These lands are primarily agricultural fields and almond orchards (west, south, and east of the project site), single-family residences (northeast of the project site), and a community agricultural center (northwest of the project site). The City of Ceres Wastewater Treatment Plant is located approximately 0.5 mile east of the project site. The closest single-family residences are located approximately 0.3 mile northeast of the project site, in Ceres.

## **B. Construction Impacts**

Construction of TID A2PP is expected to be similar to other power plants in terms of schedule, equipment used, and other types of activities. The noise level will vary during the construction period, depending upon the construction phase. Given the distance to the closest receptors, general construction noise levels are anticipated to be within the range of existing levels.

## **C. Operational Impacts**

A hearing conservation program to address potential noise impacts to operations personnel is currently in place at the existing Almond Power Plant facility. An identical program will be put in place at the A2PP location as workers will be shared between the two plants. Outdoor levels throughout the plant will typically range from 90 dBA near certain equipment to roughly 65 dBA in areas more distant from any major noise source. Therefore, noise impacts to workers during operation will be less than significant.

Operational noise from the A2PP, with noise control incorporated in the design, is anticipated to comply with the proposed Conditions of Certification.

## **D. Summary of the Cumulative Impacts**

Given the Conditions of Certification proposed for the project and that only one potential new noise source, a larger stand-by power generator, is in the planning stage of development, no significant noise or vibration cumulative impacts are anticipated to occur.

## **E. Mitigation**

Proposed mitigation measures include establishment of a noise hot line during construction and at least the first year of plant operations, development of a noise complaint resolution plan, and institution of equipment noise controls.

The TID A2PP and linear facilities will be constructed in accordance with the proposed mitigation measures and Conditions of Certification. With the implementation of the proposed project mitigation measures and Conditions of Certification, construction and operation of the project will comply with all applicable laws, ordinances, regulations, and standards and would not result in a significant adverse noise impacts on people within the affected area, directly, indirectly, or cumulatively.

## **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that six Conditions of Certification (COCs) be adopted to address noise and vibration issues, NOISE-1 through 6. On Thursday September 16, 2010 staff and the Applicant agreed in NOISE-4 that the during the 25-hour noise survey, A2PP output shall be maintained at a level of 50% or greater. The Applicant has reviewed the Staff's proposed COCs, and with the change agreed to at the September 16th workshop, Applicant finds them acceptable.

## **IV. Correlation to RSA and Hearing Topics:**

- Noise and Vibration

# Paleontological Resources

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## I. Introduction

**A. Name:** W. Geoffrey Spaulding, Ph.D.

**B. Qualifications:** Dr. Spaulding's qualifications are as noted in his resume contained in Appendix A.

**C. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification, Volume 1; Section 5.8, Paleontological Resources. [Exhibit 1]
- Comments on the CEC Staff Assessment. [Exhibit 8]
- Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Response 18. [Exhibit 21]

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

Significant impacts will not result from construction excavations associated with this project because application of measures stipulated in the approved *Paleontological Resources Monitoring and Mitigation Plan* will reduce any impacts to a level less than significant. The A2PP plant site is on artificial fill and this previously disturbed sediment has no paleontological sensitivity. Only the deepest excavations at the plant site will penetrate through this fill and have the potential to affect paleontologically sensitive sediment. These excavations will be monitored by a qualified paleontological monitor. No new wells will be drilled for this project, and therefore no impacts will occur to paleontological resources within the deeply buried Corcoran Clay member of the Tulare Formation.

No impacts to paleontological resources will result from the operation of the A2PP.

## III. Mitigation Measures

Mitigation measures include a paleontological resources awareness module in the worker education for facility construction, and monitoring of excavations in sediments in the limited areas that possess moderate paleontological sensitivity. Additional measures will be implemented, including scientific recovery of discovered specimens, should paleontological resources be encountered during excavations. The paleontological resource impact mitigation

measures proposed in the AFC would reduce, to an insignificant level, the direct, indirect, and cumulative adverse impacts on paleontological resources that might result from project construction.

#### **IV. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that seven Conditions of Certification be adopted to address paleontological issues: PAL-1 through PAL-7. The Applicant has reviewed the Staff's proposed COCs and finds them acceptable.

#### **V. Correlation to RSA and Hearing Topics:**

- Geology and Paleontology

# Public Health

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## I. Introduction

A. **Name:** Jeffrey D. Adkins

B. **Qualifications:** Mr. Adkins's qualifications are as noted in his resume contained in Appendix A.

C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification, Volume 1; Section 5.9, Volume 2; Appendix 5.9 [Exhibit 1]
- Air Quality Modeling & Screening Health Risk Assessment Files, dated May 11, 2009. [Exhibit 2]
- Data Response Set 1A, Response to CEC Staff Requests #30-33, dated September 14, 2009 [Exhibit 15]
- Data Response Set 1D, Response to CEC Staff Request #18, dated November 25, 2009. [Exhibit 21]

## D. Documents Prepared by Others

- California Air Resources Board (CARB). 2009. Consolidated table of OEHHA/CARB approved risk assessment health values. (<http://arbis.arb.ca.gov/toxics/healthval/contable.pdf>).
- California Air Resources Board (CARB). HARP Model, Version 1.4a, <http://www.arb.ca.gov/toxics/harp/harp.htm>.
- National Institute of Environmental Health Sciences (NIEHS). 1999. Environmental Health Institute report concludes evidence is 'weak' that EMFs cause cancer. Press release. National Institute of Environmental Health Sciences, National Institutes of Health.
- Office of Environmental Health Hazard Assessment (OEHHA). 2003. Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, California Environmental Protection Agency. August.
- San Joaquin Valley Air Pollution Control District (SJVAPCD). 2007. Guidance for Air Dispersion Modeling. January.
- U.S. Environmental Protection Agency (EPA). 1991. Risk Assessment for Toxic Air Pollutants: A Citizen's Guide. EPA 450/3-90-024. March 1991. [http://www.epa.gov/ttn/atw/3\\_90\\_024.html](http://www.epa.gov/ttn/atw/3_90_024.html)

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

The risk assessment for the Project was conducted using the methodology and values for health risks developed by the California Office of Environmental Health Hazard Assessment (OEHHA). Emissions of non-criteria pollutants from A2PP were estimated using emission factors developed by the U.S. Environmental Protection Agency (USEPA). Air dispersion modeling was conducted following USEPA, CARB and Air District guidance for modeling. Health risks potentially associated with the estimated concentrations of pollutants in air were characterized in terms of potential lifetime cancer risk (for carcinogenic substances), or comparison with reference exposure levels (RELs) for non-cancer health effects (for non-carcinogenic substances), using dose-response factors published by OEHHA.

Risks due to construction activities were estimated, as well as risks due to ongoing operation of the Project.

No significant public health effects are expected during construction. Construction-related emissions are temporary and localized, resulting in no long term significant impacts to the public. Strict construction practices that incorporate safety and compliance with applicable LORS will be followed. In addition, measures to reduce impacts from construction air emissions will be implemented as described in the AFC.

No significant public health effects are expected during operation. The non-criteria pollutants emitted from A2PP include certain volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) from the combustion of natural gas and ammonia from the SCR systems.

The nearest residences to A2PP are approximately 0.3 miles northeast of the site. Additional residences within 1 mile of the project site are located to the west, on Crows Landing Road; to the south, on Grayson Road; and to the southeast, on Morgan Road. There are also daycare, hospital, park, preschool, and school receptors within 6 miles.

Beneficial aspects of A2PP regarding protection of public health include the following:

- Use of clean-burning natural gas fuel.
- Low-sulfur content of the natural gas, which reduces sulfate fine particulate generation.
- Advanced SPRINT combustion gas turbine technology to minimize the amount of fuel and associated combustion emissions needed to produce electricity
- Water injection and selective catalytic reduction (SCR) technology to control nitrogen oxides (NO<sub>x</sub>) emissions
- Oxidation catalyst technology to control carbon monoxide (CO) emissions, and to reduce emissions of various toxic air contaminants (TAC)



- Optimized stack height to reduce ground-level concentrations of exhaust pollutants below public health-related significance thresholds

Air quality and health risk data presented by CARB in the *2008 Almanac of Emissions and Air Quality for the San Joaquin Valley Air Basin* show that over the period 1990 through 2005, the average concentrations for the top ten TACs have been substantially reduced, and the associated health risks for the San Joaquin Valley Air Basin are showing a steady downward trend as well.

### **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC does not recommend any Conditions of Certification to address Public Health.

### **IV. Correlation to RSA and Hearing Topics:**

- Public Health

# Socioeconomics

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## I. Introduction

**A. Name:** Fatuma Yusuf

**B. Qualifications:** Dr. Yusuf's qualifications are as noted in her resume contained in Appendix A.

**C. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification, Volume 1; Section 5.10 Socioeconomics, Volume 2; Appendices 5.10A and 5.10B. [Exhibit 1]
- Data Adequacy Supplement A, Section 5.10, Socioeconomics. [Exhibit 3]
- Comments on the CEC Staff Assessment. [Exhibit 8]
- Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18. [Exhibit 21]
- Applicant's Data Adequacy Discussions, dated May 27, 2009. [Exhibit 25]

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## A. Affected Environment

The facility will be located off Crows Landing Road in Ceres, Stanislaus County, California on approximately 4.6 acres adjacent to the existing TID Almond Power Plant to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and a modular building distributor and driller equipment storage facility to the east.

## B. Construction Impacts

Actual construction will take place over 12 months, from fourth quarter 2010 to fourth quarter 2011. Personnel requirements will be minimal during the mobilization and site grading period (the first 3 months of the construction period) and during the startup and testing period (the last 3 months of the construction period).

Available skilled labor in Stanislaus County was evaluated by surveying local labor unions and contacting the California Employment Development Department (CEDD). Both sources show that the workforce in the Modesto Metropolitan Statistical Area (MSA) will be adequate to fulfill A2PP's construction labor requirements. Therefore, A2PP construction will not place an undue burden on the local workforce. In addition, the Natural Resources, Mining and Construction sector workforce within the Modesto MSA has been growing at an average annual rate of 1.3 percent per year. In 2007, the Natural Resources, Mining and Construction sector workforce

was estimated at 11,400 workers. The A2PP peak construction needs are about 1.4 percent of the 2007 estimated workforce in the Natural Resources, Mining and Construction sector. Therefore, project will have a less-than-significant impact on construction labor supply.

The cost of materials and supplies required by the project during construction of the A2PP is estimated at approximately \$175 million. The estimated value of materials and supplies that will be purchased locally is between \$1 million and \$2 million (in 2008 dollars). A2PP will provide an estimated \$7.56 million in construction payroll, at an average salary of approximately \$38 per hour. The anticipated payroll for employees, as well as the purchase of materials and supplies during construction, will have a slight beneficial impact on the area. Assuming, conservatively, that 60 percent of the construction workforce will reside in Stanislaus County, it is expected that approximately \$4.54 million will stay in the local area during the 12-month construction period.

Construction activities would also result in secondary economic impacts (indirect and induced impacts) within Stanislaus County. Indirect and induced employment effects include the purchase of goods and services by firms involved with construction, and induced employment effects include construction workers spending their income within the county. The estimated value of materials and supplies that will be purchased locally is between \$1 million and \$2 million (in 2008 dollars). Assuming that local construction expenditures on materials and supplies are \$2 million, the estimated indirect and induced employment within Stanislaus County would be 33 and 38 jobs, respectively, while the indirect and induced income impacts were estimated at \$1,112,050 and \$1,253,970, respectively. Assuming that the local construction expenditures are \$1 million instead of \$2 million, the estimated indirect and induced employment within Stanislaus County would be 17 and 34 jobs, respectively. The estimated indirect and induced income would be \$556,020 and \$1,130,290, respectively.

Local construction expenditures also generate sales tax revenues for both the place of sale (assumed to be City of Ceres), and the state. Assuming the January 1, 2009 sales tax rate for Stanislaus County of 7.375 percent, the total sales tax revenues expected to be generated during construction is estimated to be between \$73,750 and \$147,500. Of this, the City of Ceres would receive between \$8,750 and \$17,500 while the county would receive between \$2,500 and \$5,000, with the remaining going to the state.

### **C. Operational Impacts**

In addition to the current 12 full-time employees at the Almond Power Plant, the A2PP is expected to add four full-time employees. Facility employees will be drawn from the local workforce. Consequently, no population increase is anticipated as a result of this project. There will be no significant adverse impact on local employment.

A2PP operation will generate a small, permanent, but less-than-significant beneficial impact by creating secondary employment opportunities for local workers through local expenditures for materials, such as office supplies and services. There will be an annual operations and maintenance budget of approximately \$1.8 million, of which \$1.5 million is assumed to be spent locally (within Stanislaus County). These additional jobs and spending will generate other employment opportunities and spending in the Stanislaus County area. Estimated indirect and induced employment within Stanislaus County would be 26 and 10 permanent jobs, respectively. Indirect and induced income impacts are estimated at \$1,072,600 and \$326,600, respectively.

The annual local operations and maintenance expenditures are expected to generate \$110,625 in sales tax revenues. Of this amount, \$13,125 is assumed to go to the place of sale.

## **D. Environmental Justice**

President Clinton's Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed on February 11, 1994. The purpose of this Executive Order is to consider whether a project may result in disproportionately high and adverse human health or environmental effects on any minority or low-income population.

The federal guidelines set forth a three-step screening process:

1. Identify which impacts of the project are high and adverse.
2. Determine whether minority or low-income populations exist within the high and adverse impact zones.
3. Examine the spatial distribution of high and adverse impact areas to determine whether these impacts are likely to fall disproportionately on the minority and/or low-income population.

According to the guidelines established by U.S. Environmental Protection Agency (EPA, 1996) to assist federal agencies to develop strategies to address this circumstance, a minority and/or low-income population exists if the minority and/or low-income population percentage of the affected area is 50 percent or more of the area's general population. The guidance suggests using two or three standard deviations above the mean as a quantitative measure of disparate effects.

A screening-level analysis of environmental justice is presented in Appendix 5.10A of Exhibit 1. As discussed in the *Methodology and Approach* section of Appendix 5.10A of Exhibit 1, for purposes of this analysis, CEQA-significant adverse impacts are considered synonymous with high and adverse impacts as described in EO 12898. According to that analysis, since all project impacts will be mitigated below the level of significance, this project does not create high and adverse impacts. Therefore, there are no environmental impacts that are likely to fall disproportionately on minority and/or low-income members of the community.

## **E. Cumulative Impacts**

Because the majority of the construction workers will reside primarily in the Stanislaus County and live within commuting distance, no adverse impact to local schools or housing is anticipated. There are a number of projects that are either planned or currently under development in the vicinity of the A2PP that could potentially have an adverse cumulative socioeconomic impact. These identified projects will not result in any significant cumulative impacts, as analyzed in Exhibit 1, Section 5.10.4 and Section 5.6.

## **F. Mitigation**

Because the project has no significant socioeconomic or environmental justice impacts, no additional mitigation measures are required.

## **II. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC does not recommend Conditions of Certification to address socioeconomic resource issues. We concur with this assessment.

## **III. Correlation to RSA and Hearing Topics:**

- Socioeconomics and Environmental Justice

# Soils

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## I. Introduction

- A. **Names:** Kathy Rose, Ph.D.
- B. **Qualifications:** Dr. Rose's qualifications are as noted in her resumes contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1; Sections 5.11, Soils and 5.15, Water Resources, Volume 2; Appendix 5.11. [Exhibit 1]
  - Data Adequacy Supplement A, Soils [Exhibit 3]
  - Comments on the CEC Staff Assessment. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated September 14, 2009. Response to Data Requests 34 through 69. [Exhibit 15]
  - Response to CURE Data Responses Set 1A, dated November 20, 2009. Response to Data Requests 63 through 65. [Exhibit 20]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18. [Exhibit 21]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1C, dated October 30, 2009. Response to Data Requests 61b and 68. [Exhibit 31]

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

#### Project Site

The proposed Almond 2 Power Plant (A2PP) project site is located in Stanislaus County, approximately 2 miles southwest of the Ceres city center and approximately 5 miles south of the Modesto city center. The project site is located immediately north of the existing TID Almond Power Plant. The majority of the linear features fall outside the city of Ceres boundary, in unincorporated areas of Stanislaus County.

The proposed A2PP is on land zoned for industrial use. It is bordered on the south by the existing TID Almond Power Plant, on the west by the WinCo Foods distribution center, on the

north by a chemical supply facility, and on the east by a modular building distributor and drilling equipment storage facility.

There are no current agricultural lands within the proposed A2PP project site. Agricultural lands surrounding the project site include several fields of nut trees, including one field of almond trees directly south of the existing Almond Power Plant. Several graded border alfalfa or grass fields are also located within the vicinity of the proposed A2PP, including two larger fields within 0.3 mile to the southwest and southeast.

The proposed transmission line feature will primarily run along existing corridors and rights of way, including roadways, rail lines, and existing transmission lines. The 11.6 mile long natural gas line and 1.8 mile long reinforcement (Reinforcement Segment) will run primarily adjacent to paved roads and along farm agricultural dirt roads, and parcel boundaries.

### **Soil and Agricultural Resources**

Based on a review of aerial photography, it appears that a portion of the land immediately surrounding the proposed A2PP project site is used for agricultural production. Main crops in the area appear to be nut trees and alfalfa/pasture grasses. Based on observations made during the biological field survey, most of the agricultural land along the linear features (natural gas pipeline and transmission lines) was planted with either alfalfa or grasses; however, it is expected that these fields may also be used at times for other crops depending on crop rotation cycles.

The soil mapping units in the project area are generally sandy loams or loamy sands formed in alluvial deposits. These soils are very deep and well drained, with moderately rapid permeability. Due to the developed, industrial nature of the project area and vicinity, it is possible that soil conditions could vary significantly from those shown in the NRCS soil survey. Industrial development often entails significant mixing of local soils from grading and the import of construction fill soils beneath foundations and roadways. These imported soils would have to be suitable for engineered structures and roadways, and would be expected to consist of well-graded materials containing a mix of particle sizes (particle sizes ranging from silt to gravel). Imported soils would not be expected to contain materials that are unsuitable for engineering purposes, such as organic debris or expansive clays.

In general, soils at the proposed A2PP project site are medium to coarse grained and range between sandy loam and loamy sand in texture. The erosion potential of these soils will vary based on the wetness of the soil, soil compaction, sizes of soil particles, and other site-specific properties. Based on the soil survey information, the soils at the proposed A2PP project are expected to have moderate wind and water erosion potential. It is assumed that the non-native soil material previously used to fill the borrow pit as well as non-native soil material that will likely be used to fill the retention basin will be suitable for engineering purposes and will not contain organic debris or expansive clays.

### **Farmland Conversions**

The proposed A2PP project site is adjacent to farmland in a mixed land-use area that includes areas zoned for agriculture. The project site itself currently consists of gravel and weeds, and is zoned for industrial use. A review of the "Important Farmlands" mapping by the Farmland Mapping and Monitoring Program (FMMP) shows that the natural gas pipeline would cross designated farmland. For the natural gas segments traversing main roads, a 100-foot-wide

buffer on either side of the road was assumed to be potentially affected. The Preferred Alignment would cross or be adjacent to lands designated as "Prime Farmland." The portion of the gas line that is parallel to TID Lateral #2 between the A2PP and Morgan Road and the Reinforcement Segment would not cross any parcels with Williamson Act contracts. The remaining portions of the gas line would cross at least three parcels with Williamson Act contracts. Per Government Code §51238(a)(1) and County zoning, the erection, construction, alteration, or maintenance of gas lines are considered compatible uses on Williamson Act contracted lands, provided that the long-term productivity of the land is not compromised, agricultural uses are not significantly impaired or displaced, and the use does not result in significant removal of adjacent contracted land from agricultural use. Because the natural gas pipeline would be underground, construction would be temporary, the permanent easement area is narrow, the long-term productivity of the land is not compromised by the underground pipeline, agricultural uses are not significantly impaired or displaced due to temporary construction-related and operations impacts, and the use does not result in significant removal of adjacent contracted land from agricultural use, the impacts would be less than significant.

Portions of the new transmission lines will be both within TID right-of-way and private property; however, neither intersects any parcels with Williamson Act contracts. Although during construction minor and temporary impacts may occur to adjacent lands with Williamson Act contracts. These impacts will be mitigated post construction, and the land returned to its preconstruction state. Rerating of the 69-kV sub-transmission line will not require ground disturbance, and subsequently, parcels within and outside of the transmission line right of way will not be impacted. For these reasons, the proposed A2PP project transmission lines will not result in the conversion of any agricultural land to a non-agricultural use.

## **B. Construction Impacts**

Because conditions that could lead to excessive soil erosion are not present at the A2PP project site (e.g., no long, steep slopes or erodible soils), little soil erosion is expected during the construction period. In addition, construction best management practices (BMPs) will be implemented during construction, as described in the Stormwater Pollution Prevention Plan (SWPPP) that is required for all construction projects over 1 acre under the general permit covering discharges of stormwater from construction activities. The California Energy Commission (CEC) also requires that project owners develop and implement a Drainage, Erosion, and Sediment Control Plan (DESCP) to reduce the impact of runoff from a construction site. Therefore, impacts from soil erosion are expected to be less than significant. General Permit requirements also include construction site inspections and monitoring to ensure that the BMPs described in the SWPPP/DESCP are properly implemented and provide an effective combination of erosion and sediment controls.

With the implementation of appropriate best management practices (BMPs) that will be required under the National Pollutant Discharge Elimination System (NPDES) permit, the total project soil loss of 0.96 ton ) is considered to be a minimal amount and would not constitute a significant impact. The proposed A2PP will be constructed in an area that has been disturbed by previous construction. It is expected that this area has already experienced compaction as a result of this previous activity. A portion of the proposed plant will be constructed on an area currently used as a retention basin, and therefore will require additional compaction of the fill in order to establish a stable foundation for buildings and roadways. The amount of soil compaction that will be required to establish permanent road beds and foundation areas for



buildings at the rest of the site should be minimal. Because these areas will be paved or otherwise protected after construction, the overall anticipated effects of compaction during construction are considered to be less than significant.

### **C. Operational Impacts**

Operation of the A2PP would not result in impacts to the soil from erosion or compaction. Routine vehicle traffic during plant operation will be limited to existing roads, all of which are paved or will be graveled, and standard operational activities should not involve the disruption of soil. Therefore, impacts to soil from project operations would be less than significant.

### **D. Cumulative Impacts**

Because the A2PP is a permitted use at the proposed site and would not result in significant adverse impacts that cannot be mitigated, impacts from the A2PP would not likely combine with those from the projects being processed in the city limits to result in cumulative significant impacts. Similarly, because the A2PP site is in a primarily agricultural area of the county, it is unlikely the A2PP's project impacts would combine with those of projects occurring elsewhere in the County to result in significant cumulative impacts.

The project would have no permanent effect on agriculture because there are no agricultural uses at the proposed A2PP project site and because agricultural uses would be restored along the transmission and gas pipeline alignment after construction. With the application of onsite construction BMPs, the project's expected impacts on soil erosion, sedimentation, and compaction are expected to be less than significant. The A2PP site is surrounded by rural land use, and there are no plans to develop these areas in the near future. Therefore, the potential for cumulative impacts of the proposed A2PP combined with other projects would be insignificant.

### **E. Mitigation**

Erosion control measures will be required during construction to maintain water quality, protect property, and prevent accelerated soil erosion and/or dust generation. Construction and post-construction BMPs and stormwater monitoring protocols are identified in the Construction SWPPP and DESCOP for the project. BMPs include erosion and sediment controls, tracking controls, stormwater diversion channels, wind erosion controls, and non-stormwater management. With implementation of the Construction and Industrial SWPPPs, DESCOP, and other waste discharge requirements, impacts to soil resources are less than significant and no further mitigation is required.

