CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833-2937
Tel 916.920.0300
Fax 916.920.8463

CH2MHILL

June 8, 2009

Mr. Rod Jones
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: CPV Vaca Station (08-AFC-11)
Response to CEC Staff Data Requests 54 through 67

Dear Mr. Jones:

Attached please find one original and 1 copy on CD of CPV Vaca Station, LLC's responses to California Energy Commission Staff Data Requests 54 through 67 for the Application for Certification for the CPV Vaca Station Project (08-AFC-11).

If you have any questions about this matter, please contact me at (916) 286-0278 or Sarah Madams at (916) 286-0249.

Sincerely,

CH2M HILL

Douglas M. Davy, Ph.D.
AFC Project Manager

Attachment

cc: A. Welch (CPV)
S. Madams

Application for Certification

Response to CEC Staff Data Requests 54 through 67

CPV Vaca Station

Submitted by

CPV Vacaville, LLC

Submitted to

California Energy Commission

With Technical Assistance by

CH2MHILL

June 2009

ES122007003SAC

Supplemental Filing

Response to CEC Staff Data Requests 54 through 67

In support of the

Application for Certification

for

CPV Vaca Station

Vacaville, California
(08-AFC-11)

Submitted to the:
California Energy Commission

Submitted by:
CPV Vacaville, LLC

With Technical Assistance by:

Sacramento, California

June 2009

Contents

Section **Page**

Introduction....1

Noise (54-57)....2

Transmission System Engineering (58-60)....3

Visual Resources (61-67)....6

Tables

DR61-1 Approximate Dimensions and Colors, Materials, and Finishes of the Major Project Features

DR64-1 Representative Cooling Tower Characteristics

Figures

DR58-1 Double-Circuit 230 kV Generation Tie-Line and Switchyard One-Line Diagram

DR59-1 Single-Circuit 230 kV Generation Tie-Line and Switchyard One-Line Diagram

Attachment

DR67-1 Fogging Frequency Curve

Introduction

Attached are CPV Vacaville, LLC's (CPVV's) responses to California Energy Commission (CEC) Staff data requests numbers 54 through 67 for the CPV Vaca Station (CPVVS) project (08-AFC-11). The CEC Staff served the data requests on May 7, 2009, as part of the discovery process for the CPVV project.

The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as CEC Staff presented them and are keyed to the Data Request numbers (54 through 67). New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 55 would be numbered Table DR55-1. The first figure used in response to Data Request 62 would be Figure DR62-1, and so on.

Additional tables, figures, or documents submitted in response to a data request (supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of a discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

Noise (54-57)

Ambient Noise Survey

54. *Please conduct an ambient noise survey at each of the three residential receptors identified in AFC Section 5.7.2.1 as being located approximately 800 feet to the southeast, 1,900 feet to the north, and 1,600 feet to the east of the project site, near the town of Elmira. These surveys should be conducted during calm weather conditions.*

    a) *The above noise surveys should include measurements of the ambient noise levels at these locations continuously from 10:00 p.m. to 7:00 a.m.*

    b) *These surveys should also include measurements of the ambient noise at these locations during the daytime hours for a period of at least one hour in the late morning and again for a period of at least one hour in the afternoon.*

Response: The Applicant has requested additional time to complete the additional ambient noise surveys (May 27, 2009, Docket #51719).

Survey Noise Level Reporting

55. *Please provide the resultant noise levels in terms of L_{eq}, L_{min}, L_{max}, L_{10}, L_{50}, and L_{90}.*

Response: See response to Data Request #54.

Noise Modeling Results

56. *Please evaluate the noise impacts of project operation at the receptors identified in AFC Section 5.7.2.1 as being located 1,900 feet to the north and 1,600 feet to the east of the project site, near the town of Elmira. Please provide the results, including the resultant predicted project noise levels at these locations. This evaluation should consider the typical project area ambient conditions, such as the average annual wind speed, wind direction(s), air temperature, and relative humidity.*

Response: See response to Data Request #54.

57. *Please describe the distances between these foreseeable projects [for cumulative impacts analysis] and the CPV Vaca Station project site.*

Response: See response to Data Request #54.

Transmission System Engineering (58-60)

One-Line Diagram, Double Circuit

58. Please resubmit Figure DA 3.0-1 showing the double circuit generator tie-lines with the associated conductor type, the current carrying capacity of the conductors, the ratings of the breakers and the disconnect switches.

Response: See Figure DR58-1.