## **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that four Conditions of Certification (COCs) be adopted to address soil (and water resources) issues, SOIL&WATER-1 through -4. The Applicant has reviewed the Staff's proposed COCs and finds them acceptable.

## **IV. Correlation to RSA and Hearing Topics:**

- Soil and Water Resources

# Traffic and Transportation

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## I. Introduction

- A. **Name:** Loren Bloomberg and Maly-Ann Bory
- B. **Qualifications:** Mr. Bloomberg's and Ms. Bory's qualifications are as noted in their resumes contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1, Section 5.12 Traffic and Transportation. [Exhibit 1]
  - Comments on the CEC Staff Assessment, Traffic and Transportation. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated September 14, 2009. Responses to Data Requests 70 and 71. [Exhibit 15]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1B, dated October 12, 2009. Responses to Staff Query 1. [Exhibit 18]
  - CURE Data Responses Set 1A, dated November 20, 2009. Responses to Data Request 81 through 106. [Exhibit 20]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18. [Exhibit 21]
  - Applicant's Response to CEC Regarding Data Adequacy Discussions, dated May 27, 2010. [Exhibit 25]
  - Applicant's Email Queries Set 1 dated July 13, 2009. Response to CEC Staff Email Query 1. [Exhibit 38]

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The proposed A2PP project site is located along Crows Landing Road approximately 3 miles south of State Route (SR) 99 in Ceres, Stanislaus County. The site is bounded by the existing TID Almond Power Plant to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and a modular building distributor and drilling equipment storage facility to the east. The total area of the site parcel is approximately 4.6 acres. Regional access to the site

is provided from the north and south via SR 99, and to the east and west via SR 132. Local access to the project site is mainly provided by Crows Landing Road, Service Road, Whitmore Avenue, Hatch Road, and Mitchell Road.

Traffic operations on the local streets and ramps are generally level of service (LOS) D or better, except the intersection of Crows Landing Road and northbound SR 99 ramps. This intersection operates at LOS E during PM peak hour.

## **B. Construction Impacts**

During the peak construction phase (month 6), construction will require a workforce of up to 149 workers and a maximum of 42 delivery/haul trucks each day. The construction will occur 8 hours a day between 7:00 a.m. and 3:30 p.m. Therefore, the inbound worker trips will occur before the morning peak hour for existing traffic and the outbound worker trips will occur before the evening peak hour. For analysis purposes, a conservative approach was followed and the construction trips were assumed to occur during morning and evening peak periods. The truck trips were assumed to be distributed evenly throughout the day.

For purposes of this analysis, the truck trips were converted to passenger car equivalent units (PCEs) at a ratio of 1.5 passenger cars for each truck, consistent with the 2000 HCM guidelines. Based on experience with similar projects, it is estimated that 20 percent of the workforce will carpool and the average vehicle occupancy will be two persons per vehicle for carpools. Using these assumptions, the A2PP project will generate 394 daily passenger car-equivalent trips, with 156 trips occurring during morning and evening peak hours.

The peak hour traffic generated during the construction period was added to the existing turning movement counts at the study intersections. All of the study intersections will operate at the same LOS as existing conditions. Therefore, the addition of construction traffic will not cause significant impacts on traffic operations at intersections. Average peak hour traffic generated during the construction period was added to the existing traffic volumes on each roadway segment. The study roadway segments are forecasted to operate at the same LOS as existing conditions. There will be no significant impacts from the construction traffic: all the study segments will continue to operate at an acceptable LOS, with the exception of SR-99 north of Crows Landing Road, which will continue to operate at LOS E.

The construction of the natural gas pipeline and transmission line Corridor 2 may impact the intersections and roadway segments located along the routes. However, these traffic impacts will be site-specific and temporary. Only relatively short (less than 1,000 feet) sections are typically under construction at any one time during transmission line projects. Where portions of the transmission line and gas pipeline are constructed near roads, a traffic control plan will be prepared to ensure that both directions of travel are maintained along the affected roadways. Implementation of a traffic control plan for the affected area for the short duration of construction in that area is adequate to minimize the traffic impacts to an insignificant level.

## C. Operational Impacts

The operations-related and maintenance-related traffic associated with the project is minimal and insignificant when added to major movements on freeways and local roadways (the additional eight daily trips represent less than one percent of the daily demand on surrounding streets). Consequently, no operations related impacts require mitigation measures.

## D. Potential Impacts on Aircraft Operations

The A2PP is 20,000 feet from the Modesto City-County Airport's nearest runway, is not located within any airport flight patterns, is not located within any approach or transitional surface zones, and is not located in congested airspace. In addition, according to the Stanislaus County Airport Land Use Commission Plan, the A2PP is beyond the restricted air space of this air park. The A2PP is a compatible use as it is located outside the critical zones. Therefore, no impacts to aviation are expected.

## E. Cumulative Impacts

A number of projects are in various phases of planning and development with the cities of Ceres and Modesto and Stanislaus County. The projects that would likely impact the routes A2PP staff and construction workers use are the TID Hughson-Grayson 115-kV Transmission Line and Substation Project, the Ceres West Specific Plan Annexation, and the Copper Trail Annexation. Construction on the TID Hughson-Grayson 115-kV Transmission Line and Substation Project is anticipated to begin in spring 2011. The specific construction schedule for this project has not yet been finalized, so it is unknown which portions of the TID Hughson-Grayson 115kV transmission line and substation will be constructed first. The Ceres West Specific Plan Annexation's entitlement process should not take place until the end of 2009; the annexation would be effective in 2010 at the earliest, but no construction is planned at this time. The Copper Trail Annexation is under way, but no construction has been scheduled yet.

Therefore, at this time, it is not possible to determine if these projects would add to the roads used by the A2PP or result in cumulative significant impacts. Additionally, because the A2PP site is in a primarily agricultural area of the county, it is unlikely the A2PP's project impacts would combine with those of projects occurring elsewhere in the county to result in significant cumulative impacts.

## F. Mitigation

Construction of the A2PP will add a moderate amount of traffic to state routes and local roadways during the peak construction period. However, because the volume of traffic added is small compared to existing traffic volumes, these project-related traffic increases will not result in significant impacts. Additionally, as the construction-related trips would occur during the off-peak hours, they will not affect the peak period traffic operations.

The Applicant has prepared a construction traffic control plan and construction management plan, also known as a Traffic Control and Implementation Plan (TCIP). The TCIP addresses construction hours, timing of heavy equipment and building material deliveries, potential street and/or lane closures, signing, lighting, and traffic control device placement. Damage to any roadway caused by project construction traffic will be restored to or near its pre-existing condition.

### **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that three Conditions of Certification be adopted to address traffic and transportation issues: TRANS-1 through TRANS-3. The Applicant has reviewed the Staff's proposed COCs and finds them acceptable

### **IV. Correlation to RSA and Hearing Topics:**

- Traffic and Transportation

# Visual Resources

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## I. Introduction

- A. Name:** MariaElena Conserva
- B. Qualifications:** Ms. Conserva's qualifications are as noted in her resume contained in Appendix A.
- C. Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1; Section 5.13 Visual Resources, Volume 2; Appendix 5.13A. [Exhibit 1]
  - Comments on the CEC Staff Assessment. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated September 14, 2009. Responses to Staff Query 1. [Exhibit 15]
  - Applicant's Response to CEC Staff Query Set 2, dated October 12, 2009. Responses to Staff Query 3. [Exhibit 19].
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18. [Exhibit 21]
  - Applicant Data Adequacy Discussions with CEC Staff, dated May 27, 2009. [Exhibit 25]

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### Affected Environment

#### Description of the Visual Setting

The A2PP site is located within the limits of the city of Ceres, approximately 2 miles from the city center. The city of Modesto is approximately 5 miles to the north. Highway 99 passes approximately 2 miles to the northeast and is accessible via Crows Landing Road.

The project site is an undeveloped 4.6-acre parcel situated in a small industrial zone surrounded by farmland and residential neighborhoods. The existing Turlock Irrigation District (TID) Almond Power Plant is adjacent to the south side of the project site. The rest of the industrial zone consists of a farm supply facility to the north, a WinCo distribution warehouse to the west, and a modular building distributor and drilling equipment storage

facility to the east. A railroad track and a 69-kV wooden pole transmission line run along the east side of the project site. A canal and a 230-kV tubular steel transmission line run along the south side of the existing Almond Power Plant.

Surrounding farmlands include row crops, orchards, and a dairy. The closest residence to the project site is 0.30 mile north along East Service Road and marks the edge of a recently developed residential subdivision that extends north and eastward toward central Ceres. A few rural residences are located west of the project site along Crows Landing Road, and a small rural neighborhood is located approximately 1 mile south. A golf course is located along Crows Landing Road at Grayson Road, approximately 0.75 mile southwest of the project site.

No State Scenic Highways are located in the vicinity of the project site.

### **Description of the Project**

The project site is currently a vacant lot that was used by WinCo as a borrow pit during construction of its facility west of the project site. The existing power facility (Almond Power Plant) on the south side of the project site is a 48-megawatt simple-cycle plant, the tallest element of which is a 92-foot exhaust stack. Buildings, tanks, and other structures associated with the existing Almond Power Plant are generally between 30 and 40 feet high. The existing Almond Power Plant includes exposed pipelines and is surrounded by a fence. Linear routes constructed for the project will include a new natural gas supply line and two 115-kV transmission line corridors.

Neither the existing Almond Power Plant nor the A2PP project site is located along a public roadway. They are set back 0.4 mile from Crows Landing Road and are accessed via an access road south of the WinCo distribution warehouse.

### **Impacts of the Project**

Impacts of the project from the two Key Observation Points (KOPs) are summarized below. Impacts were determined using the Landscape Scenic Quality Scale developed by the U.S. Forest Service and the U.S. Department of Transportation which assigns final scenic quality ratings.

- KOP 1 ((View of Transmission Line Corridor along Crows Landing Road). Because this view is already dominated by transmission lines, the visual quality is already rated low and will continue to be rated low with project-related changes.
- KOP 2 (Golf Course). Because of the increased visual impact of the new transmission lines, the intactness and unity of view at this KOP is decreased, changing the visual quality of the image from moderately low to low.

The project will not have a substantial adverse impact on a scenic vista, as none exist in the proximity of the project. In addition, the project would not substantially damage scenic resources, as there are also no such resources in the proximity of the project. Finally, the project will not substantially degrade the existing visual character or quality of the site and its surroundings. The project is set within an industrial area and adjacent to an existing power plant. As indicated, the project will be visible in views from KOPs 1 and 2. From KOP 2, the project was found to cause visual quality to be reduced from moderately low to

low. These adverse visual impacts do not constitute a substantial or significant change in visual character or quality.

The project will not create a new source of substantial light and glare. Because none of the major project features will have surfaces that are highly reflective, the project will not be a source of daytime glare.

Any lighting that will be installed to facilitate nighttime construction activities will, to the extent feasible and consistent with worker safety codes, be directed toward the center of the construction site and shielded to prevent light from straying offsite. Task-specific construction lighting will be used to the extent practical while complying with worker safety regulations. Lighting during the construction period will not create a significant impact.

### **Cumulative Impacts**

The proposed project is consistent with applicable General Plan land use and zoning designations, and is similar to adjacent industrial uses. No new industrial uses have been announced as planned for this area, and the A2PP would be part of the baseline for the CEQA analysis of any currently unforeseen future projects. Therefore, the A2PP project will not contribute to cumulative visual resource impacts.

Any new development in either the project vicinity or the vicinity of the KOPs may provide additional screening of the A2PP, thus further reduce its visibility within the surrounding area. There are no known projects that will remove surrounding structures and make the project more visible. Therefore, the A2PP will not contribute to cumulative impacts.

### **Mitigation**

This analysis has documented the fact that no significant visual impacts will result from implementation of the project. Therefore, no additional mitigation measures beyond those proposed and described in this AFC are necessary.

## **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that three Conditions of Certification (COCs) be adopted to address visual resources issues, VIS-1 through -3. The Applicant has reviewed the Staff's proposed COCs and finds them acceptable.

## **IV. Correlation to RSA and Hearing Topics:**

- Visual Resources.



# Waste Management

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## I. Introduction

- A. **Name:** Megan Uttecht
- B. **Qualifications:** Ms. Uttecht's qualifications are as noted in her resume contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volumes 1 & 2 [Exhibit 1]
  - Comment on the CEC Staff Assessment. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated September 14, 2009. Responses to Data Requests 1-84 and Staff Query 1. [Exhibit 15]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18, & 77-79. [Exhibit 21]
  - Data Adequacy Discussions, dated May 27, 2009. [Exhibit 25]

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The A2PP is located off of Crows Landing Road, in Ceres, California, Stanislaus County. The site is adjacent to the existing Almond Power Plant to the south, a WinCo distribution warehouse to the west, industrial businesses to the north and east, and the Ceres Wastewater Treatment Plant farther east. The site parcel is approximately 4.6 acres.

In February 2009, Wallace-Kuhl & Associates, Inc. (WKA), on behalf of TID, prepared a Phase 1 ESA for the proposed site in accordance with the ASTM Standard E 1527-05, Standard Practice for Environmental Site Assessments. The Phase I ESA revealed no evidence of historical or existing recognized environmental conditions (RECs) at the site. Soil sampling was completed and laboratory analysis identified no organochlorine pesticides detected above laboratory reporting limits in any of the samples collected.

## **B. Construction Impacts**

Both hazardous and non-hazardous waste will be generated during the construction and operating phases of the facility. During construction, the primary waste generated will be solid nonhazardous waste. Nonhazardous wastewater will be generated, including sanitary wastewater, equipment washwater, stormwater runoff, and wastewater from pressure testing the gas supply line. Most of the hazardous waste generated during construction will consist of liquid waste, such as flushing and cleaning fluids, passivating fluid (to prepare pipes for use), and solvents. Some hazardous solid waste, such as welding materials and dried paint, may also be generated. Small quantities of solvents, paints, and welding materials will also be generated. The construction contractor will be considered the generator of hazardous waste and will be responsible for proper handling of the waste in compliance with all applicable federal, state, and local laws and regulations including licensing, training of personnel, accumulation limits and times, and reporting and record keeping.

## **C. Operational Impacts**

During A2PP facility operation, the primary waste generated will be nonhazardous solid waste. However, varying quantities of both solid and liquid hazardous waste will also be generated periodically. The A2PP will produce facility wastes, typical of power generation facility operations and maintenance activities. These will include rags, turbine air filters, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers, the typical refuse generated by workers and small office operations, and other miscellaneous solid wastes. Sanitary wastewater will be located at the Almond Power Plant, no new sanitary wastewater connects will exist at the A2PP.

General facility drainage will consist of area washdown, sample drains, equipment leakage, and drainage from facility equipment areas. Water from these areas will be collected in a system of floor drains, hub drains, sumps, and piping, and will be routed to the adjacent Almond Power Plant's oil/water separator. If needed, water from this sump will be sampled and analyzed at an approved lab. If contamination is present, the water will be trucked off site for disposal at an approved wastewater disposal facility. If sampling results show no contamination, the water will be discharged to the City of Ceres Wastewater Treatment Plant using the existing pipeline currently in place for the Almond Power Plant.

Wastes that will be generated at the facility are summarized in Table 5.14-2 of the AFC. Hazardous waste generated at A2PP will be stored at that facility for less than 90 days. The hazardous waste will then be transported by a licensed hazardous waste transporter to a TSD facility.

For ultimate disposal, California has the three hazardous waste (Class I) landfills described below. The closest commercial hazardous waste disposal facility is the Waste Management Kettleman Hills Landfill in Kings County.

## **D. Cumulative Impacts**

The A2PP facility will generate nonhazardous solid waste that will add to the total waste generated in Stanislaus County and in California. However, there is adequate recycling and landfill capacity in California to recycle and dispose of the waste generated by the A2PP. It is estimated that the A2PP will generate approximately 120 tons of solid waste during construction (including approximately 1.4 tons of solid hazardous waste) and about 40 tons a

year from operations (including approximately 1 ton of solid hazardous waste). An additional approximately 25 tons of catalyst units will be recycled by the manufacturer during operation. Considering that 229,189 tons of solid waste were landfilled in Stanislaus County in the year 2007, and 196,538 tons through the third quarter of 2008 (fourth quarter and 2008 total values not yet published), the A2PP's contribution will represent a small fraction of the county's total waste generation. Therefore, the impact of the project on solid waste recycling and disposal capacity will not be significant.

Hazardous waste generated will consist of waste oil, filters, SCR and oxidation catalysts, and fluids used to clean piping. The waste oil and catalysts will be recycled. Hazardous waste treatment and disposal capacity in California is more than adequate. Therefore, the effect of the A2PP on hazardous waste recycling, treatment, and disposal capability will not be significant.

### **E. Mitigation**

The handling and management of waste generated by TID A2PP will follow the hierarchical approach of source reduction, recycling, treatment, and disposal. The first priority will be to reduce the quantity of waste generated through pollution prevention methods (e.g., high-efficiency cleaning methods). The next level of waste management will involve the reuse or recycle of wastes (e.g., used oil recycling). For wastes that cannot be recycled, treatment will be used, if possible, to make the waste non-hazardous (e.g., neutralization). Finally, offsite disposal will be used to dispose of residual wastes that cannot be reused, recycled, or treated.

Because the environmental impacts caused by wastes generated during construction and operation of the facility are expected to be insignificant, extensive monitoring programs will not be required. Generated waste, both nonhazardous and hazardous, will be monitored during project construction and operation in accordance with the monitoring and reporting requirements mandated by the regulatory permits to be obtained for construction and operation.

## **III. Proposed Licensing Conditions**

The RSA for the project filed by the CEC recommends that 7 Conditions of Certification be adopted to address waste management issues, specifically hazardous waste management issues, WASTE-1 through WASTE-7. The Applicant has reviewed the Staff's proposed COCs and finds them acceptable.

## **IV. Correlation to RSA and Hearing Topics**

- Waste Management.

# Water Resources

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## I. Introduction

- A. **Names:** Catherine Lambert
- B. **Qualifications:** Catherine Lambert's qualifications are as noted in her resume contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1; Section 5.15 [Exhibit 1]
  - Data Adequacy Supplement A; Section 5.15. [Exhibit 3]
  - Comments on the CEC Staff Assessment, Water Resources. [Exhibit 8]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated September 14, 2009. Responses to Data Requests 34 through 68. [Exhibit 15]
  - CURE Data Responses Set 1A, dated November 20, 2009. Responses to Data Requests 63 through 67. [Exhibit 20]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1B, dated October 12, 2009. Response to Staff Queries 4 through 6. [Exhibit 18]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Response 18. [Exhibit 21]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1C, dated October 30, 2009. Response to Data Requests 61b and 68. [Exhibit 31]
  - Communication between SWRCB and CH2MHILL Regarding Recycled Water Treatment Permit, dated April 15, 2010. [Exhibit 39]

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

### A. Affected Environment

The A2PP project site is an approximately 4.6-acre parcel located at 4500 Crows Landing Road in Ceres, Stanislaus County, California. The A2PP project site is located on land owned by TID

and located within the City of Ceres. The A2PP project site is adjacent to the existing TID Almond Power Plant to the south, a WinCo distribution warehouse to the west, a farm supply facility to the north, and a modular building distributor and drilling equipment storage facility to the east.

Major rivers in Stanislaus County include the San Joaquin, the Stanislaus, and the Tuolumne. The San Joaquin River originates in Fresno County, crossing southwestern San Joaquin County before terminating in the Sacramento-San Joaquin River Delta. The Stanislaus and the Tuolumne rivers terminate in the San Joaquin River west of project site. All of the major rivers in Stanislaus County have been modified by impoundments or diversion channels. The project site is approximately 3 miles south of the Tuolumne River and approximately 8 miles to the east of the San Joaquin River.

The A2PP project site is within the San Joaquin Valley Groundwater Basin within the Turlock Subbasin. The Turlock Subbasin lies between the Tuolumne and Merced rivers and is bounded on the west by the San Joaquin River and on the east by crystalline basement rock of the Sierra Nevada foothills. The Turlock Subbasin is drained by the San Joaquin River and several major tributaries, including the Tuolumne and the Merced rivers. Groundwater in the Turlock Subbasin flows primarily to the southwest following the regional dip of basement rock and sedimentary units towards the San Joaquin River.

The City of Ceres relies on groundwater as its municipal water supply. The city maintains ten wells, eight of which are active. One of the City's municipal wells is located adjacent to the Ceres wastewater treatment plant (WWTP). Other uses of groundwater in the vicinity of the A2PP include the existing Almond Power Plant, which uses approximately 16,000 gpd groundwater for service water to the plant, and local agriculture.

The A2PP project will use water that is currently delivered to the Almond Power Plant by a 6-inch-diameter pipeline between the Almond Power Plant and the Ceres WWTP for water. Due to the high level of reliability of water from the Ceres WWTP, no backup water supply is required or planned for this project at this time.

Assuming a realistic operation scenario with a 57 percent capacity factor (5,000 hours per year), the A2PP would be projected to use an annual average of approximately 293 acre-feet of process water per year. The A2PP will obtain its service water by tying into an existing onsite groundwater well currently in use for service water at the Almond Power Plant. The well is located on the southeast corner of the Almond Power Plant. Drinking water will be provided by an outside drinking water delivery service. The A2PP will tie into the existing fire system for the Almond Power Plant; fire water is provided by the onsite well.

## **B. Construction Impacts**

Surface water impacts are anticipated to be related primarily to short-term construction activity and would consist of increased turbidity due to erosion of newly excavated or placed soils. However, compliance with engineering and construction specifications, and following Chief Building Official approved grading and drainage plans will effectively mitigate these short-term impacts.

Furthermore, as required under the General Permit for Stormwater Discharges Associated with Construction Activity, a Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the construction site and will include best management practices (BMPs) for erosion and sediment control. In addition, a Drainage, Erosion, and Sedimentation Control Plan (DESCP) will be prepared and included as part of the SWPPP. The DESCP/SWPPP will be prepared prior to construction of the A2PP project to prevent the offsite migration of sediment and other pollutants, and to reduce the effects of runoff from the construction site to offsite areas. Successful implementation of the DESCP/SWPPP will ensure that construction impacts to drainage are mitigated to a less-than-significant level.

Implementation of the DESCP/SWPPP will also prevent the offsite migration of sediment and other pollutants, and will reduce the effects of runoff from the construction site to offsite areas, thereby reducing construction impacts to water quality to a less-than-significant level.

Construction activities would require a relatively limited amount of water (an average of approximately 50 gallons per minute and approximately 200 gallons per minute per 1 hour for dust control and soil compaction, at peak use). Because the construction water supply will come from the onsite fire system at the Almond Power Plant or the TID irrigation canal to the south, no impacts to groundwater resources would occur.

### **C. Operational Impacts**

The A2PP site is a basin-like area that has been backfilled with commercial fill and compacted to 95 percent. Development of the project will result in an increase of impervious surfaces and once developed, resulting in approximately 4.6 acres of impervious surfaces. The existing Almond Power Plant stormwater system incorporates a series of inlets and drainage pipes that convey runoff to an onsite retention pond. This existing stormwater system would be expanded to accommodate the A2PP. Areas of potential oil contamination will be sited inside containments that prevent the potential contaminants from traveling to the stormwater system. The increase in the amount of impervious surface is not expected to significantly change the amount or timing of runoff from the A2PP project site. Because stormwater would be collected and discharged to the onsite retention pond, the A2PP project would not result in substantial erosion, siltation, or flooding on- or offsite. Therefore, operational impacts to drainage patterns are less than significant.

Operation of the A2PP project will not result in any direct discharge offsite to receiving surface water. Therefore, operational impacts to surface water are less than significant. The City of Ceres and TID have a Water Services Agreement that permits the discharge of process wastewater from the A2PP to the percolation ponds at the WWTP. Wastewater discharge from the A2PP will meet all requirements set forth in the Water Service Agreement. Therefore, impacts to groundwater quality are less than significant. Because the A2PP project would not substantially deplete groundwater supplies such that there would be a substantial lowering of the local groundwater table, impacts to groundwater are less than significant.

### **D. Cumulative Impacts**

This minimal and intermittent use of groundwater would not result in a cumulative impact when combined with other users of groundwater in the vicinity. Other uses include the Almond

Power Plant, agriculture, and municipal (City of Ceres). Because the A2PP project, even in combination with other groundwater water uses in the area, would not substantially deplete groundwater supplies such that there would be a substantial lowering of the local groundwater table, cumulative impacts to groundwater are less than significant.

## **E. Mitigation**

The mitigation measures proposed are prescribed by stormwater and erosion control management programs mandated under the National Pollutant Discharge Elimination System (NPDES) permitting system. These programs have been in place for a number of years and the prescribed measures have proven effective. Under the General NPDES Permits for Construction, for example, various specific measures are prescribed, and a program of monitoring is required.

- In accordance with the construction DESCP/SWPPP, implement BMPs designed to minimize soil erosion and sediment transport during construction of the plant site. Design appropriate erosion and sediment controls for slopes, catch basins, culverts, stream channels, and other areas prone to erosion.
- In accordance with the construction DESCP/SWPPP, perform refueling and maintenance of mobile construction equipment only in designated lined and/or bermed areas away from stream channels. Prepare and implement spill contingency plans in areas where they are appropriate.

## **III. Proposed Licensing Conditions**

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that four Conditions of Certification (COCs) be adopted to address water (and soil) resources issues, SOIL&WATER-1 through -4. On Thursday September 16, 2010 staff and the Applicant agreed in SOIL&WATER-2 that the DESCP and construction SWPPP can be a combined document. The Applicant has reviewed the Staff's proposed COCs, and with the changes from the September 16<sup>th</sup> workshop, Applicant finds them acceptable.

## **IV. Correlation to RSA and Hearing Topics:**

- Soil and Water Resource

# Worker Health and Safety

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## I. Introduction

- A. **Name:** Sarah Madams
- B. **Qualifications:** Ms. Madams' qualifications are as noted in her resume contained in Appendix A.
- C. **Prior Filings:** In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:
- Application for Certification, Volume 1; Section 5.16, Worker Health & Safety. [Exhibit 1]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1A, dated September 14, 2009. Responses to Data Requests 80 through 84. [Exhibit 15]
  - Applicant's Response to CEC Staff Requests, Data Response Set 1D, dated November 25, 2009. Response to Data Request 18. [Exhibit 21].
  - Stanislaus County Comment Letter Regarding Fire Prevention Bureau, dated June 17, 2009. [Exhibit 40]

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

## II. Summary of Testimony

During this project, the workers will be exposed to construction safety and operation hazards. A hazard analysis has been prepared to evaluate the project hazards and control measures. The analysis identifies the hazards anticipated during construction and operation and indicates which safety programs should be developed and implemented to mitigate and appropriately manage those hazards.

### Overview of Hazards and Related Programs and Training

Programs are overall plans that set forth the method or methods that will be followed to achieve particular health and safety objectives. For example, the Fire Protection and Prevention Program will describe what has to be done to protect against and prevent fires. This will include equipment required, such as alarm systems and firefighting equipment, and procedures to protect against fires. The Emergency Action Program/Plan will describe escape procedures, rescue and medical procedures, alarm and communication systems, and response procedures for very hazardous materials that can migrate. The programs or plans are contained in written documents that are usually kept at specific locations within the facility. Each program or plan will contain training requirements that are translated into detailed training courses.



## Health and Safety Programs

To protect the safety and health of workers during the construction and operation of the A2PP, health and safety programs designed to mitigate hazards and comply with applicable regulations will be implemented. Periodic audits will be performed by qualified individuals to determine whether proper work practices are being used to mitigate hazardous conditions and to evaluate regulatory compliance.

## Operations Health and Safety Program

Upon completion of construction and commencement of operations at the A2PP, the construction safety and health program will transition into an operations-oriented program reflecting the hazards and controls necessary during operation.

## Safety Training Programs

To ensure that employees recognize and understand how to protect themselves from potential hazards during this project, comprehensive training programs for construction and operation will be implemented. Each of the safety procedures developed to control and mitigate potential site hazards will require some form of training. Training will be delivered in various ways, depending on the requirements of Cal-OSHA standards, the complexity of the topic, the characteristics of the workforce, and the degree of risk associated with each of the identified hazards.

## Emergency Response

There are four fire stations in the Ceres Emergency Services – Fire Division system. Fire Station #3, at 420 East Service Road, Ceres, California 95307, is the primary responding fire station to the project site; approximately 0.3 mile (driving distance is 1.2 miles) to the northwest of the project site. Approximate response time from Fire Station #3 to the project site would be 2 to 3 minutes during the day and 2 to 4 minutes at night. Primary mutual aid response would come from the City of Modesto Fire Department and the Westport Fire Protection Division.

## Hospitals

The nearest hospital that has an emergency room is Memorial Medical Center in Modesto, which is approximately 8 miles from the A2PP project site.

## III. Proposed Licensing Conditions

The Revised Staff Assessment (RSA) for the project filed by the CEC recommends that five Conditions of Certification be adopted to address worker safety and fire protection issues: WORKER SAFETY-1 through WORKER SAFETY-5. The Applicant has reviewed the Staff's proposed COCs and finds them acceptable.

## IV. Correlation to RSA and Hearing Topics:

- Worker Safety and Fire Protection

APPENDIX A

# Resumes

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research**

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## Résumé

### **Jeffrey D. Adkins**

#### Education

1992, J.D., University of California Hastings College of the Law, San Francisco  
1983, B.S., Chemical Engineering, Pennsylvania State University, State College

#### Professional Experience

Aug. 1993 - Present Senior Engineer/Partner/Managing Partner/Senior Partner  
Sierra Research

Responsibilities include providing final technical review for stationary source projects, preparing proposals, and supervising workload for stationary source staff. Also provides compliance assistance and project support for multiple industrial sources, including the following:

- Providing strategy development, negotiation support, and technical services for facilities subject to EPA and local air district enforcement actions;
- Preparing variance petitions and representing clients at variance hearings in multiple California air districts;
- Preparing air quality sections of California Energy Commission Applications for Certification and Small Power Plant Exemptions;
- Preparing Title IV Acid Rain permit applications and monitoring plans for power plants and providing ongoing technical support for Electronic Data Reporting;
- Preparing Title V operating permit applications and permit renewal applications;
- Preparing federal PSD applicability determinations;
- Providing emission reduction credit transaction services including applications, due diligence review, inter-district transfers, and inter-pollutant trades;
- Preparing local, state, and federal permit applications for portable and stationary equipment including evaluations of BACT, offsets, and air quality impacts, and compliance with local, state, and federal regulations; and
- Providing detailed compliance assistance for federal NSPS and NESHAPS, local air district, and state ATCM regulations.

1990 - July 1993      Supervising Air Quality Engineer  
Bay Area Air Quality Management District

Supervised engineering staff of five. Implemented complex local, state, and federal air quality regulations. Formulated strategy, recommended District position, negotiated terms and conditions of abatement orders and variances with staff and industry. Acted as expert witness in District Hearing Board administrative proceedings. Handled all aspects of California Energy Commission power plant siting proceedings, including reviewing and writing Determination of Compliance, acting as District spokesperson at public workshops, and testifying at Energy Commission evidentiary hearings.

Reviewed and implemented California Clean Air Act and 1990 federal Clean Air Act Amendments, including Title V (“Permits”), Title III (“Toxics”), Prevention of Significant Deterioration, New Source Review, and NSPS. Reviewed California Environmental Quality Act (CEQA) Environmental Impact Reports for consistency with District air permits and regulations. Determined CEQA applicability for all air permits issued.

1987 - 1990              Air Quality Engineer II  
Bay Area Air Quality Management District

Performed detailed engineering evaluations and recommended approval or denial of air permit applications for various industrial sources. Determined compliance with local, state, and federal air pollution regulations. Performed multi-pathway health risk assessments and risk screenings. Drafted detailed permit conditions limiting source operation and emissions. Determined best available control technology. Reviewed air quality modeling analyses.

1983 - 1987              Designs Engineer  
Chevron U.S.A. Inc., Richmond Refinery

Performed engineering design, cost estimated, obtained capital funding, and coordinated work on major refinery construction projects. Provided engineering services for major process plant turnarounds and day-to-day plant operations at crude oil distillation, Diesel and jet fuel sulfur removal, and gasoline reforming plants.

### Credentials and Memberships

Member, State Bar of California, Environmental Section  
Registered Professional Engineer, State of California (Chemical Engineering)  
Lead Verifier under the California Air Resources Board Mandatory Greenhouse Gas Emissions Reporting Program—General; Refinery and Power Entities sectors

# Mark Bastasch, P.E., I.N.C.E.

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## Noise Task Lead

### Education

M.S., Environmental Engineering  
B.S. (cum laude), Environmental Engineering

### Professional Registrations

Registered Acoustical Engineer: Oregon (No. 58990PE)  
Professional Environmental Engineer: Oregon (No. 58990PE)  
Professional Civil Engineer: Oregon, 1999 (No. 58990PE)  
Certified Water Rights Examiner: Oregon, 2000 (No. 58990WRE)

### Distinguishing Qualifications

- Has prepared acoustical analysis or expert testimony for more than 15,000 megawatts (MW) from gas-fired facilities (primarily in California) and more than 5,000 MW from wind generation facilities nationwide
- Specializes in industrial noise measurements, modeling and control for power, industrial, and transportation clients
- Has prepared detailed noise models of numerous power facilities
- Has prepared comprehensive and cost effective compliance reports for several gas-fired power facilities demonstrating that permit conditions were satisfied

### Relevant Experience

Mr. Bastasch is a registered acoustical, environmental, and civil engineer with more than 10 years experience conducting acoustical studies. Mr. Bastasch's acoustical experience includes preliminary siting studies, regulatory development and assessments, ambient noise measurements, industrial measurements for model development and compliance purposes, mitigation analysis, and modeling of industrial and transportation noise.

### Representative Projects

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California.** Authored the Noise section for the A2PP AFC. The project consisted of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts.

**BrightSource Energy, Ivanpah Solar Electric Generating System.** Authored noise section of California Energy Commission Application for Certification. Successfully worked with CEC staff to streamline noise analysis and eliminate unnecessary field studies given remote project site and lack of noise sensitive receptors.

Mark Bastasch, P.E., I.N.C.E.

**Licensing and Permitting for Cosumnes Power Plant, Sacramento Municipal Utility District, California.** Acoustical technical lead for this two-phase, 1,000-MW combined-cycle power plant on buffer lands for the former Rancho Seco Nuclear Plant. Prepared AFC, worked with SMUD legal council and permitting team to address intervenor comments. Alternative mitigation measures were developed in consultation with CEC Staff to establish acceptable Conditions of Certification.

**Licensing and Permitting for San Francisco Electric Reliability Project (SFERP) for San Francisco Public Utilities Commission.** Noise task lead for this power plant. The SFPUC proposed to develop a 145-MW simple-cycle plant in southeast San Francisco, using three LM 6000 turbines. Although construction of another power plant in southeast San Francisco was controversial, it was licensed by the CEC. The plant would be located two blocks south of the existing Portrero Power Plant. Major issues included remediation of the power plant site (contaminated fill); Air Quality mitigation measures; water supply; Environmental Justice; and the need for in-city generation.

**Walnut Energy Center, Turlock Irrigation District, Turlock, California.** Acoustical technical lead for a combined cycle power plant. Tasks included evaluating and measuring background noise levels; development of detailed noise model, comparison of expected noise levels with the City of Turlock, County of Stanislaus, and the California Energy Commission's (CEC) noise guidelines; preparing Application for Certification and subsequent amendments submitted to the CEC; regulatory negotiation; and review of Conditions of Certification. Additional tasks included development assistance with acoustical bid and guarantee specifications and independent analysis of manufacturer steam turbine generator enclosure.

**Calpine GE LM6000 Peaker Program, Calpine Corporation, Dublin, California.** Project manager and acoustical lead for Calpine's Peaker Program. Prepared California Environmental Quality Act level noise assessments for more than 10 LM6000-based peaking power plants located throughout northern California. Developed a flexible and streamlined program to accurately and quickly prepare acoustical assessment. Tasks included regulatory review and interpretation of city and county noise standards, ambient measurements and analysis, development of a standardized model that included several levels of optional mitigation and field verification at operating facilities, and regulatory negotiating.

**Edison Mission Energy's GE LMS100 Peaking Facilities, Southern California.** Acoustical technical lead for two simple cycle power facilities each utilizing 5 GE LMS100 combustion turbines in simple cycle. Tasks included evaluating and measuring background noise levels to determine and evaluate risk associated with potential CEC permit limits; extensive coordination with GE given limited available data resulting from short operating history of the LMS100 (these were the first LMS100 evaluated in California); preparing Application for Certification to the CEC. Additional tasks included development and review of acoustical bid and guarantee specifications for cooling towers, SCR, stack, transformers, and other balance of plant equipment.

**Tierra Energy, Eastshore Power Project, Hayward, California.** The proposed facility would be a nominal 115.5-MW simple cycle power plant consisting of 14 Wärtsilä 20V34SG natural-gas-fired reciprocating engine generators and associated equipment. As acoustical technical lead for this facility, tasks included evaluating and measuring background noise levels to determine potential CEC permit limits; preparing Application for Certification to the CEC. Review of available vendor data and commitments.

**Pacific Gas & Electric, Humboldt Bay Repowering Project, Humboldt, California.** As acoustical permitting lead for this proposed load-following power plant, tasks included evaluating and measuring background noise levels to determine and evaluate risk associated with potential CEC permit limits; preparation of Application for Certification to the CEC, conducting site tour with CEC's acoustical staff and review of existing EPC commitments.

# Loren Bloomberg, P.E.

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## Traffic and Transportation

### Education

M.S., Civil Engineering  
B.S., Systems Engineering

### Professional Registrations

Professional Engineer (Traffic): California

### Relevant Experience

Mr. Bloomberg has led or played a key role in numerous large-scale planning and operations analyses. He has conducted studies and developed plans for local areas, corridors, and entire regions. Mr. Bloomberg's technical expertise is in simulation modeling and traffic operations, with a particular focus on conceptual engineering and traffic analysis. He is often called upon as a technical expert for CH2M HILL's modeling projects, and is known for his ability to complete traffic analyses accurately and efficiently, while meeting client requirements. Mr. Bloomberg is a member of the Highway Capacity Committee of the Transportation Research Board, the international group of 30 professionals charged with developing and maintaining the *Highway Capacity Manual*.

### Representative Projects

**Task Lead; Ivanpah Solar Electric Generating System; BrightSource Energy; San Bernardino County, California; 2007 to Present.** Traffic and transportation task lead for analysis of a solar energy project in the Mojave Desert, near the California/Nevada border. Prepared the traffic and transportation analysis section of the Application for Certification. The analysis focused on construction impacts to traffic operations, including construction workers, truck trips, and transport of hazardous materials. Assessed freeway, ramp, and local streets impacts.

**Task Lead; GWF Energy Tracy Combined Cycle Conversion Project; San Joaquin County; California; 2008 to Present.** Traffic and transportation task lead for analysis of the conversion of an existing peaking plant to a combined-cycle baseload facility. Prepared the traffic and transportation analysis section of the Application for Certification. The analysis focused on construction impacts to traffic operations, including construction workers, truck trips, and transport of hazardous materials and assessed freeway, ramp, and local streets impacts.

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California.** Directed the development of the Traffic and Transportation section for the A2PP AFC. The project consisted of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts.

**Traffic Lead; Ras Tanura Integrated Project (RTIP) Environmental Impact Assessment; Kingdom Of Saudi Arabia; 2009 to Present.** Traffic lead and technical advisor on this effort to develop the environment document for improvements to an integrated refinery and



## **Loren Bloomberg, P.E.**

petrochemicals complex in Saudi Arabia. Designed the data collection approach, and helped to coordinate outside contractors in multiple countries. Reviewed and analyzed data, and developed traffic impact analysis criteria and methodologies for application in the environmental document. Authored the traffic study.

**Task Lead; Eastshore Energy Center; Hayward, California; 2006 to 2007.** Traffic lead for the application for certification (AFC) for a new 115.5-megawatt (MW) intermediate/peaking load facility. Led the assessment of the traffic and transportation impacts associated with the construction and operation of the facility. Assessed traffic operations impacts, transport of hazardous materials and public safety. Developed strategic approach for the Transportation Management Plan, and represented the applicant (for transportation issues) at California Energy Commission meetings

**Walnut Energy Center Traffic Control and Implementation Plan (TCIP), Turlock Irrigation District (2004 to 2005).** Developed the traffic control plan for the utility (potable and recycled water) lines for the Walnut Energy Center in Turlock. The TCIP addressed the mitigation of traffic impacts to the existing transportation facilities to satisfy the requirements of the CEC Conditions of Certification.

**Metcalf Energy Center, Calpine Corp., San Jose (2001 to 2002).** Task lead for traffic control for this fast-track effort to design and construct linear facilities (recycled water, sewer, and potable water) to support a new energy center. Developed plans to support two pipeline alignments through 6 to 10 miles of urban streets. Worked with local agencies to develop a transportation management plan to support agency requirements and maintain construction schedules.

**San Francisco Electric Reliability Project, San Francisco Public Utilities Commission (2004 to 2005).** Task lead for the traffic and transportation section of the AFC. Traffic impacts focused on construction activities.

**Proponent's Environmental Assessment (PEA), San Mateo County (2002 to 2004).** Task lead for the transportation analysis to support the PEA and associated EIR for a major utility company. The project will involve trenching and overhead construction throughout San Mateo County, with potential impacts to freeways, ramps, surface streets, and BART. Led the transportation analysis (including evaluation, assessment of impacts, and development of mitigation measures) and was primary author for the transportation section of the environmental document. Leading the development of transportation management plans for the multiple jurisdictions.

**Infrastructure Improvement Projects and Dutton Meadows EIR, Santa Rosa (2004).** Traffic task lead for developing project- and program-level EIRs to support planned development in Santa Rosa. Developed traffic/transportation sections of the CEQA documents, tiering off previous environmental documents and technical studies.

**Owens Lake Dust Control Project EIR, Southern California (2001).** Traffic task lead for the assessment of the impacts of a major hauling operation near Lone Pine. Gathered traffic information and forecasts, and conducted reconnaissance with local agency staff. Assessed traffic operations and impacts of the proposed project.

**SR 237 Guadalupe Bridge Replacement, Santa Clara County (2003).** Traffic task lead for this project to replace the bridge on SR 237 over the Guadalupe River. Developed transportation

## **Loren Bloomberg, P.E.**

management plan, including detour plans and lane closure charts. Conducted operational analysis for staging plans and late lane re-opening penalties.

**Route 70/Algodon Road Interchange, Yuba City (2002).** Task lead for traffic operations analysis to support planning efforts for the Route 70/Algodon Road interchange near Yuba City. Led the analysis to assess future operations of the freeway, interchange, and cross-streets to identify design improvements.

**Highway 114/Hyampom Road, Trinity County (2002 to 2005).** Traffic task lead for evaluating a rural road in Trinity County. Mr. Bloomberg directed the effort to gather traffic information and forecasts, conduct reconnaissance with local agency staff, and evaluate existing and future traffic. He worked with client staff to achieve consensus on future forecasts, and helped craft the purpose and need statement.

**Clinton-Keith Initial Study/Environmental Assessment, Southern California (2002 to 2005).** Traffic task lead for preliminary engineering and environmental documentation for a new transportation corridor in Riverside County. Led the development of traffic forecasts, including integrating travel demand forecasts from the regional model and traffic impact studies. Conducted traffic analysis, and worked with the engineering team to optimize the design. Coordinated traffic inputs to the environmental team.

**Harbor Boulevard Improvements Project, Southern California (2004 to 2005).** Traffic task lead for preliminary engineering and environmental documentation for improvements to a congested major arterial in Costa Mesa. Coordinated data gathering from Caltrans and Costa Mesa, and conducted detailed operations analysis for multiple alternatives. Prepared traffic analysis documentation and coordinated traffic inputs to the design and environmental teams.

# Maly-Ann Bory

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## Traffic and Transportation

### Education

MS Transportation Engineering, University of California at Berkeley, CA

MS Civil Engineering, France

BS Civil Engineering, France

### Professional Registrations/ Certifications

Professional Engineer: CA

### Distinguishing Qualifications

Expertise in transportation design and traffic and transportation analysis. Experience in traffic and transportation analyses for energy project Applications for Certification, which are similar in scope to NEPA and CEQA documents. Direct experience in transportation design for Caltrans, demonstrating expertise in Caltrans design standards and specification.

### Relevant Experience

Maly-Ann Bory is a design engineer who has served on a variety of design and improvement projects for roadways and interchanges throughout California. She has experience with Caltrans design standards and is highly proficient with industry-standard design tools. She also provides traffic and transportation analysis for energy project AFCs.

### Representative Projects

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California.** Authored the traffic and transportation section for the A2PP AFC. The project consisted of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts.

**Contra Costa Generating Station; Radback Energy Inc., Oakley, CA.** Prepared the Traffic and Transportation section of the AFC.

**Norris Canyon Direct High-Occupancy Vehicle (HOV) Project Study Report (PSR); Contra Costa Transit Authority, San Ramon, CA.** Developed design alternatives for direct HOV ramps to a new interchange at Norris Canyon. Created horizontal and vertical alignments and corresponding pavement delineation plans using Microstation V8. Prepared typical cross sections.

**San Diego Association of Governments (SANDAG) On-call Engineering; San Diego, CA.** Prepared typical cross sections of the mainline using Microstation V8. Checked existing ramps and connectors for horizontal alignments and diverge/merge angles to ensure they met current design standards. Prepared cost estimates for roadway items removal.

## Maly-Ann Bory

**I-80 at Truckee River Canyon Pavement Replacement; Caltrans District 3, Sierra and Nevada Counties, CA.** Created horizontal and vertical alignments of the mainline and temporary construction crossovers using Inroads XM and Microstation V8. Identified, prepared, and documented all design exceptions. Prepared the design checklist.

**Chevron Richmond Refinery Power Plant Replacement; Chevron, Richmond, CA.** Prepared the Traffic and Transportation section of the Small Power Plant Exemption (SPPE).

**Mariposa Energy Center; Diamond Energy Corporation; Alameda County, CA.** Prepared the Traffic and Transportation section of the AFC.

**Fontana Energy Center; Calpine, Fontana, CA.** Prepared the Traffic and Transportation section of the AFC.

**Ivanpah Solar Electric Generating System; Bright Source Energy, San Bernardino County, CA.** Prepared the Traffic and Transportation section of the AFC.

**Carlsbad Energy Center; Carlsbad Energy Center LLC, Carlsbad, CA.** Prepared the Traffic and Transportation section of the AFC.

**Russell City Energy Center; Russell City Energy Center LLC, Russell City, CA.** Prepared the Traffic and Transportation section of the AFC.