One-Line Diagram, Single Circuit

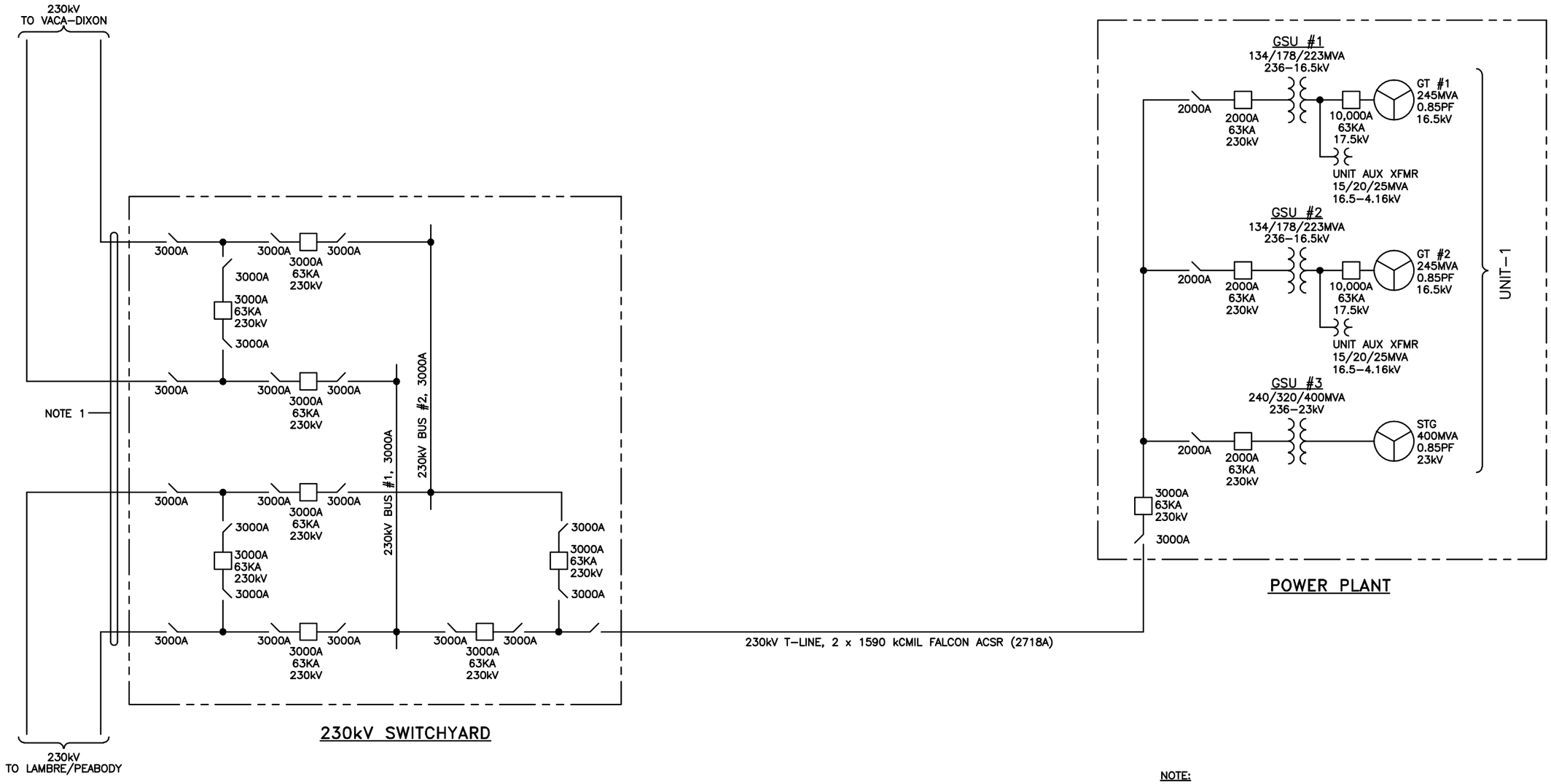
59. Please submit an additional figure (similar to Figure DA 3.0-1), showing the single circuit generator tie-line with the associated conductor type, the current carrying capacity of the conductor, the ratings of the breakers and the disconnect switches.

Response: See Figure DR59-1.

Breaker and Disconnect Switch Ratings

60. Please provide all of the breakers and disconnect switches ratings for the above new figures.

Response: Please see Figures DR58-1 and DR59-1.