**GWF Tracy Combined Cycle Power; Tracy, CA.** Prepared the Traffic and Transportation section of the AFC.

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# Bridget Canty

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## Biological Resources

### Education

Graduate Studies, Environmental Science Resources, 2003-2005, Portland State University, Portland, Oregon

B.S., Biology, 1991, Lewis & Clark College, Portland, Oregon

### Distinguishing Qualifications

- Manager for pre-construction and post-construction biological monitoring and mitigation plans for a 62-mile long natural gas pipeline project in western Oregon.
- Biological Task manager for a proposed 800-MW wind project in Kern County, California.
- More than 13 years experience as a wildlife ecologist.

### Relevant Experience

Ms. Canty is an Associate Project Manager and Senior Ecologist with expertise in the areas of natural resource assessment, ESA consultation, permitting, NEPA/SEPA documentation, renewable energy facility siting, project/task management, special status species investigations, and analyzing/mitigating project impacts. She has prepared numerous environmental reports and constraints analyses for clients in Oregon, Washington, California, Idaho, and Wyoming.

### Representative Projects

**Alta Infill Wind Project; Terra-Gen Power; Kern County, California. 2010.** Coordinated and conducted biological resources investigations and reports for proposed 414-MW infill wind project including vegetation and habitat mapping, streambed analysis, and surveys for special-status species. Coordinated and managed subcontractors conducting surveys for rare plants, desert tortoise, Mojave ground squirrel, avian use, nesting raptors, and acoustic bat surveys. Prepared 2081 Incidental Take Permit and Streambed Alteration Agreement applications.

**Sun Creek Wind Project; Terra-Gen Power; Kern County, California. 2009-Present.**

Coordinated and conducted biological resources investigations and reports for proposed 300-MW wind project including vegetation and habitat mapping, streambed analysis, and surveys for special-status species. Coordinated and managed subcontractors conducting surveys for rare plants, desert tortoise, Mojave ground squirrel, avian use, nesting raptors, and acoustic bat surveys.

**Alpine Solar Project; NRG; Los Angeles County, California. 2010.** Prepared biological resources checklist portion of Mitigated Negative Declaration. Analysis was conducted for 92-MW solar photovoltaic project on 580 acres of fallow agricultural land in the Antelope Valley in northern Los Angeles County.

## Bridget Canty

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California. 2009.** Planned and conducted biological resources investigations. Authored the biological resources section for the A2PP AFC. Prepared Wetland Delineation Report. The project consists of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts, transmission lines, and a natural gas pipeline.

**Alta-Oak Creek Mojave Wind Project; Terra-Gen Power; Kern County, California. 2009.** Coordinated and managed subcontractors conducting biological resources investigations and reports for proposed 800-MW wind project including rare plants, desert tortoise, Mojave ground squirrel, avian use, nesting raptors, acoustic bat study, and other special status species. Prepared 2081 Incidental Take Permit and Streambed Alteration Agreement applications.

**Montague Wind Project; Iberdrola Renewables; Gilliam and Morrow counties, Oregon. 2009.** Prepared site certificate exhibits summarizing existing biological resource investigations, potential project impacts, proposed mitigation, and compliance with energy facility siting rules for proposed 200-MW wind project.

**City of Vernon Solar and Wind Project; Kern County, California; 2009.** Assisted with habitat mapping, identification of habitats for special-status species; and scoping of future biological resource surveys.

**Oregon LNG Terminal and Pipeline; Astoria, Oregon. 2009.** Contributed to USFWS Biological Assessment addressing project impacts from proposed Liquefied Natural Gas Terminal and Pipeline near the mouth of the Columbia River in Oregon.

**Solar PV Projects; Edison Mission Energy; Kern, Los Angeles, and San Bernardino counties, California. 2008-2009.** Conducted preliminary biological resource analysis including site visits and contributed to Critical Issues Analyses for eight proposed solar PV sites.

**Fatal Flaw Analysis; Bridger Butte Wind Project; PacifiCorp; Uinta County, Wyoming; June-August 2008.** Prepared the fatal flaw analysis report, which covered biological, cultural and visual resources for a proposed wind development. The report identified potential project constraints as well as recommendations and next steps for the client.

**Pine Draw Wind Project, Carbon County, Wyoming, June-August 2008.** Prepared the fatal flaw analysis report, which covered biological, cultural and visual resources for a proposed wind development. The report identified potential project constraints as well as recommendations and next steps for the client.

**Migratory Bird Treaty Act Memorandum; OR LNG Terminal and Pipeline; Astoria, Oregon; August 2008.** Prepared a memo documenting recent and historical resource agency policy toward migratory birds and how this relates to the proposed removal of trees to accommodate the OR LNG pipeline. Memo was used by client to justify proposed actions.

**Joint Aquatic Resources Permit Application and Joint Permit Application; McNary to Walla Transmission Line; Pacific Power; Oregon and Washington, June 2008-Present.** Prepared permit applications in support of bi-state transmission line.

**Biological Impact Assessment; Star Point Wind Project; Iberdrola Renewables; Sherman County, Oregon; April 2008-Present.** Prepared the Biological Impact Assessment summarizing

potential project impacts to biological resources as well as proposed mitigation measures. Document was prepared in support of client's Conditional Use Permit.

**Application for Site Certificate Exhibits P (habitat) and Q (special status species); Helix Wind Project, Iberdrola Renewables; Umatilla County, Oregon; April 2008-Present.** Prepared Exhibit P summarizing potential project impacts to habitat as well how proposed project would meet the Oregon Department of Energy's (DOE) Energy Facility Siting requirements including avoidance/mitigation of high-quality habitats (per Oregon Department of Fish and Wildlife [ODFW] Habitat Mitigation Policy). Prepared Exhibit Q summarizing the effects of the project on state and federal special status species and proposed avoidance/mitigation measures. The DOE indicated that Exhibit P was the most thorough the Department had ever received.

# MariaElena Conserva

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## Visual Resources

### Education

Law Student Boalt Hall School of Law, UC Berkeley

Ph.D., Geography

M.A., Geography

B.A., Environmental Studies

### Relevant Experience

Dr. Conserva has a broad background in environmental science, planning, and law. She has assisted in the preparation of EIRs, EISs, and various permitting projects. Her primary focus has been visual impact analysis and energy project siting and licensing. She has also conducted legal research for land use development projects.

### Representative Projects

**Almond 2 Power Plant, Turlock Irrigation District; Ceres, California.** Prepared the visual impact analysis of a power plant for California Energy Commission Application for Certification (AFC). Analyzed visual impacts, prepared the draft chapter, and coordinated the preparation of project simulations.

**Alta Wind Center Project; Mojave, California.** Conducted general project management and project tracking activities. Responsive to client data needs to support permitting activities.

**Mountain States Transmission Intertie (MSTI) Project; Montana and Idaho.** The deliverable was a visual technical report of a proposed 1,400-mile transmission alignment for the Montana Department of Environmental Quality. Coordinated the preparation of the report with several authors and conducted project tracking and other general project management activities.

**Confidential Project Wind Energy Project; Oahu, Hawaii.** Developed permitting schedule for federal, state, and local permits for a wind energy project. Primary author of visual impact analysis.

**Auwahi Wind Energy Project; Shellwind Energy; Maui, Hawaii.** Assisted with data collection, analysis, and the preparation of the EA for a wind energy project pursuant to Hawaii Revised Statutes (HRS) 343. Primary author of the visual impact analysis.

**New York Regional Interconnect; New York.** Co-authored detailed technical report on the impact of a controversial transmission corridor on tourism in upstate New York. Analyzed the effect of the 70-mile project on the tourist economy of the four counties it would cross, the impact on specific tourist destinations, and the impact on a proposed housing development.

**Confidential Project; Vacaville, California.** Prepared the visual impact analysis of a power plant for California Energy Commission Application for Certification (AFC). Analyzed visual impacts, prepared the draft chapter, and coordinated the preparation of project simulations.



## MariaElena Conserva

**Chula Vista Energy Upgrade Program; MMC Energy, Incorporated; Chula Vista, California.** Prepared the visual impact analysis of a power plant for California Energy Commission Application for Certification (AFC). Analyzed visual impacts, prepared the draft chapter, and coordinated the preparation of project simulations.

**Oakland Army Base Redevelopment; Port of Oakland; California.** Coordinated with technical specialists to pull together the Initial Study. Primary author of Change in Circumstance Analysis, which involved assimilating a large amount of technical and regulatory information and coordinating with specialists.

**State Route 79 Realignment Project; Riverside County; California.** Primary author of the EIR/EIS Visual Impact Analysis for the State Route 79 Realignment Project. Coordinated with two other planners to pull the final document together. Analyzed four alternate routes of a proposed 12-mile freeway segment that crossed the County of Riverside, City of Hemet, and City of San Jacinto.

**City of Martinez Annexation; Martinez, California.** Primary author of application to Local Agency Formation Committee (LAFCO) and the CEQA environmental checklist for the annexation of unincorporated areas to the City of Martinez.

**Eastside Road Storage Project; Town of Windsor; Windsor, California.** Primary author of the EIR visual impact analysis and co-author of the EIR biological impact analysis for a reclaimed wastewater storage facility project. Assembled information about visual and biological resources and analyzed potential impacts to them from project construction and operation, wrote draft chapters, and developed chapter graphics.

# Debra J Crowe

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## Biological Resources

### Education

B.S., Environmental Biology and Management (Honors), University of California, Davis  
Veterinary Technician Certification Program, Western Career College, Sacramento, California

### Professional Registrations

Endangered Species Act (ESA) Section 10 Scientific Take Permit for California Threatened and Endangered Fairy Shrimp and Tadpole Shrimp (Permit #TE004824-0)  
California Department of Fish and Game Scientific Collector's Permit  
Certified Veterinary Technician

### Distinguishing Qualifications

- Experienced in California Energy Commission power plant licensing procedures
- Expert witness for biological resource evaluations on power plant projects
- Experienced in Section 7 of ESA consultations and mitigation plans
- Expertise in biological resource construction mitigation monitoring
- Routinely consults with natural resource agencies on project permitting, mitigation measures, and construction monitoring

### Relevant Experience

Ms. Crowe is a wildlife and wetlands biologist who analyzes potential project impacts on biological resources, including wetlands and threatened or endangered species and Species of Concern. She has been an expert witness in several power plant licensing projects under the California Energy Commission regulations and prepared biological resource analyses, mitigation, monitoring, and resources management plans, and monitored construction and operations for compliance with Conditions of Certification. She conducts wetland delineations, biological resource surveys, timber stand exams, and wetland creation/preservation monitoring.

She has 18 years of field experience in surveys and identification of wildlife and plants, wetland delineations, field sampling, vernal pool crustacean surveys, and threatened and endangered wildlife surveys in California, Alaska, Washington, Oregon, and Nevada. Ms. Crowe is experienced in Section 7 of the ESA consultations, Biological Assessments, and mitigation negotiations, as well as in fresh and salt marsh wetland delineations using U.S. Army Corps of Engineers methods and obtaining CWA Section 404 and 401 permits, Coastal Consistency Determinations, CDFG Consultations and Streambed Alteration Agreements. Her expertise includes NEPA and CEQA regulations, procedures, and documentation production. She is certified in identification of California fairy shrimp and tadpole shrimp to species and has

## Debra J Crowe

current ESA Section 10 permit. Ms. Crowe is familiar with California floristics, Atlas GIS, habitat modeling, environmental law, and report preparation and is certified in Hazardous Waste Operations and Emergency Response. Ms. Crowe also conducts soil and water sampling on hazardous waste sites and conducts groundwater and surface water sampling programs.

She also has 15 years experience in handling injured and diseased animals as a licensed Veterinary Technician and is a member of the Sacramento Wildlife Care Association.

### Representative Projects

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California.** Directed the development of the biological resources section for the A2PP AFC. The project consisted of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts. Assisted with biological resources section, primarily as reviewer. Assisted with agency meetings. Providing assistance through construction monitoring phase of project.

**Application for Certification (AFC) of Humboldt Bay Repowering Project, Pacific Gas and Electric, Eureka, California.** Task Manager for biological resource impact analysis and document section of AFC. Performed threatened and endangered species surveys, literature search, and wildlife impact evaluation for proposed electric power plant and linear features. Evaluated project effects on jurisdictional California Coastal Commission wetland habitat, Northern red-legged frog, and migratory birds. Obtained USACE permit and prepared Biological Resources Mitigation Implementation and Monitoring Plan.

**Biological Resources Evaluation for Contra Costa Pipeline Project, Praxair, Inc., Contra Costa County, California.** Performed threatened and endangered species surveys, literature search, and wildlife impact evaluation for proposed electric power plant and linear features. Prepared Technical Memorandum for inclusion in EIR. Initiated consultations for sensitive biological resources with U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. National Marine Fisheries Service, California Regional Water Quality Control Board, California Department of Fish and Game. Prepared Biological Assessment for impacts to California red-legged frog and Alameda whipsnake habitat along the pipeline alignment. Prepared mitigation plans for wetland enhancement, habitat restoration, and habitat compensation.

**Application for Certification (AFC) of Metcalf Energy Center, Calpine Corporation, San Jose, California.** Task Manager for biological resource impact analysis and document section of AFC. Performed threatened and endangered species surveys, literature search, and wildlife impact evaluation for proposed electric power plant, recycled water supply line, natural gas pipeline route, and electric transmission line connection. Prepared the biological resources section of the AFC and initiated consultations for sensitive biological resources with U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. National Marine Fisheries Service, California Regional Water Quality Control Board, California Department of Fish and Game, City of San Jose, Santa Clara Valley Water District, and California Energy Commission. Consulted with local experts and USFWS on potential impacts to serpentine habitat on Tulare Hill and with Santa Clara Valley Water District on potential impacts within the Fisher Creek Riparian Corridor. Prepared Management Plan for the MEC Ecological Preserve and Fisher Creek Riparian Corridor Enhancement Plan. As the CEC qualified Designated Biologist prepared and implemented a mitigation implementation and

monitoring plan for sensitive biological resources during construction and operation of the project.

**Environmental Impact Report/Environmental Impact Statement for Teayawa Energy Center, Calpine Corporation, Indio, California.** Task Manager for threatened or endangered species consultations with U.S. Fish and Wildlife Service and California Department of Fish and Game. Performed threatened and endangered species surveys, literature search, and wildlife impact evaluation for proposed electric power plant, recycled water supply line, natural gas pipeline route, and electric transmission line connection. Consulted with local experts and USFWS/CDFG on potential impacts to desert species and habitat in the Coachella Valley. Prepared the Biological Assessment and mitigation plan and initiated consultations for sensitive biological resources.

**Application for Certification (AFC) of Sutter Power Plant, Calpine Corporation, Yuba City, California.** Task Manager for biological resource impact analysis and document section of AFC. Performed threatened and endangered species surveys, literature search, and wildlife impact evaluation for proposed electric power plant, natural gas pipeline route, and electric transmission line route. Conducted wet season and dry season surveys for listed vernal pool branchiopod species. Conducted wetland delineation, prepared wetland delineation report, biological assessment, and mitigation plans for U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, California Department of Fish and Game, and California Energy Commission. Consulted with above-mentioned agencies and the California Regional Water Quality Control Board for Clean Water Act Section 404 permit and Section 401 water quality certification to fill seasonal wetlands and construct gas pipeline through Sutter National Wildlife Refuge. Conducted stream geometry surveys and water quality analysis for irrigation canals, Sutter Bypass, and Sacramento River. As the CEC qualified Designated Biologist prepared and implemented a mitigation implementation and monitoring plan for sensitive biological resources during construction and operation of the project.

**Application for Certification (AFC) of Delta Energy Center, Calpine Corporation, Pittsburg, California.** Task Manager for biological resource impact analysis and document section of AFC. Performed threatened and endangered species surveys, literature search, and wildlife impact evaluation for proposed electric power plant, natural gas pipeline route, and electric transmission line route. Conducted wet season and dry season surveys for listed vernal pool branchiopod species. Currently preparing wetland delineation report, biological assessment, and mitigation plans for U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. National Marine Fisheries Service, California Department of Fish and Game, and California Energy Commission. Consulted with above-mentioned agencies and the California Regional Water Quality Control Board for Clean Water Act Section 404 permit, Section 10 Rivers and Harbors Act, and Section 401 water quality certification to construct in areas of coastal wetlands with special-status species such as California clapper rail, salt-marsh harvest mouse, species occurring within the Antioch Dunes National Wildlife Refuge. As the CEC qualified Designated Biologist prepared and implemented a mitigation implementation and monitoring plan for sensitive biological resources during construction and operation of the project.

**Application for Small Power Plant Exemption for Carson Ice-Cogeneration Facility, Sacramento Regional Wastewater Treatment Plant, Carson Energy Group, Elk Grove, California.** Assisted in the preparation of a Biological Resources Management Plan for the

## Debra J Crowe

burrowing owl and threatened or endangered species at the project site. Served as assistant project manager for biological resource construction mitigation monitoring in vicinity of project site. Conducted surveys for threatened and endangered species, Species of Special Concern, and wetlands and other wildlife habitats. Researched alternative structures for burrowing owl burrows. Assisted in the development of a Biological Resources Sensitivity Awareness Training Program and brochure for site managers. The training class covered species identification (giant garter snake, Swainson's hawk, burrowing owl), habitat management, and the nature of, and compliance with, existing state and federal environmental laws. Assisted in teaching the sensitivity program. Prepared the 1994 Burrowing Owl Monitoring Report for submission to the California Energy Commission. Attended agency meetings and consulted with client on agency matters.

**Application for Certification (AFC) of Sacramento Ethanol and Power Cogeneration (SEPCO) Project, Ark Energy Group, Rio Linda, California.** Performed threatened and endangered species surveys (giant garter snake, fairy shrimp, Swainson's hawk, burrowing owls), literature search, and wildlife impact evaluation for proposed ethanol production plant and water pipeline route. Assisted in vernal pool crustacean surveys on project site. Conducted wetland and raptor surveys for evaluation of impacts along proposed water pipeline route.

**Threatened and Endangered Species Surveys for Seismic Upgrade of Mokelumne Aqueduct No. 3, East Bay Municipal Utility District, San Joaquin County, California.** Conducted surveys for special-status species along the aqueduct pipelines. Prepared a technical biological assessment for consultations with the California Department of Fish and Game, U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers. Developed mitigation measures to protect delta smelt, chinook salmon, Central Valley steelhead, Sacramento splittail, and nesting Swainson's hawks and burrowing owls along the aqueduct during construction.

**Threatened and Endangered Species Surveys for New Electric Transmission Line Corridors; Sacramento Municipal Utility District, Sacramento County, California.** Assisted in threatened and endangered species surveys of new utility corridors in Sacramento County. Located occurrences of state protected species including Swainson's hawks, burrowing owls and vernal pool crustaceans.

**Threatened and Endangered Species Wildlife Surveys for Proctor and Gamble Cogeneration Project; Sacramento Municipal Utility District, Sacramento, California.** Performed threatened and endangered species wildlife surveys for burrowing owls, raptors, and vernal pool crustaceans along the proposed fiber optic lines route from the Proctor and Gamble cogeneration plant site. Identified wetlands and sensitive species habitat.



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## **RON S. DASCHMANS**

Vice President, Technical Services

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### **ACADEMIC BACKGROUND**

B.S. Electrical & Electronic Engineering, with a specialty in Power Systems Engineering  
California State University, Sacramento, 1987

### **PROFESSIONAL EXPERIENCE**

Ron S. Daschmans has over twenty-two (22) years of electric system utility experience - specializing in both transmission system planning & operations engineering. He possesses extensive experience and a strong working knowledge of the analytic tools that support the system performance evaluation and capital planning processes used by electric utilities. In recent years, he has also shared his expertise as a trainer and mentor. Ron joined Utility System Efficiencies, Inc. (USE) in September of 2001. His employment resumes spans over several sectors of the electric utility industry, including LADWP, SMUD and the CAISO.

As an Assistant Transmission Planning Engineer with LADWP, Ron was primarily involved in WSCC bulk-system activities. As a member of both the WSCC Pacific And Southwest Transfer (PAST) Technical Studies Work Group and serving as Vice-Chairman of the WSCC PAST Coordination Subcommittee, Ron garnered extensive experience in the evaluation of the WSCC interconnected system. During his tenure at LADWP, Ron also worked closely with SRP to evaluate the technical feasibility of the Westwing-Mead-Adelanto 500 kV transmission project.

While employed as a Senior Transmission Planning Engineer at SMUD, Ron assumed a local-system transmission-planning role, which included technical assessments of new transmission and generation interconnections. Ron was responsible for providing expert witness testimony and testifying on behalf of SMUD at CEC Evidentiary Hearings for the Sacramento Ethanol and Power Cogeneration Project. At the time of Ron's employment with SMUD, it was determined that the Sacramento area was prone to voltage collapse. Ron developed specialized software tools to assess both the reactive margin (Q-V) and load handling capability (P-V) of the Sacramento area. He was involved in the development and determination of the local area reactive margin criteria.

In addition to local system transmission planning responsibilities, Ron maintained a visible presence in the WSCC arena. He performed Operations System Studies (OSS) for summer 1995 & 1996, and developed the OSS Handbook – a training reference still widely used today. He was also a member of the System Review Work Group (SRWG), the Operating Capability Study Group (OCSG), and served as Chairman of the July 2 & August 10 Disturbance Validation Work Group. During his tenure as Chairman of the Disturbance Validation Work Group, Ron developed & benchmarked the original post-transient & reactive margin bulk-system assessment tools for the GE PSLF software, which are still being used, in various incarnations, today. At the time of Ron's employment with SMUD, he also conducted transient stability assessments for the proposed Central California-Desert Southwest 500 kV Transmission Project, and participated in the West-of-the-River (WOR) Rating Increase WSCC Review Group.

Ron's career at the CAISO was split between both Grid Planning & Operations Engineering disciplines. As a Grid Planning Engineer, Ron was responsible for the first Reliability Must-Run (RMR) assessment of the Southern California Edison system, coordination of the San Francisco-Peninsula Planning Study Group to assess the long-term transmission/generation needs of the

San Francisco Peninsula, and technical review & coordination of new generation projects interconnecting to the ISO-Controlled Grid. Before changing disciplines from planning to operations, Ron was responsible for providing expert witness testimony and/or testifying on behalf of the CAISO at CEC Hearings for La Paloma, Sunrise, and Elk Hills generation projects.

As a Senior Operations Engineer with the CAISO, Ron was assigned to both Northern California & Greater Bay Area regions. In order to ensure reliable system operation of these regions, Ron was responsible for the development, review & revision of operating procedures, and the engineering evaluation of system clearances and outages. Ron also provided GE PSLF/PSDS/SCSC power flow & transient stability training to members of California utilities, mentored new Operations Engineers, and provided OSAT Training "Summer Seminars" on Sacramento Valley voltage collapse with an emphasis on causes and solutions.

Ron obtained his Bachelors of Science degree in Electrical & Electronic Engineering with a Utility Power Engineering specialization from California State University, Sacramento. References from any existing or previous client of USE may be made available upon request.

## **Utility System Efficiencies, Inc.**

**2001-Present**

- **Turlock Irrigation District (TID).** Primary client over the last 8 years. Performed numerous Transmission Planning and Operations Engineering studies. Conducted the Walnut Energy Center (WEC) system impact study (2002-AFC-04). Performed annual Five & Ten Year Electric Transmission System Assessments. Developed seasonal operating Nomograms. Evaluated transmission system clearances (scheduled and forced outages). Provided power flow base case submittals for WECC case development.
- **Generation Interconnection Evaluations.** Performed numerous generation system impact studies for power plants ranging in size from 45 to 1,500 MW. Breadth of technical investigations performed included traditional power flow analysis (under normal and/or emergency system conditions), post-transient analysis, and transient stability evaluations. System impact studies also include the development and evaluation of transmission system mitigation alternatives that can range from capital additions to the implementation of special protection schemes (SPS). In addition to technical feasibility assessments, financial and risk assessments were also provided.
- **River City Transmission Group (RCTG).** Conducted a technical assessment to determine the cumulative impacts of the following generation projects on the Sacramento Area: East Altamont Energy Center (01-AFC-4), Rio Linda/Elverta Power Plant Project (01-AFC-1), Roseville Energy Facility (01-AFC-14), and SMUD Cosumnes Power Plant Project (01-AFC-21). The purpose of the evaluation was to benchmark and compare the electric system performance of the Sacramento Area under anticipated 2003-04 Light Winter operating conditions for various generation project dispatch scenarios. In all, nine (9) generation permutations were evaluated. Studies were limited to N-1 and select N-2 contingency thermal analysis for the PG&E Sacramento Division, PG&E Stockton Division, SMUD, Western Area Power Administration (WAPA), and NCPA areas.
- **TransCanada Northern Lights ±500 kV DC Transmission Project.** Served as the Project Manager for an initial feasibility study of TransCanada Energy Ltd. (TransCanada) project proposal to construct, interconnect and energize a ±500 kV (bi-pole) DC transmission line within the WECC (Western Electricity Coordinating Council) power system grid. Utility System Efficiencies, Inc. (USE) performed two preliminary transmission system impact evaluations, which were limited to the Pacific Northwest region of the United States. The scope of services was to evaluate and compare two potential interconnection alternatives. The components of the preliminary transmission system impact evaluation included: full-representation model development of the DC project, power flow (thermal overload and voltage deviation), post-transient (thermal overload, voltage deviation, reactive margin), and transient stability

assessments. The analysis determined if any transmission system expansion would be required to integrate the project under the most critical operating season, outlined preliminary system expansion alternatives, and identified system conditions that the project can be integrated without significant system expansion.

- **Bonneville Power Administration EPCL Tool Development.** Developed GE PSLF tools in EPCL to assist the Bonneville Power Administration (BPA) in meeting their WECC base case submittal requirements. Programs were written, tested and documented which expand aggregated generator units, detect unexpected shunt cap/reactor modeling, detect and correct unexpected transformer modeling, evaluate VAR flows on selected groups of transformers to identify VAR circulation, and look at generator/SVD/LTC voltage target conflicts at buses.

## California ISO Operations Engineering

2000-2001

- **Alerts Warning Emergency (AWE) Analysis.** Resolved how much generation capacity was available to the CAISO during AWE conditions. Examined each Stage 2 Emergency day for 2000, Developed a report (and tools) that itemized the amount of internal generation by technology and zone, the amount of generation curtailed and/or out of service, imports (with and without dynamics), actual operating reserves, and ACE during Stage 2 Emergency time periods.
- **Operation Engineering Tools.** Developed sophisticated tools in EPCL and Visual Basic, which completely automated the development of the T-126 Nomogram. The tools were tested, benchmarked, and utilized to handle San Francisco/Peninsula clearances and evaluate the Hunters Point 2 & 3 re-power and synchronous condenser proposals. These tools allowed Operations Engineers to analyze the San Francisco area in a way not previously possible. During the course of the year, additional tools were developed for use by Operations Engineering and Grid Planning. These included Unit Effectiveness, Split Bus, 25:1 Watt/VAr Ratio, and Monitoring applications.
- **WSCC / NERC Summer Preparedness.** Served as the Operations Engineering liaison to WSCC for the summer of 2000. Provided the CAISO's response to the WSCC Summer Adequacy Assessment and weekly updates to WSCC. Authored the NERC Summer 2000 Pre-Seasonal and Post-Seasonal Narratives for the CAISO. In addition, participated in the CMOPS Audit, and developed documents for the NERC Reliability Assessment Subcommittee Interview. Also, drafted detailed June 14 & 15 Stage 1 Emergency Reports and created various presentations and graphics for the ISO Board and CEO.
- **Operations Engineering & On-Call Duties.** As a core responsibility of an Operations Engineer, evaluated, suggested modification to, recommended re-schedule of, and approved clearances for both Northern California and Greater Bay Areas. Assessed approximately 200 complex clearances, which required engineering analysis. During one specific on-call rotation, Ron was dealt the challenge of maintaining the system reliability of the CAISO grid during a fire that took out a major 500/230/70 kV substation (Mira Loma). Developed a computer model reflecting the system conditions witnessed in Southern California and determined transmission line re-routing alternatives and minimum generation requirements for the Los Angeles basin due to the loss of the facility.
- **Training.** Conducted two three-day GE PSLF/PSDS training courses for CAISO, CEC, and PTO planning and operations staff. The course covered load flow mechanics, transient stability analysis, and EPCL programming. Responsible for the mentoring and training of new CAISO Operations Engineers. Provided Operations Support and Training (OSAT) Department training "Summer Seminars" on Sacramento Valley voltage collapse with an emphasis on causes and solutions.



- **CAISO Working Groups.** Participated in the CAISO New Generation Connection Working Group. Reviewed, commented on, and provided write-ups for the Action Plan for summer 2001 system operations. Provided comment and feasibility rankings for the Summer Reliability Generation (SRG) review.
- **Hardware/Software/Web Support.** Worked closely with IT, IBM, and MCI to properly configure the new hardware and coordinated with Grid Planning and Operations Engineering to minimize the transitional woes associated with the deployment of the new hardware. These included customized setups, restoration of individualized software, and secure data file backups during the transition. Provided PSLF/PSDS and PTI Software and Hardware Support throughout 2000 to Grid Planning, Operations Engineering, Market Operations and Outage Coordination. Also maintained the CAISO Grid Planning Web Site and Planning Discussion Groups. This included web redesign, layout and expansion. Coordinated all web site postings requested by internal and external entities and served as a single-point-of-contact to answer all Grid Planning related questions received via the web. 99% of all Grid Planning web site inquiries received were handled to the customer's satisfaction the day they were received, which well exceeded the Corporate Goal of three-day turn around.

## California ISO Grid Planning

1997-2000

- **CEC AFC Generation Projects.** Provided technical review and coordination of the interconnection of new generation projects to the CAISO-Controlled Grid. Responsible for La Paloma, Sunrise, Elk Hills, Midway Sunset, and Morro Bay projects. Ron was responsible for providing expert witness testimony and/or testifying on behalf of the CAISO at CEC Hearings for La Paloma, Sunrise, and Elk Hills generation projects.
- **Reliability Must-Run (RMR) Analysis.** Conducted technical analysis for the determination of the 1999-2003 Reliability Must-Run (RMR) generation requirements for the Southern California Edison (SCE) system and evaluation of Local Area Reliability Service (LARS) proposals. Also worked with SCE to reduce RMR generation requirements for the LA Basin with the implementation of an SCE Capacitor Project (1,450 MVAR of shunt capacitors installed in various locations).
- **Dual-Fuel Generation Requirements.** Provided a technical determination of the 1999 Dual-Fuel generation requirement for PG&E, SCE and SDG&E service territories. This study analyzed CAISO-Controlled Grid performance under extreme natural gas curtailment scenarios in an open stakeholder process.
- **San Francisco - Peninsula Long-Term Planning Study Group.** Served as Coordinator of the San Francisco - Peninsula Long-Term Planning Study Group from 1998 to 2000. Developed and evaluated numerous potential transmission and/or generation solutions intended ensure the reliable operation of the San Francisco Peninsula over a ten-year period.

## Sacramento Municipal Utility District

1990-1997

- **CEC AFC Generation Projects.** Ron was the Transmission Planning engineer responsible for the evaluation of the Sacramento Ethanol and Power Cogeneration (SEPCO) Project. Also conducted Transmission Interconnection Study & Assessment for Alternative Project Locations for the aforementioned project. Ron was responsible for providing expert witness testimony and/ testifying on behalf of SMUD at CEC Hearings for SEPCO.
- **Deregulation.** Provided a technical determination of facilities which should be included as part of the PX Grid. Developed SMUD Criteria for determining transmission facilities for which an ISO must have physical control.

- **Operations System Studies (OSS/OSCTG).** Conducted 1994 Spring & Summer Post-Transient Nomogram Studies for the California-Oregon Border Operations Study Coordination Group (OSCTG). Conducted COI & PDCI Nomogram studies for 1995 summer, 1996 summer. Authored the OSS Handbook reference.
- **SMUD Transmission Project Evaluation.** Responsible of the development of the SMUD Ten-Year 230/115 kV Transmission Plan with Provision for SP Shops & Richards Boulevard Development Plans. Also conducted Central California-Desert Southwest (CCDS) 500 kV Transmission Project Transient Stability Study for Transmission Agency of Northern California (TANC).
- **WSCC Committees.** Served as Chairman on July 2 and August 10 Disturbance Validation Work Group. Member of the Operating Capability Study Group (OCSG) from 1996 through 1997. Served as Vice-Chairman of the WSCC Pacific And Southwest Transfer (PAST) Coordination Subcommittee from 1992 through 1994. Member of the System Review Work Group (SRWG) Representation and Implementation Subgroups from 1995 through 1997.
- **Hardware/Software/Web Support.** Served as Systems & Network Administrator for SMUD Transmission Planning / Energy Operations RISC System/6000 AIX Computer Workstations & Networks.

## Los Angeles Department of Water & Power

1987-1990

- **Pacific and Southwest Transfer (PAST).** Served as a member on both the WSCC PAST Coordination Subcommittee and the Technical Studies Work Group. Responsible for the 1990 Summer Nomogram Study (PACI & PDCI), and the 1989 Winter PDCI Nomogram Study. Participated in all seasonal study activities between 1987 and 1990.
- **Mead-Adelanto 500 kV Transmission Project.** Worked closely with Salt River Project (SRP) to evaluate the technical feasibility of the Westwing-Mead-Adelanto 500 kV transmission project. Technical assessment included transient stability studies to determine the optimal sizing of SVCs at both Adelanto and Marketplace substations.

## Power Systems Analysis Tools

- General Electric PSLF/PSDS - 18 Years
- WSCC Interactive Power Flow System (IPS) and WSCC Stability - 7 Years
- Power Technologies, Inc. PSS/E - 3 Years

## Relevant Course Work & Training

- PI-Systems Training - OSI Software, Inc., 1999
- Electronic Data Management Systems - Documentum, 1998
- Mechanics of Using EPCL (PSLF Version 10.1) - General Electric, 1998
- Power Transmission: Access, Pricing & Policy - Infocast, 1996
- Machine Parameter Measurements for Improved Modeling - Power Technologies, Inc., 1994
- Mechanics of Running PSLF Dynamics - General Electric, 1992
- C-Language Computer Programming - Sacramento City College, 1992 Fall Semester
- AIX & RISC System/6000 Systems Administration - IBM, 1991
- Static Compensators in Electric Utilities & Large Industries - University of Wisconsin, 1991
- Voltage Control & Reactive Power - Power Technologies, Inc., 1990
- Power System Dynamics - Power Technologies, Inc., 1990
- Advanced PSS/E - Power Technologies, Inc., 1988

## **Extracurricular Activities**

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- California ISO Y2K Project Team
- California ISO Business Champions Team
- California ISO Volleyball Team
- California ISO Web Site Development
- Contributor to California ISO Newsletter
- Contributor to IBM Newsletter
- SMUD Employee Volunteer Program
- SMUD United Way Key Campaigner
- Team Leader, SMUD Safety Improvement Employee Action Team

## **Awards**

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- 4-Time Recipient of California ISO Spot-Bonus Award Program, 1999-2001
- Recipient of SMUD District Excellence Award, 1997
- Life-Time Member Tau Beta Pi
- Member Golden Key Honor Society

# Clint Helton, RPA

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## Cultural Resources

### Education

M.A., Anthropology

B.A., Language and Literature

### Professional Registration

Registered Professional Archaeologist (1999, No. 11280)

### Distinguishing Qualifications

- Strong background in environmental impact evaluations, with particular expertise in conducting cultural resources studies in California, Colorado, Idaho, Nevada, Utah, and Wyoming
- Has 13 years of environmental management experience in the western U.S.
- Meets Secretary of Interior Professional Qualification Standards (36 CFR 61)
- Highly experienced managing cultural resources studies for large linear transportation and utility projects to meet requirements of National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), California Environmental Quality Act (CEQA), and standards of the California Energy Commission (CEC), and Federal Energy Regulatory Commission (FERC)

### Relevant Experience

Mr. Helton is an environmental consultant with more than 13 years of environmental management experience in the western United States. He has a strong background in environmental impact evaluations, having directed technical studies; negotiated with lead agencies, responsible agencies, and clients; and written, edited, and produced a substantial number of environmental review and technical documents. Mr. Helton has extensive experience of regulatory compliance, cultural and paleontological resources, NEPA and NHPA compliance activities, and federal regulations governing treatment of cultural resources, especially Section 106 of NHPA (36CFR800) and the Native American Graves Protection and Repatriation Act (NAGPRA) (43CFR10). Additionally, Mr. Helton is experienced with the challenges of preparing environmental documentation for large linear utility projects, including large interstate pipelines and is familiar with the process and guidelines of CEC and FERC among others. Mr. Helton has authored numerous environmental technical reports, cultural resources management plans, cultural resources studies, Programmatic Agreements, and Memorandums of Understanding (MOU) and contributed to many NEPA and CEQA documents for a variety of private and public sector clients.

Clint Helton, RPA

## Representative Projects

**Turlock Irrigation District Almond 2 Power Plant, Ceres, California.** Task Lead and overall management of cultural resources studies for the construction of a simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

**Carlsbad Energy Center Project, Carlsbad, California.** Task Lead and overall management of cultural resources studies for the construction of a combined-cycle facility consisting of two natural-gas-fired turbines, heat recovery steam generators, steam turbine generators, and associated equipment. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

**GWF Energy Tracy Combined Cycle Conversion Project, San Joaquin County, California.** Task Lead and overall management of cultural resources studies for this conversion of an existing peaking plant to a combined-cycle baseload facility in San Joaquin County, California. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

**BrightSource Energy, Ivanpah Solar Electric Generating System Project, San Bernardino County, California.** Assisted with preparation of Application For Certification for California Energy Commission in support of a large proposed solar power generation facility covering over 4,000 acres of land managed by Bureau of Land Management in San Bernardino County, California. Responsible for preparation of cultural resources component of project, including archival research, field surveys, report preparation, and conducting Native American consultation.

**Terra-Gen LLC Alta Wind Project, Kern County, California.** Task Lead, quality control manager, and overall management of cultural resources studies for this 5,000-acre-plus alternative energy development project near the City of Tehachapi, Kern County, California. Provide regulatory guidance, regional technical expertise in cultural resources and coordination with Kern County. Supervised inventory for cultural resources, technical report preparation, and conducted Native American Consultation.

**Iberdrola Renewables, Multiple Solar Energy Development Projects, Arizona, California, New Mexico, Nevada.** Led preparation of cultural resources assessments for solar power generation facilities in Arizona, New Mexico, Nevada, and California. Mr. Helton is acting as principal investigator for several critical issues analyses as well as full permit preparation of solar energy development projects in Arizona, California, Nevada, and New Mexico. Project acreages range from 5,800 acres to 35,000 acres.

**PPM Energy, Solar Energy Development, Arizona, Nevada, California.** Cultural resources assessments for solar power generation facilities in Arizona, Nevada, and California. Mr. Helton is acting as principal investigator for literature searches and field visits for several proposed solar energy projects in Arizona, California, and Nevada. Project acreages range from 2,000 acres to 25,000 acres.

**Edison Mission Energy, Walnut Creek Energy Park Power Plant, California.** Assisted with preparation of Application for Certification for California Energy Commission in support of this

proposed 500-MW power generation facility in Los Angeles County, California. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

**Edison Mission Energy, Sun Valley Energy Center Power Plant, California.** Assisted with preparation of Application for Certification for California Energy Commission in support of this proposed 500-MW power generation facility in San Bernardino County, California. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

**Chula Vista Energy Upgrade Project, MMC Energy, San Diego County, California.** Task Lead and overall management of cultural resources studies for this 100-MW power plant upgrade project in San Diego County, California. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

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# Jeffrey D. Hologa, PE

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## Project Engineer

### Education

B.S., Nuclear Engineering, Texas A & M University, 1976

### Professional Registrations

Professional Mechanical Engineer: California (2009, No. 34791), Texas (2001, No. 89679), Louisiana (1990, No. 25481, inactive), and North Carolina (1985, No. 12592, inactive)

### Distinguishing Qualifications

- Registered Professional Engineer
- Thirty-four (34) years of experience with Power Generation and Building Construction Projects
- Supervision of Engineering staff during engineering, procurement, design and construction
- Experience includes onsite support during field activities for construction, start-up, testing and operation of power plant facilities
- Technical Resource Planning, Development and Management
- Experienced in Project Planning and Scheduling
- Experienced in Project Risk Assessment
- Experienced in identifying and addressing Value Engineering considerations

### Relevant Experience

Have been the lead for and directed the engineering resources in support of multimillion dollar energy and development projects including both green field and brown field opportunities. Have experience in project management of the engineering resources required in support of projects making use of a variety of fuels including biomass, natural gas, coal and nuclear.

Motivated, results oriented Registered Professional Engineer with over thirty-three years of experience encompassing leading and directing success driven staff. Have been responsible to represent the owner, as the owner's engineer, in design and construction related development projects including direct interface and control of architectural and engineering staffs. Have been in direct interface with both permitting organizations and construction staff and been involved in the marketing of new projects as well as establishing staff work assignments.

Jeffrey D. Hologa, PE

## Representative Projects

### Project Management Background and Experience

**Project Engineer; Almond 2 Power Plant; Turlock Irrigation District; Turlock, California; 2009 - 2010.** As the project engineer for the project, I am responsible for all design engineering scope of supply for three LMS6000 PG Simple Cycle Gas Turbines supporting the peaking requirements for the Turlock Irrigation District in Northern California. The project will use the first three GE designed PG gas turbine units with a total production of 174 MW (58 MW each).

**Assistant Project Manager; Punta Rincon Coal-Fired Power Plant Project; Panama; 2008.** As the assistant project manager I am responsible for the preparation of the EPC RFP package, as the owner's engineer, making use of performance based system design specifications. The project will consist of two 150MW pulverized coal boilers feeding a single turbine making use of Columbian coal, seawater Flue Gas Desulphurization (FGD), and once through seawater condenser cooling.

**Project Engineer; Gold River Power Plant; Vancouver Island, British Columbia; 2008.** As the project engineer (PE) for the project, I was responsible for the day to day direction and control of a third party design engineering organization in support of pre-LNTP (Limited Notice to Proceed) activities for a 90MW biomass fired electric power facility. As the PE, I directed the scope, layout, and cost estimating effort associated with the design of a processing facility to convert municipal solid waste (MSW) into refuse derived fuel (RDF) in support of the proposed facility. Additionally, I directed the activities associated with the expenditure of ~\$250K to evaluate the steam cycle design, boiler house structural design/assessment and to establish the general LNTP scope of activities. The project is currently being progressed by the owner to confirm a reliable source of fuel as well as to renegotiate the power purchase agreement. It is anticipated that a full LNTP will be released in the 4th quarter of 2008.

**Project Manager; Niland Peaker Generating Station; Imperial Irrigation District; El Centro, California; 2007 - 2008.** As the project manager for the project, I was responsible for all design engineering scope of supply for two LM6000 Simple Cycle Gas Turbines supporting the peaking requirements for the Imperial Irrigation District in Southern California. The project was developed and designed both on schedule and within the designated engineering budget.

**Project Manager; Otay Mesa Biomass Generating Unit; Confidential Client; San Diego, California; 2007 - 2008.** As the project manager for the project development, was responsible for all engineering scoping and evaluating efforts associated with a 23MW biomass facility near San Diego, California. For the project, I was responsible for the coordination of engineering resources in initial heat balance evaluations, completely revamping the system configuration to make the best use of available heat while at the same time reducing the expected initial capital expenditure for equipment. At the same time, was responsible for the mechanical and electrical system design and specification writing for initial estimating for the project and project client.

**Project Manager/Project Director Delegate; Horizon City Development; Lend Lease Communities; Aurora, Colorado; 2006 to 2007.** As the Project Manager/Project Director Delegate, was responsible for all aspects of a 497 acre greenfield development in the City of Aurora, coordinating with Architectural and Engineering resources and market study resources to secure the necessary infrastructure design as well as market based data. I served as the primary interface with the City of Aurora and other supporting agencies for the implementation as well as the marketing of the subject development. Developed and maintained the economic



Proforma to reflect the changing economic environment and financial go-no-go assumptions. The infrastructure and marketing materials had been tailored to support the development of 3740 residences, 1.8M square feet of Retail development and 3.0M square feet of Commercial development.

**Construction Project Manager; Las Palmas & Roosevelt Elementary School Demolition and Replacement; Edgewood Independent School District; San Antonio, Texas; 2002 - 2006.** As the Construction Project Manager, I was responsible for all aspects pertaining to the demolition of existing school facilities to ensure a readiness for replacement with new state of the art elementary school buildings. Each of the two schools was ~72,000sq.ft in size, with a combined cost of ~\$21M. Each included designs incorporating common design elements though completely different floor plans. Overall scope of responsibilities included selection of Architectural/Engineering teams, construction bidding and construction oversight, and well as turnover to the owner. Responsibilities included the scoping and layout of new furniture and computer equipment as well as the coordination of installation and initial occupancy.

**Construction Project Manager; Edgewood Fine Arts Academy Auditorium; Edgewood Independent School District; San Antonio, Texas; 2002 -2006.** As the Construction Project Manager, I was responsible for all aspects relating to the shutdown, litigation, and subsequent reconstruction of a 1500 seat auditorium that was built and in service for only one year before closing due to significant construction mismanagement in 2000 when the building was initially constructed. After substantiating a litigation award essentially equal to the initial construction value, I was responsible to secure the design and construction resources necessary to correct and reconstruct the building envelope, a project valued at ~\$6M.

**Energy Studio Manager; Dallas - Fort Worth International Airport; DFW Regional Development Agency; Dallas, Texas; 2000 - 2002.** As the Energy Studio Manager, I had assignment and oversight responsibilities for a staff of engineers and designers in support of a complete change-out and expansion of the boiler and chiller systems for the DFW Airport terminals. With the advent of Terminal D and the necessary replacement of aging equipment, the designs included complete boiler and chiller replacements as well as the associated steam piping upgrades and additions. The design eventually included the addition of a chilled water thermal storage tank as well.

#### Relevant Nuclear Power Plant Experience

**Project Engineer; Condenser Cooling Water Concept Development Study for the Emirates Nuclear Energy Corporation; 2008 - 2009.** As the Project Engineer for the study, I was responsible for the lead and direction of a team of engineering staff in the alternative development and potential risk and permitting assessment of condenser cooling water alternatives available for the siting of multiple nuclear power plant units at a single coastal location. The assessment included a determination of water requirements, a detailed development of technical options possible for cooling and identifying possible permitting limitations associated with the various options.

**Mechanical and Civil Design Engineering Manager; Crystal River Power Facility; Florida Power Corporation; Crystal River, Florida; 1998 - 2000.** As the Mechanical and Civil Design Engineering Manager, I was responsible for the long term and short term engineering support of the operating Nuclear Power Plant. I was hired on with the company to be personally involved in the development and accomplishment of extremely aggressive departmental goals

## Jeffrey D. Hologa, PE

for a turn around engineering organization committed to significant upgrades to the power plant facilities resulting from a long period mandated shutdown of the facility by the Nuclear Regulatory Commission. I was responsible for the technical and administrative oversight of personnel and personnel assignments including both permanent staff members and contract staff in support of mechanical and civil engineering expertise for the operating facility. During this period of time, significant power plant system upgrades were performed to both primary and secondary systems consistent with the facility restart requirements.

**Technical Coordinator; Waterford 3 Nuclear Plant; Entergy Operations, Inc.; New Orleans, Louisiana; 1996 - 1998.** At Waterford 3, as the Technical Coordinator, I was responsible for the engineering support of a \$2 Million conversion for the Waterford 3 Technical Specifications to the New Improved Technical Specifications.

Previously was responsible for a \$16.1 Million Power Uprate Project for the Waterford 3 Nuclear Plant. Daily involvement included the direction and coordination of engineering resources both internal to the organization as well as the NSSS supplier and the original design engineering organization. During this period, I was responsible for all aspects of the technical reviews that were performed and the licensing changes that were required for the implementation of an eight percent Power Uprate Project.

**Mechanical and Civil Design Engineering Manager; Waterford 3 Nuclear Plant; Entergy Operations, Inc.; New Orleans, Louisiana; 1989 - 1996.** At Waterford 3, I was promoted to the role of Mechanical & Civil Design Engineering Manager while at the same time maintaining the responsibility for the Design Basis Development Group noted below. In this responsibility, I continued the development of an engineering organization to provide full service engineering expertise to the operating nuclear power plant facility, independent to the original engineering designers. The design engineering organization provided both daily support to the power plant facility as well as provided design changes and improvements to the facility to address ongoing requirements for operation.

While serving as the Mechanical and Civil Design Engineering Manager, I was temporarily assigned to the Operations Department as part of a Management Certification Program for power plant operation. I was included in an intensive six month operator training class equivalent to normal operator training but without the Nuclear Regulatory Commission Operating License Testing. Training included a detailed understanding of all operating systems, including multiple hours of simulator training in both normal and off-normal operating events. This training also included two weeks on shift with the operating nuclear staff actively performing supervised operator actions, both in the plant and in the control room with no less than one full day spent with each of the eight nuclear operating staff positions.

**Project Engineer; Waterford 3 Nuclear Plant; Entergy Operations, Inc.; New Orleans, Louisiana; 1988 - 1989.** At Waterford 3, my initial responsibility was the development and establishment of the design basis for the operating facility. The utility had made a decision to bring an end to the use of the original design engineering organization and was developing the engineering expertise and talent internal to the organization to assume these responsibilities. My role involved the creation of a group of engineers and designers to prepare and document the original design basis for the facility and accomplish the turnover of design basis documents from the original Architect/Engineer and the original NSSS provider.

**Project Engineer; Brunswick Nuclear Power Plant, Robinson Nuclear Power Plant, Harris Nuclear Power Plant; Progress Energy (was Carolina Power & Light); Raleigh, North Carolina; 1983 - 1988.** At Progress Energy, I was responsible for a mechanical systems engineering group providing support to each of the nuclear facilities within the utility. As a part of the corporate Nuclear Engineering & Licensing Department, I was responsible for the design of modifications and associated licensing changes for each of the operating facilities. Example projects included the complete replacement of the service water piping and retubing of the condenser at the Brunswick Nuclear Plant to address material issues associated with seawater cooling. As the Harris Nuclear Plant was nearing start-up, I was part of the engineering team providing an engineering oversight role of the original architect/engineer design and work product for the power plant. I was also involved and supported the initial start-up activities for the facility which included system troubleshooting and problem resolution.

**Senior Engineer; Comanche Peak Steam Electric Station for Texas Utilities; Brown & Root, Inc.; Glen Rose, Texas; 1981 - 1983.** As Senior Engineer with Brown & Root, I was assigned to the project construction site for the Comanche Peak Nuclear Plant providing engineering support and oversight during construction of this facility. I served as the initial point of contact to address field issues/problems experienced during construction with direct interface with the design engineering organizations both on and off-site for technical resolution of design and system start-up problems.

**Senior Engineer; South Texas Nuclear Project for Houston Power & Light; Brown & Root, Inc.; Houston, Texas; 1976 - 1981.** As Senior Engineer with Brown & Root, I was responsible for mechanical system design and supervision of engineers and designers for mechanical system design for the South Texas Nuclear Project. Scope of work included both primary and secondary systems, component selection, piping layouts, and interference resolution of mechanical systems. I was also involved in the direct interface, control, and supervision of engineers involved in pipe stress analysis and pipe support design for all piping systems for the facility.

# Aarty Joshi

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## Land Use

### Education

M.Sc.Pl., Planning, University of Toronto, Canada, 2000

B.Sc.Env., Environmental Science, University of Guelph, Canada, 1998

### Professional Registrations

Member, American Planning Association (APA)

Certified Planner, American Institute of Certified Planners, 2005 (Registration No. 159391)

### Distinguishing Qualifications

- More than ten years of experience performing and managing land use evaluations, environmental permitting, and public involvement programs in the industrial, commercial/municipal, pipeline, transportation and infrastructure sectors
- Extensive experience in environmental permitting for energy sector projects
- Experience in urban planning and industrial development

### Relevant Experience

Ms. Joshi is a certified planner and project manager in CH2M HILL's Oakland, California office. With more than ten years of experience, she specializes in land use evaluations, environmental permitting, and provision of support for public participation programs for Environmental Impact Reports (EIRs), Environmental Impact Statements (EISs), and Environmental Assessments (EA)s for proposed industrial plants, commercial/municipal facilities, pipelines, and transportation and infrastructure projects. She frequently serves as project manager or deputy project manager on her projects.

### Representative Projects

**Almond Two Power Plant, Turlock Irrigation District; Ceres, California (ongoing).** Prepared the land use analysis of a power plant for California Energy Commission (CEC) Application for Certification (AFC). Analyzed land use impacts, prepared the draft chapter, and responded to comments and questions from the CEC.

**Confidential Wind Power Project; Confidential Client; Kern County, California (ongoing).** For a confidential client, Ms. Joshi is overseeing the licensing, environmental permitting, and California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) processes for a 300-megawatt (MW) wind power project in the Tehachapi Wind Resource Area. The project is situated on privately-owned land under the jurisdiction of Kern County and federally-owned land under the jurisdiction of the U.S. Bureau of Land Management (BLM). Development of the wind power project requires development and submittal of a Plan of Development to the BLM, and an Application for Rezoning and Conditional Use Permit from

## Aarty Joshi

Kern County. The work entails conducting biological and cultural surveys, evaluating potential project impacts, and identifying mitigation measures through consultations with the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS). The project also requires close coordination with Kern County and BLM to identify appropriate levels of evaluation for other resource areas including air, noise, visual, paleontology, and geology. Ms. Joshi participates in weekly progress meetings with the client, coordinates extensively with the client and project team, and assists in daily management activities.

Deputy Project Manager; California High Wind Energy Projects (CHiPS) Infill EIR Addendum; Terra-Gen Power, LLC; Kern County, California. Ms. Joshi was responsible for managing the Addendum to the Environmental Impact Report for the Alta-Oak Creek Mojave Project. The purpose of the addendum was to evaluate the potential impacts of a Lot Line Adjustment, the relocation and conservation of Bakersfield cactus, and the construction of three additional turbines in a small area of desert tortoise habitat. The CHiPs Infill wind energy development consists of 42 WTGs, generating up to 65 MW of electricity, on approximately 1,420 acres of land, for a nominal output of up to 65 MW.

### **Confidential Wind Power Project; Confidential Client; Kern County, California (ongoing).**

For a confidential client, Ms. Joshi is managing acquisition of environmental permits for a 400-megawatt (MW) wind power project in the Tehachapi Wind Resource Area. The project is situated on privately-owned land under the jurisdiction of Kern County. Project activities include biological fieldwork and development of permit application materials in support of an Incidental Take permit, per Section 2081 of the California Endangered Species Act for the desert tortoise and Bakersfield Cactus; Streambed Alteration Agreement, per Section 1600 of the California Fish and Game code; and Waste Discharge Requirements from the Regional Water Quality Control Board.

### **250-MW Solar Program; Pacific Gas and Electric Company, various locations, California (ongoing).**

Deputy Project Manager for PG&E's 250-MW solar program involving siting of solar energy projects up to 20 MW throughout California. Ms. Joshi oversaw development of a GIS model that evaluated more than 2 million parcels for suitability for solar development. Based on the results of the GIS modeling program, Ms. Joshi is currently assisting PG&E with preparation of site-specific critical issues analyses that address aesthetic, agricultural, land use, biological, and cultural resources, as well as regulatory permit constraints. Ms. Joshi participates in weekly progress meetings with PG&E, coordinates extensively with the client team, assists in daily management activities, and maintains the secure, Web-based SharePoint communications site used by the client and the project team.

### **WaveConnect Projects; Pacific Gas and Electric Company; Eureka, California (ongoing).**

Deputy Project manager for a 5-MW hydrokinetic pilot project located offshore of Eureka, Humboldt County, California. Ms. Joshi is assisting with preparation of a Hydrokinetic Pilot Project License Application before the Federal Energy Regulatory Commission (FERC) for this project, one of the first proposed to convert the ocean's energy to electrical power in the world. Ms. Joshi authored several sections of the Hydrokinetic Pilot Project License Application, including the Land Use and Recreation sections, as well as the Coastal Zone Consistency Analysis. Ms. Joshi participates in weekly progress meetings with PG&E, coordinates with the client and project team, and assists in daily management activities.

**Water Quality Support Services, California Department of Transportation (Caltrans) District 4, Oakland, California, (ongoing).** Provides support to Caltrans' Office of Water Quality and Mitigation in general project management and project tracking activities. Develops Section 401 applications in accordance with the Clean Water Act for Caltrans projects, and provides general support to aid Caltrans in obtaining Section 401 Water Quality Certifications.

**Application for Lease Amendment; Cabrillo Power I; NRG Energy; Carlsbad, CA (November 2008 -February 2009).** Prepared application for lease amendment to California State Lands Commission for inclusion of a proposed ocean-water purification system.

# Thomas A. Lae, PG

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## Geologic Hazards and Resources

### Education

Bachelor of Science – Geology. California State University, Fullerton

### Professional Registrations

State of California Professional Geologist, License No. 7099

### Relevant Experience

Mr. Lae has more than 19 years of experience in environmental geology and project management and is a California Professional Geologist. Mr. Lae serves as a project or task manager on numerous projects for a variety of private, federal and municipal clients and has an extensive background in environmental field investigations. Projects include: Section preparer for over 20 power plant licensing projects: Superfund site investigation oversight: remedial investigations/feasibility studies: underground storage tank/oil water separator closures: landfill groundwater monitoring: phase II environmental assessments: among others.

### Representative Projects

**Electrical Power Plant Application for Certification section preparer.** Mr. Lae has prepared Geologic Hazards and Resources sections for 23 AFCs. These include the Almond 2 Power Plant (Turlock Irrigation District), East Altamont Energy Center (Calpine), Central Valley Energy Center (Calpine), Los Esteros Energy Center (Calpine), Cosumnes Power Plant (SMUD), Woodland II (Modesto Irrigation District), Modesto Electric Generation Station (Modesto Irrigation District), Walnut Energy Center (Turlock Irrigation District), San Francisco Electrical Reliability Project (San Francisco Public Utilities Commission), Highgrove (AES Pacific), Walnut Creek Energy Project (Edison Mission Energy), Sun Valley Energy Project (Edison Mission Energy), Eastshore Energy Project (Tierra), South Bay Energy Facility (Duke), Chevron Richmond Power Plant Replacement Project SPPE, Ivanpah Solar Electric Generating System (Bright Source Energy), Carlsbad Energy Center Project (NRG), Tracy Power Plant (GWF), Vacaville Energy Center (Competitive Power Ventures), Fontana Energy Center (Calpine) Lodi Energy Center (NCPA), Oakley Generating Station (Radback), and Mariposa Energy Center (Diamond Generating Corp). Mr. Lae is well versed in the assessment of geologic resources and hazards relating to CEQA and NEPA requirements.

**California Energy Commission Hazardous Waste Remediation Oversight.** A part of the PG&E's Gateway Generating Station (Antioch, CA) and Colusa Generation Station (Colusa, CA) construction, Mr. Lae served as the project's on-call Professional Geologist. His duties included the coordination of sampling, characterization, and remediation of hazardous waste materials (including asbestos, PCBs, and TPH) encountered during plant excavation activities. Mr. Lae provided a summary report upon completion of remedial activities for submittal to the CEC.

## Thomas A. Lae, PG

**Superfund Site Investigation and Oversight.** CH2M HILL provides support to the USEPA for a number of task orders, with Mr. Lae serving as project manager. At a former gold mine site in Nevada City impacted by past mining operations, three task orders include the O&M of a remedial action, conducting pilot treatment plant testing, and preparing a feasibility study. At a rocket engine test facility impacted by solvent, fuel, propellant, and metals contamination, two oversight task orders involve the review and comment of reports, white papers, technical memoranda, and studies that are submitted for regulatory review.

**Union Pacific Railroad.** Mr. Lae serves as the project manager for two active UPRR projects that include: a groundwater and soil TPH investigation at a former UST site (Donner Summit UST); and an arsenic in soil assessment at a Right of Way (Clyde, CA). Mr. Lae successfully received regulatory closure at two sites - including a TPH in soil site at Right of Way (Chico, CA), and nitrogen contamination in onsite soils (Willows, CA).

**Remedial Investigation.** For AFCEE, Mr. Lae serves as the project manager for the RI of the Beale AFB Clinic site. This site has been impacted by past release of TPH- and VOC-related contaminants. This project includes the removal of two 8,000-gallon diesel USTs as well as drilling, sampling, and well construction for contaminant delineation. The site lies between two former ranges and the presence of UXO is a possibility.

**Groundwater Monitoring.** For the City of Roseville, CA, Mr. Lae serves as the supervising geologist for the Annual and Semi-Annual groundwater reports for the former sanitary landfill. Duties included planning sampling events, evaluation of laboratory data, preparation of graphics and tabular data, and report writing. Mr. Lae also supports landfill gas studies at the site.

**Groundwater Study/Well Decommissioning.** Mr. Lae served as the project manager for TO 467 at Beale AFB. This project involved the installation of groundwater monitoring wells and the collection of groundwater samples to assess the effects of potential impact to the underlying groundwater from a retention pond that receives treated waste water. In addition, this project required the destruction of several former water/agricultural supply wells at the base per County and State destruction protocol.

**Soil Vapor Extraction System Termination.** Mr. Lae served as the project manager for the IC27 STOP project at the former McClellan AFB. This project involved the collection of soil gas samples and the preparation of report documentation to support the SVE system termination (closure). The project successfully met regulatory criteria and system termination was granted. The project also required the decommissioning of the system wells and conveyance pipelines.

**Superfund Site Investigations.** Mr. Lae served as a project (site) manager for the Cooper Drum superfund site, located in Southgate, CA. This project involved the evaluation and remedial investigation of soil and groundwater contamination from past releases at a drum recycling center.

**Oil/Water Separator Closure Investigation.** Mr. Lae served as the project manager for three projects at Beale AFB in the evaluation for regulatory closure of 25 former oil/water separators across Beale. The project included the assessment of environmental impacts to underlying soil and groundwater from past releases and preparing closure documentation. Mr. Lae has successfully received closure of 23 OWSs. Two OWSs are undergoing biovent remediation prior to closure.



**UST and Oil Water Separator Investigation.** Mr. Lae served as the project manager for three U.S. Navy project sites at Rough and Ready Island, Stockton, CA. These projects involved the evaluation of soil and groundwater contamination at sites with underground storage tanks or oil water separators. Soil and groundwater samples were collected and analyzed to determine the presence or absence of contamination. Each of the three sites was successfully evaluated and a determination of "No Further Assessment" was received by the RWQCB.

**Phase II Environmental Assessment.** As a project manager, Mr. Lae conducted a Phase II environmental assessment for the City of Roseville at a former tire fire site with lead contamination. Duties included the work plan preparation, conducting field work, data review and report preparation.

**Remedial Investigations.** Mr. Lae served as a task manager/team member for several on-going investigations at both Beale AFB and former McClellan AFB, CA. Duties included site supervision of both junior and subcontractor staff, site management, and report writing. Report writing duties included review of field and laboratory data; determining nature and extent of contamination; developing graphic aids to illustrate contaminant distributions; identifying data gaps; presenting findings to upper management and clients; creating field sampling plans; and performing third-party document review, among other tasks.

**Phase 3 Removal Action, Castle Airport, Merced, CA.** Field supervisor of three crews during installation of 18 injection, extraction, and monitoring wells drilled with air rotary casing hammer and mud rotary drilling methods. Duties included preparing schedules, implementing overall project field sampling plans, supervising field staff, reviewing boring logs, overseeing subcontractors, assuring quality compliance of staff and subcontractors, designing wells, interpreting downhole geophysical logs, conducting well development, serving as laboratory and client project contact, compiling daily and monthly status reports, and tracking budgets.

**Groundwater Well Installation, Castle Airport, Merced, CA.** Field supervisor for installation of deep groundwater wells to monitor removal action at Castle Airport. The monitoring wells were drilled using mud-rotary drilling equipment, and designs were based on downhole geophysical surveys. Duties included overseeing subcontractor, logging subsurface geologic data, collecting and interpreting in-situ groundwater samples, interpreting geophysical surveys, and designing and developing wells.

**Field Work, McClellan AFB and Castle AFB, CA.** As staff geologist, duties included providing site reconnaissance and placement of boring/sampling locations; supervising subcontractors; enforcing project quality assurance plan; logging lithologic samples; collecting soil, soil gas, and groundwater samples; ensuring health and safety plan compliance of subcontractors; training new field staff on established protocols; generating daily progress reports; tracking waste containers; assisting in the placement, design, and construction of soil vapor extraction, nested soil vapor monitoring, and groundwater extraction wells; conducting subsequent step, drawdown, and long-term pumping well tests for groundwater wells; and performing SVE tests.

**Project Geology Tasks, Various Clients and Locations.** Conducted Phase I and Phase II environmental assessments and remedial investigations. Duties included regulatory agency contact, site reconnaissance, historical aerial photograph and map review, report preparation, development of Phase II work plans, preparation of health and safety plans, work plan

## Thomas A. Lae, PG

implementation, data collection and interpretation, and final report preparation. Also provided groundwater well design and installation, including placement of bore locations, soil sampling, logging of drill cuttings, monitor well casing design, groundwater sample collection, conducting slug tests, and report preparation. Provided construction observation of municipal-supply wells for numerous cities and agencies throughout Orange County. Duties included oversight of subcontractors, lithologic collection and description, sieve analyses, geophysical log interpretation, assistance with casing design, well development, test-pump and data collection and interpretation, and report preparations. Performed underground storage tank assessments/removals, including subcontractor coordination, initiating permit acquisitions, soil sampling, and report preparations.

# Brian LaFollette

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## Education

B.S., Electrical Engineering, California Polytechnic State University, San Luis Obispo

## Professional Registrations

Registered California Professional Engineer - Electrical #E 13067

## Relevant Experience

As a utility engineer in the Transmission and Distribution area for 25 years Brian LaFollette has a broad range of experience including modeling and design of T&D lines, project management, protection and service reliability, circuit and area capability studies, power quality, customer claims evaluation and forensic engineering, EMF assessment and modeling, and provision of technical support to operators, field personnel and others.

For more than 20 years, Mr. LaFollette has also held an engineering/manager position with oversight, training, and technical responsibility for professional and para-professional engineering personnel. Mr. LaFollette participated in the development of the Transmission System Engineering (TSE) and Transmission Line Safety and Nuisance (TLSN) sections of the AFC's for both TID's Walnut Energy Center and the Almond 2 Power Plant.

Currently, Mr. LaFollette is serving as the interim Assistant General Manager for TID's Power Supply Administration, responsible for the maintenance and operation of all of TID's power generation resources, including hydro, small hydro, wind, fuel cell, and thermal, as well as day-ahead and hourly trading and scheduling of power.

## Representative Projects

**Task Lead; Ivanpah Solar Electric Generating System; BrightSource Energy; San Bernardino County, California; 2007 to Present.** Traffic and transportation task lead for analysis of a solar energy project in the Mojave Desert, near the California/Nevada border. Prepared the traffic and transportation analysis section of the Application for Certification. The analysis focused on construction impacts to traffic operations, including construction workers, truck trips, and transport of hazardous materials. Assessed freeway, ramp, and local streets impacts.

- **Expert Witness and Person Most Knowledgeable** - in a recent case against TID involving residential fire and dispute between utilities as to cause and responsibility. Provided opinion and testimony in depositions and at trial.
- **WEC and A2PP** - Participation in the preparation of the transmission line sections of AFC's for TID's Walnut Energy Center (2003) and the current Almond 2 Power Plant project.
- **Pioneer 115 - kV Line** - (Project Manager & Design) Prepared, reviewed, and supervised the preparation of design drawings and material specifications for construction of a double-

## Brian LaFollette

circuit 115 – kV intertie between Turlock Irrigation District and Merced Irrigation District, and including environmental compliance (including electric and magnetic fields assessment), rights of way acquisition, application and compliance with multiple agencies regulating the Merced River crossing.

- **Westley – Tracy 230-kV Transmission Line – (Supervision)** Reviewed, supervised, and provided technical support to staff managing this 30-mile 230kV transmission project from Western’s Tracy Substation to the new Turlock Irrigation District and Modesto Irrigation District Westley Substation.
- **Tuolumne – Pioneer 115 – kV Transmission Line – (Supervision)** Performed preliminary assessment, reviewed, supervised, and provided technical support to staff managing this 16.4-mile 115kV transmission project from TID’s Tuolumne Substation to the northern terminus of the Pioneer 115kV line.
- **Hilmar – Walnut 115-kV Transmission Project – (Supervision)** Performed preliminary assessment, reviewed, supervised, and provided technical support to staff managing this 8-mile 115kV transmission project from TID’s Hilmar Substation to the northern Terminus of the Pioneer 115kV line.

# Catherine Lambert

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## Water Resources

### Education

M.C.R.P., Master of City and Regional Planning, Environmental Planning Emphasis  
B.A., Physical Geography, Certificate in Resource Planning

### Distinguishing Qualifications

- Knowledge of CEQA, NEPA, and related environmental regulations
- Knowledge of water quality regulations and permitting
- Extensive experience writing environmental impact analyses and regional conservation planning documents

### Relevant Experience

Ms. Lambert specializes in water resource, land use, and regional conservation planning. Her skills include technical writing, plan development, policy analysis, geographic information systems (GIS), and public involvement coordination.

### Representative Projects

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California.** Authored the water resources section for the A2PP AFC. The project consisted of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts.

**Contra Costa Generating Station (CCGS) Application for Certification (AFC); Radback Energy, Inc.; Oakley, California.** Authored the water resources section for the CCGS AFC. The project consisted of a natural gas-fired, combined-cycle electrical generating facility rated at a nominal generating capacity of 624 megawatts.

**Lodi Energy Center (LEC) Application for Certification; Northern California Power Agency; Lodi, California.** Authored the water resources section for the LEC AFC and contributed to the preparation of the application for an Underground Injection Control Permit. The project consisted of a natural gas-fired, combined-cycle nominal 255-megawatt power generation facility.

**Carlsbad Energy Center Project (CECP) Proposed Project Enhancements and Refinements (PEAR) to the AFC; NRG Energy, Inc.; Carlsbad, California.** Contributed author of the water resources section for the CECP PEAR to be submitted to the CEC. The CECP proposed to use desalinated ocean water for process, evaporative cooling water, miscellaneous plant uses, and onsite irrigation.

## Catherine Lambert

**CalEnergy Black Rock Units 1-3 Project Drainage, Erosion, and Sediment Control Plan (DESCP) and Record of Waste Discharge (ROWD); CE Obsidian Energy, LLC; Imperial County, California.** Authored a DESCP and ROWD to support the Amendment Petition for the Amended Salton Sea Unit 6 Project, submitted to the CEC in February 2009. The project consisted of three 53 MW net geothermal electric power plants located southeast of the Salton Sea.

**Colusa Generating Station Drainage, Erosion, and Sediment Control Plan (DESCP); PG&E; Colusa County, California.** Authored a DESCP for submittal to the CEC to support PG&E's AFC for the Colusa Generating Station.

**GWF Hanford Project Drainage, Erosion, and Sediment Control Plan (DESCP); GWF Energy LLC; Kings County, California.** Authored a DESCP for submittal to the CEC to support a license amendment application for the Hanford Energy Park Peaker.

**GWF Henrietta Project Drainage, Erosion, and Sediment Control Plan (DESCP), GWF Energy LLC, Kings County, California.** Authored a DESCP for submittal to the CEC to support a license amendment application for the Henrietta Peaker Plant.

**Imperial Irrigation District Water Conservation and Transfer Project Habitat Conservation Plan/Natural Communities Conservation Plan Supplemental EIR/EIS, Imperial Irrigation District, California.** Contributed to preparing a draft Supplemental EIR/EIS for the HCP/NCCP, including writing the land use, geology and soils, and hazards and hazardous materials sections.

**Cordova Bulk Transmission Substation Project, Sacramento Municipal Utility District, Rancho Cordova, California.** Conducted regular inspections of the 6.5-acre site to assess erosion and sediment control measures, wind erosion control measures, tracking control measures, non-stormwater management, and materials and waste management activities and control measures. Inspection findings were documented and communicated to the Stormwater Pollution Prevention Manager and SMUD. Updated the project's Stormwater Pollution Prevention Plan Water Pollution Control Drawing as necessary.

**American River Bridge Site, Union Pacific Railroad (UPRR), Sacramento, California.** Conducted stormwater monitoring, including visual inspection of onsite Best Management Practices and water quality sampling. Inspection findings were documented and submitted to the Stormwater Pollution Prevention Manager. Updated the project's Stormwater Pollution Prevention Plan Water Pollution Control Drawing as necessary. Completed necessary e-Railsafe safety training.

# Sarah Madams

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## Project Description, Worker Health and Safety, Alternatives

### Education

B.S., Environmental Toxicology

### Relevant Experience

Ms. Madams has more than 12 years of professional experience including project management, regulatory compliance, permitting, public involvement/community relations, data collection and analysis, database management, compliance audits, document preparation, and technical writing. For the last 8 years, Ms. Madams is serving as the Project Manager for the Almond 2 Power Plant and the Lodi Energy Center.

Her expertise includes working with multidisciplinary teams to assess the environmental impacts of power plant projects on the environment. These assessments include impacts to air, biological and cultural resources, land uses, noise, socioeconomics, public health, water and visual resources, soils and geology, and paleontology.

### Representative Projects

**Almond 2 Power Plant, Stanislaus County, California.** Project Manager for the licensing of this 174-MW simple cycle power plant. Managed a multidisciplinary team of scientists, planners, and engineers in preparing and filing the license application. Coordinated efforts between CEC project management, local and state agencies and CH2M HILL staff. In addition to overseeing the preparation of the AFC, Ms. Madams prepared the Alternatives analysis, Project Description, Natural Gas Supply, Worker Health and Safety and Executive Summary sections.

**Lodi Energy Center, NCPA, San Joaquin County, California.** Project Manager for the licensing of this 255-MW combined cycle power plant. Managed a multidisciplinary team of scientists, planners, and engineers in preparing and filing the license application. Submitted FAA Form 7460s and notice criteria tools to FAA. Coordinated efforts between CEC project management, local and state agencies and CH2M HILL staff. In addition to overseeing the preparation of the AFC, Ms. Madams prepared the Alternatives analysis, Project Description, Natural Gas Supply, and the Executive Summary sections.

**Chula Vista Energy Upgrade Project, MMC Energy, San Diego County, California.** Deputy Project Manager for the AFC for a 100-MW power plant. Prepared and provided testimony on the waste management, alternatives, worker health & safety and hazardous waste sections of the AFC. In addition to overseeing the preparation of the AFC, Ms. Madams prepared the Alternatives analysis.

**Russell City Energy Center Amendment, Calpine, Alameda County, California.** Deputy Project Manager for the AFC for a 600-MW power plant. Prepared and provided written testimony for the waste management, alternatives, worker health & safety and hazardous waste sections of the AFC. Coordinated biological and cultural surveys of the project area. Submitted

## Sarah Madams

FAA Form 7460s and notice criteria tools to FAA. Addressed multidisciplinary issues received from state and local agencies. Attended public workshops and hearings.

**Application for Certification, Los Esteros Critical Energy Facility, Calpine C\*Power, San Jose, California. Project Coordinator for the AFC for a 180-MW power plant.** The project required the preparation of numerous other studies/documents to satisfy the CEC staff request. These studies/documents included the preparation of a General Plan amendment and planned development zoning applications, archaeological and paleontological survey reports, and biological resource protection permits. Ms. Madams assisted with the development and implementation of biological, cultural, and paleontological resource monitoring programs; risk management plan; and traffic and transportation management plan. The plant is currently in operation.

**Application for Certification, Walnut Energy Center, Turlock Irrigation District, California.** Project Coordinator for the AFC for a 250-MW combined cycle power plant. She reviewed applications, coordinated multidisciplinary data requests and responses, and coordinated efforts between CEC project management and CH2M HILL staff. Ms. Madams assisted with the development of the security plan and emergency response plan. The plant is currently in operation.

**Application for Certification, Salton Sea Unit 6 Geothermal Power Plant, Mid-American Energy Holding Company, Imperial County, California.** Project Coordinator for the licensing of the 185-MW geothermal power plant. The power plant design was based on the flash geothermal power plant process, which produces both solid and liquid byproducts that required disposal. The project site was in a rural area of Imperial County, but was adjacent to a National Wildlife Refuge that supports significant populations of avian species. The licensing process involved the review of all environmental areas, and specifically focused on waste disposal, air quality, hazardous materials handling, and biological resources. Ms. Madams was responsible for the development and tracking of data response submittals requested by the CEC. The project was successfully completed, with a license issued by the CEC.

**Various Power Plant Applications for Certification (AFCs).** Prepared or assisted on the Worker Health and Safety, Hazardous Materials, and Waste Management sections. In addition prepared Field Safety Instructions and Health and Safety Plans for the following power plant Applications for Certification:

- Ivanpah Solar Electric Generating Station
- Eastshore Energy Center
- Carlsbad Energy Center
- San Francisco Electric Reliability Project
- Walnut Creek Energy Park
- Sun Valley Energy Project



# Leslie V Mathine

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## Project Description

### Education

B.S., Civil Engineering, University of Nebraska, 1972

### Professional Registrations

Professional Engineer: Oregon, Arizona, Hawaii, California, Colorado, Nevada

### Relevant Experience

Mr. Mathine brings 35 years of engineering and project management experience in the power industry, providing engineering scope, schedule, and budget performance on complex power plant projects.

### Representative Projects

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California.** Project Manager for the A2PP AFC and detailed design for the power plant. The project consisted of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts.

**Chesterfield Unit 3-5 Scrubber Project, Dominion Energy, Virginia, Project Manager.** The project involves the installation of a wet scrubber system for Units 3, 4 and 5 at the Chesterfield Station. Dominion using a Siemens/Wheelabrator for a scrubber vessel identical to the Unit 6 scrubber vessel. CH2M is providing engineering services including balance of plant design and owner's engineer services. Included in the engineering services are analysis of the waterfront/land interface, design of foundations, design of structural steel and ductwork, relocation of utilities, installation of new utilities and electrical and mechanical systems design.

**Tracy Combined Cycle Power Plant, Sierra Pacific Power Company, Nevada, Project Director.** The Tracy Combined Cycle Power Plant consists of engineering, procurement, construction and commissioning of a combined cycle power block producing a nominal 514 MW. The Tracy addition is a two on one combined cycle configuration utilizing two (2) GE F-class advanced combustion turbine generators (CTG) with inlet air evaporative coolers, two (2) heat recovery steam generators (HRSG's) with duct burners, and one (1) GE D11 steam turbine generator (STG). The steam turbine exhaust is condensed in an air-cooled condenser. Construction of the Tracy Addition was at an existing plant site owned by Sierra Pacific Power Company (Owner).

**Walnut Energy Center Combine-Cycle Project, Turlock Irrigation District, California.** Project Manager. The 250 MW combined cycle facility in Turlock, California consists of two GE 7EA combustion turbines, three pressure reheat Heat Recovery Steam Generators (HRSG) and a 100 MW steam turbine. Mr. Mathine was assigned as Owner's Engineer involved in reviewing the detailed design for the project along with duties as Chief Building Official for the California Energy Commission.

## Leslie V Mathine

**Coyote Springs 2 Combined-Cycle Project (July 2002 to Present), Avista Utilities.** Manager for completion of a 280-MW combined-cycle facility in Boardman, Oregon. The project consists of an EPC contract for a GE 7FA combustion turbine, three pressure reheat Heat Recovery Steam Generators (HRSG) with duct burners, and a 115-MW steam turbine. Assignment involved responsibility for overall procurement, engineering, and construction for the facility.

# Stephanie S Moore

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## Geologic Resources

### Education

B.A., Social Ecology

### Relevant Experience

Ms. Moore has over 5 years of experience as part of the Environmental Site Management group in the Sacramento office. She has experience in field work, including due diligence visual site inspections, groundwater, surface water, soil, soil gas, and sewer sampling. She also has experience authoring data quality objectives for proposed sampling. Ms. Moore has authored for Phase I and Remedial Investigation reports for both CERCLA- and RCRA-regulated sites. She has experience authoring a Pollution Prevention Plan, a Potentially Responsible Parties Evaluation, and Powerpoint presentations for client use to educate the public. Ms. Moore has also authored the geological hazards and resources section of an Application for Certification (AFC) for a power plant. Her public involvement experience includes supporting public meetings, setting up and managing an environmental open house for community members surrounding the former McClellan Air Force Base, assisting with outreach events, and preparing public notices.

### Representative Projects

#### **Almond 2 Power Plant Application for Certification; Turlock Irrigation District; Ceres, CA.**

Ms. Moore was responsible for completing the geology section of the AFC. She worked closely with the senior technical lead on the section.

#### **Remedial Investigation Characterization Summaries (RICS) Addenda for Initial Parcel #3; AFCEE; Sacramento, CA.**

Ms. Moore was part of the field team for this project at the former McClellan Air Force Base, a superfund site. Fieldwork included collecting soil and soil gas samples by surface scrapes, hand augers, direct push and hollow stem auger drill rigs, at approximately 35 sites. She was responsible at times for submitting permit requests to the Air Force, and coordinated underground service alert for nearly all of this work. Ms. Moore was responsible for authoring sections for two sites, which included a site history and previous investigations, as well as a conceptual site model, physical characteristics, nature and extent, and contaminant fate and transport.

#### **Santa Susana Field Laboratory (SSFL) RCRA Facility Investigation (RFI) Report; NASA;**

**Ventura County, CA.** Ms. Moore was involved throughout the entire process of data collection, from the document review team, which split up roughly 10,000 documents which needed to be reviewed, to writing data quality objectives for proposed data gap sampling. Personal site knowledge gained during a previous project on-site helped Ms. Moore to author background sections including descriptions and histories of five RFI sites. She was also responsible for authoring some of the nature and extent sections of the final reports.

# Kathy Rose, Ph.D.

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## Soils

### Education

Ph.D., Soil and Water Sciences

M.S., Soil Science

B.S., Soil Science

### Licenses/Certifications

Certified Professional Soil Scientist, ARCPACS No. 36374

### Relevant Experience

Dr. Rose has 20 years of combined experience in academic research related to soil-plant-water relationships; water quality planning with the California Regional Water Quality Control Board-Santa Ana Region; and environmental consulting. Her academic experience focused on the ecosystem function of soils in forest and chaparral environments. Water quality regulatory experience included development of total maximum daily loads (TMDLs), and construction and industrial stormwater permit compliance. Dr. Rose also has extensive experience in water quality regulatory compliance, including obtaining Clean Water Act Section 404/401 permits from the Army Corps of Engineers and Regional Water Quality Control Boards; Streambed Alteration Agreements with California Department of Fish and Game; and mitigation planning. Most recently, Dr. Rose's work includes developing applied solutions to soil and water management projects, including land application of municipal waste, land reclamation, nutrient management planning, and alternative landfill covers. Additionally, she has managed or collaborated on a number of CEQA/NEPA projects, including Initial Studies-Mitigated Negative Declarations, Environmental Impact Reports, and General Plan updates. Dr. Rose has worked on several solar energy projects, including preparation of Applications for Certification, development of restoration/revegetation plans, and evaluating beneficial use impacts to waters of the State.

### Representative Projects

**Turlock Irrigation District, Almond 2 Power Plant.** Dr. Rose directed development of the Soil Resources section of the Application for Certification for a 174 MW natural gas-fired combined cycle power plant to be developed in the city of Ceres, California.

**BrightSource Energy, Ivanpah Solar Electric Generating System, California.** Dr. Rose prepared responses to comments from California Energy Commission related to soil and water resources. Specifically, she evaluated water quality impacts from heliostat wash water, was a contributing author to the Restoration and Revegetation Plan, and the Beneficial Use Impacts Evaluation related to dredge and fill within ephemeral drainages.

## Kathy Rose, Ph.D.

**SolarReserve, Rice Solar Energy Project.** Dr. Rose prepared the Soil Resources section of the Application for Certification for this solar energy project proposed for development in eastern Riverside County, California.

**Iberdrola, Reconnaissance Surveys for Solar Energy Facility Siting.** Dr. Rose prepared comprehensive evaluations of soils for several potential solar energy sites in California, Arizona, Nevada and New Mexico. Soil survey information was used, when available, to compare sites for relative soil erodibility via wind and water, and other physical and chemical properties that could affect feasibility for development.

**Contra Costa Generating Station LLC, Contra Costa Generating Station Project.** Dr. Rose prepared the Soils Resources section of the Application for Certification for a 624 MW, natural gas-fired power plant to be located in the city of Oakley, Contra Costa County, California.

**Caltrans, Comprehensive Monitoring Program Guidance Manual –Statewide.** Dr. Rose authored chapters and provided technical review on sections of the revised Caltrans Stormwater Monitoring Guidance Manual, which provides protocols for planning and implementing stormwater monitoring programs/projects conducted on Caltrans' facilities.

**Regional Water Quality Control Board-Santa Ana Region, Water Quality Planning and Stormwater Compliance.** While working with the Coastal Waters Planning Section of the Santa Ana Regional Water Quality Control Board, Dr. Rose developed TMDLs for organochlorine compounds (DDT, PCBs, chlordane, toxaphene) for San Diego Creek and Newport Bay, Orange County, California. Work included holding stakeholder and CEQA scoping meetings; analyzing data; organizing and participating in a Technical Advisory Committee; preparing technical staff reports and the Draft Basin Plan Amendment. Presented the TMDLs with Implementation Plan at the December 2006 meeting of the SARWQCB; and the TMDLs were adopted by the Board in 2007. Additionally, oversaw implementation of the sediment TMDLs for San Diego Creek and Newport Bay; participated in grant proposal review and selection; issued 401 Water Quality Certifications; and managed contracts. With the Coastal Waters Storm Water Section, inspected construction and industrial sites for compliance with stormwater general permits; wrote inspection reports; prepared enforcement actions when necessary (e.g., Administrative Civil Liability Complaints [ACLs]); and assisted with the MS4 permit update for Orange County.

**University of California, Riverside, Academic Research related to Soil and Water Science.** While working in the Soil and Environmental Sciences Department at UC Riverside, Dr. Rose designed and implemented complex field and laboratory studies that primarily focused on the role of weathered granitic bedrock in forest and chaparral ecosystems. Conducted literature reviews, installed field equipment; designed and built laboratory equipment to process samples; analyzed data; prepared manuscripts for journal publication. Directed staff; provided direction to undergraduate students; trained students and staff in the use of specialized equipment and laboratory methods; and taught the laboratory portion of a graduate-level class in Soil Mineralogy.

# W Geoffrey Spaulding

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## Paleontological Resources

### Education

Ph.D., Geology (Paleobiology), University of Arizona, 1981

M. S., Geology (Palynology & Vertebrate Paleobiology), University of Arizona, 1974

B. A., Anthropology (Archaeology), University of Arizona, 1972

### Certifications

Nevada State Bureau of Land Management Paleontological Resources Use Permit N-82749

California State Bureau of Land Management Paleontological Resources Use Permit CA-07-17

Approved Paleontological Resources Specialist by the California Energy Commission, State of California

Reviewed under Secretary of the Interior's Guidelines by the California Energy Commission, State of California and Approved as a Geoarchaeologist

Qualifications as Paleontological Resources Expert Witness accepted by the Attorney General of the State of Washington

### Distinguishing Qualifications

- Specialist in Paleontological Resources Management
- Expert in the Quaternary Paleoecology and Paleoclimatology of Western North America
- Specialist in Site Formation Processes, Quaternary Paleobiology, Geoarchaeology, Paleohydrology
- Captain, Signal Corps, United States Army Reserve (Retired)

### Relevant Experience

Dr. Spaulding is a senior technical lead and paleontologist with CH2M HILL, with extensive experience in experience in paleobiology, paleontology, and paleoecology. He also is accomplished in the study of site formation processes, and the Quaternary geology of the western United States. He has more than three decades of technical experience in the Earth and Life sciences focusing on the deserts of western North America and on California. Prior to joining private industry, he was on the faculty of the University of Washington, Seattle pursuing research in the paleobiology and paleoecology of the American West.

### Paleontological Resources Management

**Ivanpah Solar Energy Generation Station EIS/AFC.** Conduct records review and literature search, field reconnaissance and subsequent field survey of paleontologically sensitive areas, and recordation of Paleozoic and Quaternary paleontological sites in support of a large solar

## W Geoffrey Spaulding

powered electrical generation facility. Model pluvial lake fluctuations and alluvial fan surface development to determine distribution of paleontologically and archaeologically sensitive sediments. Prepare appropriate paleontological resources sections for BLM EIS and California Energy Commission Application for Certification. Address site formation process in subsequent data request phase.

**Preparation of Paleontological Resources Assessments for Applications for Certification to the California Energy Commission for Multiple Power Generation Projects.** Prepare resource specific documentation for more than 25 separate projects. Conduct literature reviews, records searches, and field surveys to develop Paleontological Resources Assessments, prepare paleontological resources impact evaluations and mitigation measures, for projects' Application for Certification before the California Energy Commission. Determine the relative levels of paleontological sensitivity of Mesozoic through Quaternary rock units in the context of the geological history of the project areas, direct field surveys, and prepare AFC sections for projects from San Diego in the south to Humboldt Bay in the north. Prepare Paleontological Resources Monitoring and Mitigation Plans for construction-phase compliance activities.

**Paleontological Resources Specialist, Construction-Phase Mitigation Implementation, Multiple Power Generation Projects, California.** Develop and manage paleontological resources monitoring and mitigation programs for the construction of power generation projects including the following:

- Walnut Energy Center south of Modesto
- Roseville Energy Park east of Sacramento
- Gateway Generation Station near Antioch
- Colusa Generation Station south of Willows
- Humboldt Bay Repowering Project near Eureka
- Los Medanos Energy Center near Pittsburg
- Russell City Energy Center near Hayward

As part of these efforts he was responsible for the preparation of the Paleontological Resources Module of the worker education program and visual aids for worker education. He directed the recovery of discovered paleontological resources (Quaternary vertebrate and paleobotanical remains), and consulted with Staff of the California Energy Commission on the adequacy of mitigation efforts. He also develops site-specific stratigraphic framework to identify paleontologically sensitive sediments, and to provide client and the CEC with guidance regarding what construction activities need and need not be monitored.

**Salton Sea Ecosystem Restoration Project EIR.** Geological and paleontological literature review, records search including consultations with California State Paleontologist, to develop large scale paleontological sensitivity assessment of the Salton Trough. Develop impact assessment and mitigation measures for Environmental Impact Report. Develop mitigation measures for eight different action alternatives, and respond to comments on the PEIR.

**Paleontological Resources Assessment for Kinder Morgan's EPX Pipeline, Texas, New Mexico, and Arizona.** Literature and records review, remote-sensing and map analyses to characterize the affected environment and environmental impacts for a Bureau of Land Management Environmental Assessment for the installation of an interstate petroleum products pipeline. Prepare appropriate sections of the EA, and assemble technical information from museums in three states.

**Transportation-Related Paleontological Resources Management Services, southern California.** Perform paleontological resources assessments, develop management and monitoring plans, prepare, review and amend subconsultant scopes of work, and provide audit services to clients for paleontological resources management work. Multiple contracts for the City of San Diego, the Regional Transportation Commission, and the Counties of Riverside, San Diego and Orange. Formations addressed included Quaternary terrestrial and lacustrine units, and Tertiary marine and estuarine sediments.

**Client Task Oversight & Expert Witness Testimony on Paleontological Resources Sensitivity.** Review and develop discovery and mitigation plans, and provide testimony to the Attorney General of the State of Washington. On the paleontological data potential and impacts to Middle Tertiary age fossil resources in the Columbia Basin, and on potential project-related impacts pursuant to Washington's Energy Facility Siting & Environmental Certification process, on behalf of Olympic Pipeline Corporation.

**Duke Energy of North America, Paleontological Support Services for the Potrero and Contra Costa Applications For Certification.** Conduct literature reviews, record searches, and site surveys; and prepare appropriate sections of Applications for Certification according to the format and data requirements of the California Energy Commission. Respond to CEC staff questions and requests for additional data. Provide cost-control strategies to client. In support of the relicensing efforts for two power plants in the Bay Area of California.

**Kern River Pipeline Cultural & Paleontological Resources Compliance, California, Nevada, and Utah.** Coordination and implementation of cultural resources mitigation and monitoring efforts along a 678-mile pipeline corridor involving up to 160 personnel operating in three states. Consult with state and federal agencies (FERC, Advisory Council on Historic Preservation Bureau of Land Management), and coordinate with client representatives. Direct and participate in state-wide field compliance programs. Participate in and direct technical studies of sites ranging in age from Paleoindian to Formative Periods. Manage the preparation of reports perform the task of senior report editor.

**Los Angeles Department of Water and Power, Mead/McCullough - Victorville/Adelanto Transmission Line.** Manage cultural and paleontological resources monitoring and mitigation in conjunction with the construction of a 500 kV power line extending through Nevada and California. Assess levels of significance of paleontological sites discovered during survey and monitoring, implement mitigation measures for affected sites, manage analyses, prepare reports.



# Gregory K. Tucker

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## Electrical Engineering Department Manager, Turlock Irrigation District

### Education

B.S., Electrical Engineering, Brigham Young University, 1987

M.P.A., California State University, Stanislaus, 2001

### Professional Registrations

Professional Engineer, California

### Distinguishing Qualifications

- Approximately 22 years electric utility experience in electrical engineering, project management, and construction management.
- Includes transmission design and generation experience
- Extensive transmission line design and management experience involving 69 through 230-kV voltage levels with all structure types, including lattice, tubular steel, and wood pole.
- Knowledge of transmission line design software, including: Sag10, TLCADD, and PLSCADD

### Relevant Experience

Greg Tucker is an Electrical Engineering Department Manager with 22 years electrical utility experience. For the past 18 years, Mr. Tucker's focus has been on project management of large transmission and generation projects. Typical work involves preparation, oversight, and coordination of all aspects associated with the project, including: environmental, easement acquisition, survey, design, construction, and energization. More recently, Mr. Tucker has been involved in project management activities associated with gas turbine power plants.

### Representative Projects

#### Transmission Projects

**Atwater - Merced 115-kV Transmission Line.** As a contract employee for Merced Irrigation District, served as project manager. Duties included all aspects of project management including preparation and oversight of environmental documentation, survey, design, land acquisition, and construction. This 33-mile double-circuit 115-kV line involved both transmission and distribution and included several freeway, railroad, and transmission crossings.

## Gregory K. Tucker

**Westley - Tracy 230-kV Transmission Line.** Provided project management for this 30-mile 230kV transmission project from Western's Tracy Substation to the new Turlock Irrigation District and Modesto Irrigation District Westley Substation. The project involved both lattice and tubular poles in a double circuit, bundled conductor arrangement.

**Tuolumne - Pioneer 115 - kV Transmission Line.** Provided project management for this 16.4-mile double circuit 115kV transmission project from TID's Tuolumne Substation to the northern terminus of the Pioneer 115kV line. The project involved both transmission with underbuild distribution.

**Hilmar - Walnut 115-kV Transmission Project.** Provided all aspects of project management for this 8-mile 115kV transmission project from TID's Hilmar Substation to the northern Terminus of the Pioneer 115kV line.

**Walnut - Marshall 115-kV Transmission Project.** Provided project management for this 15.5-mile 115kV transmission project from TID's Walnut Substation to Marshall Substation.

**Marshall - Westley 115-kV Transmission Project.** Provided project management for this 9.0 mile double circuit 115-kV transmission line. Project included fiber optic and 12-kV distribution.

### Power Projects

**Almond Repowering Project.** Changed out a GE LM5000 engine and associated power turbine with an LM6000. Oversight included management of schedule and budget.

**1.2MW Fuel Cell, Renewable Energy Project.** Managed the design and construction of a large fuel cell powered by digester gas at the Turlock Waste Water Treatment Facility.

# Megan Uttecht

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## Hazardous Materials Handling and Waste Management

### Education

M.S., Civil/Environmental Engineering, University of Colorado at Boulder

B.S., Chemical Engineering, University of Colorado at Boulder

### Professional Registrations

Engineer in Training (E.I.T.) Certification

### Distinguishing Qualifications

- Project manager and author of numerous regulatory compliance plans including Phase I and Phase II Environmental Assessments, Spill Prevention, Control, and Countermeasures Plans, Spill Prevention and Response Plans, Facility Response Plans, and Storm Water Pollution Prevention Plans for Department of Defense and industrial clients.
- Project task manager for environmental remediation and assessments including field sampling efforts, sample data analysis, and report writing for federal and industrial clients and real estate transactions.
- Extensive U.S. government experience, including multi-million dollar Department of Energy and Department of Defense contracts, Environmental Protection Agency and Superfund contracts, Department of Defense research contracts, and federal regulatory experience.

### Relevant Experience

Ms. Uttecht is an engineer with CH2M HILL's Environmental Services Group in Reno, Nevada. She has 10 years of experience in environmental investigation, remediation, and compliance. Her strong background in chemical and environmental engineering is an asset for current, complex, multi-disciplinary projects.

### Representative Projects

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California.** Authored the Hazardous Materials Handling and the Waste Management sections for the A2PP AFC. The project consisted of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts.

**Application for Certification and Power Plant Licensing; Confidential Energy Clients; California.** Project engineer responsible for research and preparation of siting and licensing application sections on hazardous waste and waste management, as well as hazardous material business plans and waste management plans for new power plant construction and operation.

## Megan Uttecht

**EPA Region 9 Remediation Projects: Lava Cap Mine, Anaconda Mine, Carson River, South El Monte Groundwater Basin, Rialto-Colton Groundwater Basin; Multiple Sites, Nevada and California.** Responsible for preparation and review of reports and cost estimates, planning and conducting extensive sampling and analysis programs to address contamination and support site characterization and remediation design for EPA Region 9 contract.

**Remediation Projects; Former Naval Air Station Adak; Adak, Alaska.** Project engineer responsible for support of investigation and restoration projects at former Department of Defense facility for property transfer, including Explosives Safety Hazard Assessment (ESHA) analysis of sites, remedial investigation and feasibility study reports for Munitions and Explosives of Concern (MEC).

**Remediation Projects, Hawthorne Army Depot; Hawthorne, Nevada.** Site safety coordinator responsible for groundwater monitoring and support of remedial system design and implementation to address contamination at Department of Army site in compliance with Installation Restoration Program (IRP) requirements.

**Remediation Projects; Camp Navajo; Bellemont, Arizona.** Responsible for support of investigation and restoration projects in operational and non-operational portions of National Guard Bureau demolition training range, including preparing and reviewing MEC hazard analyses, MEC Awareness training materials, and reports in accordance with Comprehensive Environmental Response Compensation and Liability Act and IRP (CERCLA/IRP) requirements.

# Fatuma Yusuf, Ph.D.

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## Socioeconomics

### Education

Ph.D., Agricultural Economics

M.S., Statistics

M.A., Agricultural Economics

B.Sc., Range Management

### Relevant Experience

Dr. Yusuf is an economist and statistician. She has conducted economic analyses for energy, water supply, water quality, agriculture, transportation, and recreation projects; evaluated project feasibility; and assessed economic impacts associated with project implementation. She has experience in preparing the socioeconomic analysis, regional economic impact analysis, cost-benefit analysis, and rate impact analysis. She has developed statistical predictive models and has evaluated the economic impacts associated with base closures and habitat creation. She has been an economics task lead and task manager for a number of Environmental Impact Statements/Reports (EIS/R) including some on highway development or expansion, high speed rail development, and light rail development.

### Representative Projects

**Almond 2 Power Plant (A2PP) Application for Certification (AFC); Turlock Irrigation District; Ceres, California.** Authored the socioeconomic section for the A2PP AFC. The project consisted of a natural gas-fired, simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts.

**Economic Impact Analysis for the Teanaway Solar Reserve, Kittitas County, Washington.** Economics Task Lead. Provided screening-level economic, socioeconomic and fiscal impact analyses of the construction and operation associated with the Teanaway Solar Reserve project in Kittitas County, Washington.

**Ivanpah Solar Electric Generating System (Ivanpah SEGS), San Bernardino County, California.** Socioeconomics Task Lead. Prepared the socioeconomic analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Carlsbad Energy Center Project (CECP), Carlsbad, California.** Socioeconomics Task Lead. Prepared the socioeconomic analysis section of the AFC for the construction of a combined-cycle facility consisting of two natural-gas-fired turbines, heat recovery steam generators, steam turbine generators, and associated equipment. Also, analyzed the regional economic impacts of the project on employment and income.

**GWF Tracy Combined Cycle Power Plant Project (GWF Tracy), Tracy, California.** Socioeconomics Task Lead. Prepared the socioeconomic analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Fatuma Yusuf, Ph.D.**

**Roseville Energy Park, California.** Analyzed the regional economic impacts of the project on employment and income.

**Lodi Energy Center, NCPA; Lodi, San Joaquin County, California.** Socioeconomics Task Lead. Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Chula Vista Energy Upgrade Project, MMC Energy, San Diego County, California.** Socioeconomics Task Lead. Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Application for Certification, Eastshore Energy Project, Hayward, California.** Socioeconomics Task Lead. Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Application for Certification, South Bay Replacement Project, Chula Vista, California.** Socioeconomics Task Lead. Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Economic Analysis for the Calpine LNG Facility and Power Plant in Eureka, California.** Project Manager. Provided screening-level economic, socioeconomic and fiscal impact analyses of the construction and operation associated with the Calpine LNG and Power Plant Projects in Eureka, California.

**Socioeconomic Study Plan for the SMUD Upper American River Project Iowa Hill Pumped Storage Development Project.** Socioeconomic Task Lead. Prepared the socioeconomic study plan and evaluated the socioeconomic impacts associated with the Iowa Hill Pumped Storage Development Project as part of the SMUD Upper American River Project Hydroelectric relicensing application. Also, analyzed the regional economic impacts of the project on employment and income.

**Revision of SMUD Upper American River Project Socioeconomic Impact Study Report.** Socioeconomic Task Lead. Prepared Revision 1 of the SMUD UARP Socioeconomic Impact Study Report on the SMUD Upper American River Project Hydroelectric relicensing. Revision 1 involved the verification of the study conducted by CSUS. Also, analyzed the regional economic impacts of the project on employment and income.

**Industrial Siting Application for a number of energy projects in Wyoming including the Medicine Bow Coal to Liquid Project, Wygen III Unit 5, Seven Mile Hill and Glenrock Wind Energy Projects.** Analyzed the regional economic impacts of the projects on employment and income.

**Application for Certification the Walnut Energy Facility in Turlock, California.** Socioeconomics Task Lead. Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Application for Certification for Los Esteros Critical Energy Facility, San Jose, California.** Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Application for Certification for the San Francisco Electric Reliability Project in San Francisco, California.** Socioeconomics Task Lead. Prepared the socioeconomics analysis

section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**San Joaquin Valley Energy Center AFC, Calpine Corp., San Joaquin, California (2001 to 2002).** Socioeconomics Task Lead. Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**East Altamont Energy Center AFC (2001).** Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Salton Sea Unit 6 Geothermal Project (2002 to 2003).** Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Small Power Plant Exemption for Modesto Irrigation District's Woodland Generation Station Unit II (WGSII), Modesto Irrigation District, Modesto, California (2003 to 2004).** Economics Task Lead. Prepared the socioeconomics analysis section of the SPPE.

**SMUD Cosumnes Power Plant AFC (2001).** Prepared the socioeconomics analysis section of the AFC. Also, analyzed the regional economic impacts of the project on employment and income.

**Klamath Hydroelectric Project Resources Studies and Preparation of Relicensing Documents, PacifiCorp, Upper Klamath River, Oregon and California (2003 to 2004).** Prepared the Socioeconomic Resources Final Technical Report in support of the FERC application for a new Project license.

# SUSAN STRACHAN

Susan Strachan has 22 years of both public and private sector project management experience in the permitting and compliance activities associated with large industrial projects. She has extensive experience managing the environmental permitting of power plant, transmission, and pipeline projects. Her experience includes conducting due diligence investigations and fatal flaw analyses, permitting strategies, preparing permit applications and other project environmental documentation, negotiating permit conditions and other project related issues with regulatory agencies, conducting public outreach, developing compliance plans, and managing compliance activities.

## PROFESSIONAL HISTORY

Strachan Consulting  
Principal, June 1998-Present

Sacramento Municipal Utility District  
Mgr., Project Permitting and Licensing - March 1992-May 1998

Assemblymember Lloyd Connelly  
Senior Assistant - 1990 to 1992

Santa Barbara County  
Hazardous Materials Section Manager - 1987 to 1990  
Environmental Planner 1985 to 1987

## PROFESSIONAL EXPERIENCE

**Pacific Gas & Electric** – Ms. Strachan served as Environmental Project Manager for the Humboldt Bay Generating Station project (HBGS). The HBGS is a 163 MW power plant located in Humboldt Co. Her responsibilities included: overseeing the preparation of the application to the California Energy Commission (CEC); responding to Data Requests; interfacing with the regulatory agencies, reviewing the Preliminary and Final Staff Assessments; preparing for and participating in Evidentiary Hearings; and managing initial construction compliance activities. Ms. Strachan also prepared CEC license amendments for the project.

Mr. Strachan is serving as permit coordinator for the decommissioning of the PG&E Humboldt Bay Power Plant.

**Praxair Inc.** Ms. Strachan represented Praxair Inc. as Environmental Project Manager for its Contra Costa Pipeline Project, a 21.5 mile hydrogen pipeline in Contra Costa County.



Her responsibilities include: conducting the fatal flaw analysis and permitting strategy, overseeing the preparation of the application materials to the applicable local, state, and federal agencies, advising the client on environmental permitting and CEQA issues; coordinating with local, state, and federal agencies and the County's EIR consultant, participating in public environmental meetings; ensuring proper compliance with CEQA; participating in agency meetings.

**Turlock Irrigation District** – Ms. Strachan provided Environmental Project Management Services to the Turlock Irrigation District for its Walnut Energy Center, a 250 MW power plant, located in Stanislaus Co. Her responsibilities included: assisting in site selection, overseeing the preparation of the application to the CEC; participating in public outreach activities; responding to Data Requests; interfacing with the regulatory agencies, reviewing the Preliminary and Final Staff Assessments; and preparing for and participating in Evidentiary Hearings.

Ms. Strachan also served as Environmental Compliance Manager for the Walnut Energy Center Project. Her responsibilities included: preparing and processing CEC license amendments, ensuring compliance with all environmental regulatory requirements; managing the activities of the environmental monitors; and maintaining communication with the environmental regulatory agencies.

Ms. Strachan is currently serving as Environmental Project Manager for TID's Almond 2 Power Plant in Ceres, CA. She is also managing the preparation of an EIR for the Hughson-Grayson 115-kV Transmission Line and Substation Project.

**Modesto Irrigation District** - Ms. Strachan provided Environmental Project Management services to the Modesto Irrigation District for the Woodland 2 Generation Station, an 80 MW combined cycle power plan, located in San Joaquin Co. She also prepared CEC amendments for the Woodland 2 project. Ms. Strachan also managed the permitting of the Modesto Irrigation District Electric Generation Station Ripon project, a 95 MW simple-cycle power plant, located in San Joaquin Co. Her responsibilities included: managing the preparation of the application, providing project coordination with regulatory agencies, and resolving issues/concerns of the agencies. Ms. Strachan continues to provide compliance support to MID.

**Calpine Corporation** – Ms. Strachan served as the Environmental Project Manager for several natural gas-fired power plants developed by Calpine Corporation. These include the following:

- Delta Energy Center – Contra Costa Co.
- King City LM600 Project – Monterey Co.
- Gilroy City Phase I LM6000 Project – Santa Clara Co.
- East Altamont Energy Center – Alameda Co.

Her responsibilities included obtaining the CEC licenses for the projects and obtaining permits from other regulatory agencies such as the U.S. Fish and Wildlife Service, California Department of Fish and Game, State Lands Commission and U.S. Bureau of Reclamation. She has also provided permitting assistance to Calpine on its Sutter and Metcalf Energy Center projects.

**Calpine Corporation – Compliance** Ms. Strachan also assisted Calpine Corporation in compliance activities associated with projects licensed before the CEC. Her activities have included the preparation of several amendments to the project licenses for the Delta Energy Center and Los Medanos Energy Center.

**Calpine Corporation – Due Diligence** Ms. Strachan conducted the environmental due diligence investigation for Calpine’s acquisition of the Los Medanos Energy Center and Otay Mesa projects.

**Sacramento Municipal Utility District** - Ms. Strachan served as the Manager, Project Permitting and Licensing, responsible for overseeing permitting activities before the California Energy Commission (CEC) for the following projects:

- Sacramento Cogeneration Authority at Procter & Gamble – Sacramento, Co.
- Sacramento Power Authority at Campbell Soup – Sacramento Co.
- Carson Ice-Gen – Sacramento Co.
- SEPCO – Sacramento Co.
- SMUD Cogeneration Pipeline – Sacramento Co., and Yolo Co.

In this position, Ms. Strachan worked closely with the CEC while the projects moved through the licensing process. Her responsibilities included preparation of the Applications for Certification, responding to data requests, negotiating permit

conditions, working with members of the public, and participating in hearings.

Ms. Strachan was also responsible for acquiring permits from other agencies including the Sacramento Metropolitan Air Quality Management District, Regional Water Quality Control Board, U.S. Fish and Wildlife Service, and Army Corps of Engineers.

**Construction Compliance** - As project manager for Sacramento Power Authority at Campbell Soup project, Ms. Strachan managed the compliance activities associated with the CEC's conditions of certification for the project. This included preparation of CEC license amendments, interface with the CEC during construction of the project, preparation of submittals to the CEC in compliance with permit conditions, and responding to and addressing local community concerns associated with the project.

***Cosumnes Power Plant*** – Ms. Strachan provided environmental project management support/advice to SMUD for the CEC licensing of the Cosumnes Power Plant project, located in Sacramento Co.

## **EDUCATION**

B.A., Political Science  
University of California, Santa Barbara

APPENDIX B

# Signed Declarations

---

**DECLARATION OF  
JEFFREY D. ADKINS**

I, Jeffrey D. Adkins, declare as follows:

1. I am presently employed by Sierra Research, Inc., as a Senior Partner.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Air Quality and Greenhouse Gas Emissions for the Turlock Irrigation District Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated:           9/3/10          

Signed:           Jeffrey D. Adkins          

At:           Sacramento, CA

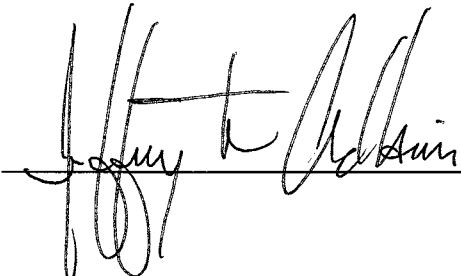
**DECLARATION OF  
JEFFREY D. ADKINS**

I, Jeffrey D. Adkins, declare as follows:

1. I am presently employed by Sierra Research, Inc., as a Senior Partner.
2. A copy of my professional qualifications and experience has been provided elsewhere and are incorporated herein by reference.
3. I prepared the attached testimony on Public Health for the Turlock Irrigation District Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/3/10

Signed: 

At: Sacramento, CA


**DECLARATION OF  
MARK BASTASCH**

I, Mark Bastasch, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Senior Technologist.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Noise and Vibration for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 1, 2010

Signed: 

At: Portland, Oregon

**DECLARATION OF  
LOREN BLOOMBERG**

I, Loren Bloomberg, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Principal Technologist.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I helped prepare the attached testimony on Traffic and Transportation for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 2, 2010

Signed: 

At: Santa Ana, California



**DECLARATION OF  
MALY-ANN BORY**

I, Maly-Ann Bory, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Staff Engineer.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Traffic and Transportation for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 09/01/2010

Signed: Maly-Ann Bory

At: Oakland, California

**DECLARATION OF  
BRIDGET CANTY**

I, Bridget Canty, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as an Associate Project Manager.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Biological Resources for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/2/20

Signed: 

At: San Jose, California

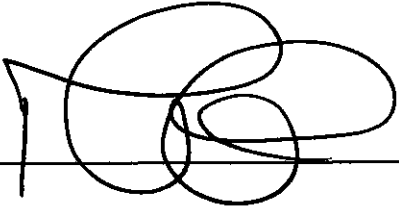
**DECLARATION OF  
MARIA-ELENA CONSERVA**

I, MariaElena Conserva, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as an Associate Planner.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Visual Resources for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/31/10

Signed: 

At: Oakland, California

**DECLARATION OF  
DEBRA CROWE**

I, Debra Crowe, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Project Scientist.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I helped prepare/review the attached testimony on Biological Resources for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 31, 2010      Signed: Debra J Crowe

At: Sacramento, California

**DECLARATION OF  
RON S. DASCHMANS**

I, Ron S. Daschmans, declare as follows:

1. I am presently employed by Utility System Efficiencies, Inc. as Vice President of Technical Services.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I contributed to the preparation of the attached testimony on the Electric Transmission for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/7/2010

Signed: 

At: Sacramento, CA


**DECLARATION OF  
CLINT HELTON**

I, Clint Helton, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Senior Technologist.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Cultural Resources for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8-24-10

Signed: 

At: Santa Ana, California

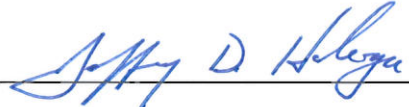
**DECLARATION OF  
JEFFREY D. HOLOGA**

I, Jeffrey D. Hologa, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as an Engineer.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I helped prepare the attached testimony on the Project Description for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 31, 2010

Signed: 

At: Denver, Colorado


**DECLARATION OF  
AARTY JOSHI**

I, Aarty Joshi, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as an Associate Project Manager.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Land Use for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 23, 2010

Signed: 

At: Oakland, California



**DECLARATION OF  
THOMAS A. LAE**

I, Thomas Lae, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Project Manager.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I supervised the preparation of and provided senior review for the attached testimony on Geologic Resources for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8-31-10

Signed: 

At: Sacramento, California

**DECLARATION OF  
BRIAN LAFOLLETTE**

I, Brian Lafollette, declare as follows:

1. I am presently employed by the Turlock Irrigation District as the interim Assistant General Manager of the Power Supply Administration.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on the Project Description for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 10<sup>th</sup>, 2010 Signed: Brian Lafollette

At: Turlock, California

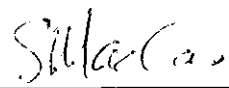
**DECLARATION OF  
SARAH MADAMS**

I, Sarah Madams, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Project Manager.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on the Project Description, Worker Health and Safety, and Alternatives for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 17, 2010

Signed: 

At: Sacramento, California

**DECLARATION OF  
LESLIE MATHINE**

I, Leslie Mathine, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Technical Specialist.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I helped prepare the attached testimony on the Project Description for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 08/24/2010

Signed: 

At: Denver, Colorado

**DECLARATION OF  
STEPHANIE MOORE**

I, Stephanie Moore, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as an Associate Scientist.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Geologic Resources for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9.2.10

Signed: 

At: Sacramento, California

**DECLARATION OF  
KATHY ROSE**

I, Kathy Rose, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Project Consultant.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Soils for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/31/10

Signed: Kathy Rose

At: Sacramento, California

**DECLARATION OF  
W. GEOFFREY SPAULDING, PH.D.**

I, W. Geoffrey Spaulding, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Senior Technical Specialist.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Paleontological Resources for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 09/16/2010

Signed: W. Geoffrey Spaulding

At: Sacramento, California

**DECLARATION OF  
SUSAN STRACHAN**

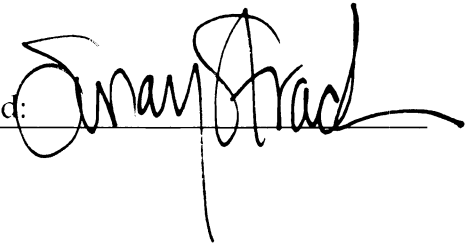
I, Susan Strachan, declare as follows:

1. I am presently employed by Strachan Consulting as Principal Consultant.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I assisted in the preparation of the attached testimony on the Project Description for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 18 September 2010

Signed: \_\_\_\_\_

A handwritten signature in black ink, appearing to read "Susan Strachan", written over a horizontal line.

At: Davis, California




DECLARATION OF  
GREGORY TUCKER

I, Gregory Tucker, declare as follows:

1. I am presently employed by the Turlock Irrigation District as an Electrical Engineering Department Manager.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Electric Transmission for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 27, 2010

Signed: 

At: Turlock, CA

**DECLARATION OF  
MEGAN UTTECHT**

I, Megan Uttecht, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as an Associate Engineer.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Hazardous Materials Handling and Waste Management for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 23 August 2010

Signed: 

At: Reno, Nevada

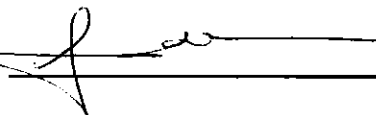
**DECLARATION OF  
FATUMA YUSUF**

I, Fatuma Yusuf, declare as follows:

1. I am presently employed by CH2M HILL Incorporated as a Senior Technologist.
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.
3. I prepared the attached testimony on Socioeconomics for the Almond 2 Power Plant project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/25/10

Signed:  \_\_\_\_\_

At: Sacramento, California