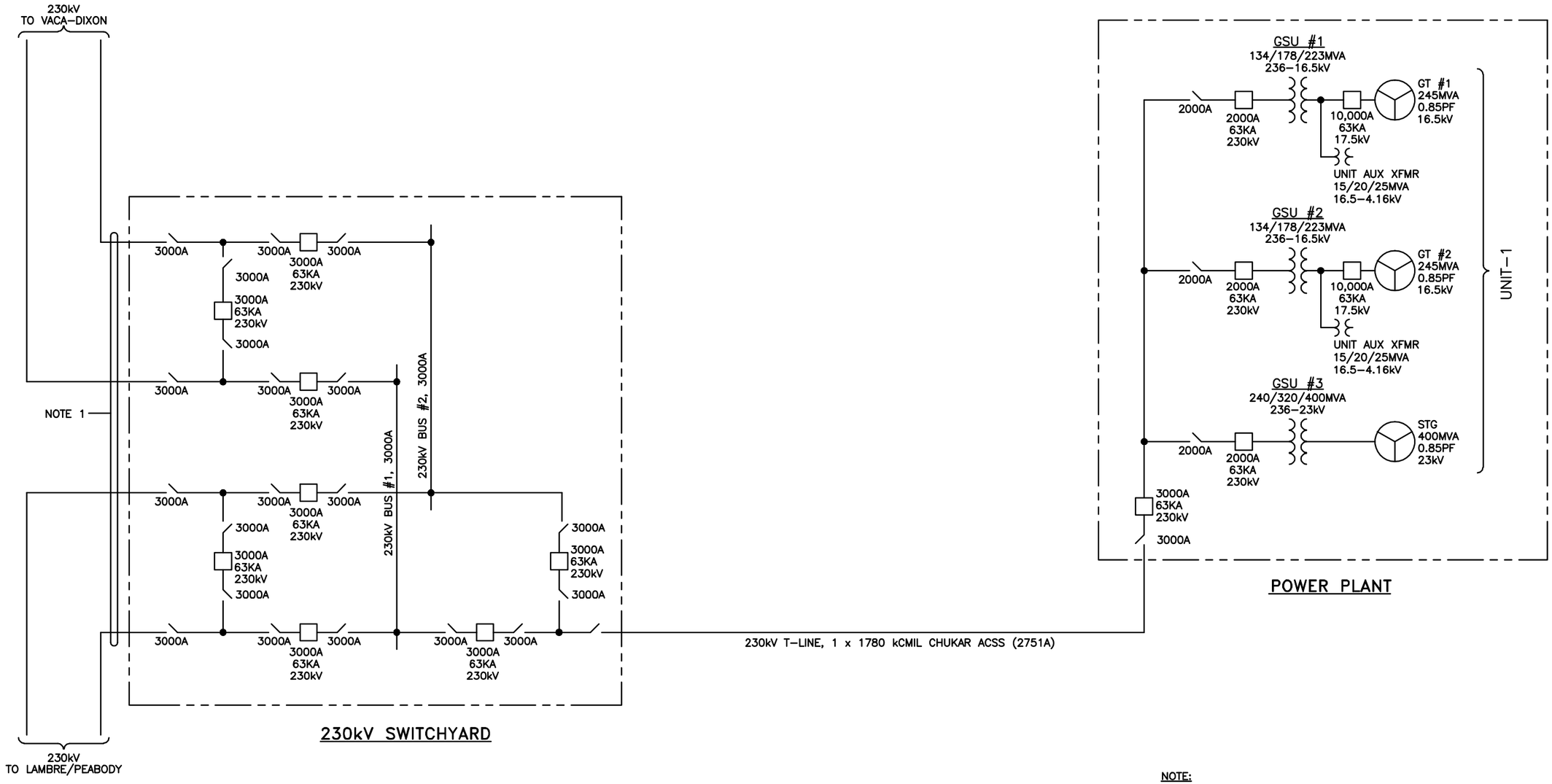


NOTE:

1. THIS CONDUCTOR CAN BE SINGLE 2156kCMIL ACSS (BLUBIRD ACSS). PG&E WILL SELECT TRANSMISSION LINE CONDUCTOR FOR RE–CONDUCTORING IN THE FUTURE AND THIS CONDUCTOR SHALL BE THE SAME.

FIGURE DR58-1
DOUBLE-CIRCUIT 230 KV GENERATION TIE-LINE AND SWITCHYARD ONE-LINE DIAGRAM
CPV VACA STATION
VACAVILLE, CA

Source: Pike Electric, Inc., Drawing 339115085-D3-1_RevG



NOTE:

1. THIS CONDUCTOR CAN BE SINGLE 2156kCMIL ACSS (BLUBIRD ACSS). PG&E WILL SELECT TRANSMISSION LINE CONDUCTOR FOR RE–CONDUCTORING IN THE FUTURE AND THIS CONDUCTOR SHALL BE THE SAME.

FIGURE DR59-1
SINGLE-CIRCUIT 230 KV GENERATION TIE-LINE AND SWITCHYARD ONE-LINE DIAGRAM
CPV VACA STATION
VACAVILLE, CA

Source: Pike Electric, Inc., Drawing 339115085-D3-2_RevA

Visual Resources (61-67)

Corrected AFC Table 5.13-2

61. Please provide a corrected version of Table 5.13-2 that reflects the current estimates of the building dimensions as shown in the site plot plan, and as necessary correct the site plot plan if errors are found in the depiction of the building dimensions.

Response: Table DR61-1 shows the correct dimensions.

TABLE DR61-1
Approximate Dimensions and Colors, Materials, and Finishes of the Major Project Features

Feature	Height (feet)	Length (feet)	Width (feet)	Diameter (feet)	Color	Materials	Finish
Exhaust Stacks	150	—	—	18.5	Gray	Metal	Flat/Untextured
HRSG – Tier 2	84	154	40	—	Gray	Metal	Flat/Untextured
HRSG – Tier 3	95	101	40	—	Gray	Metal	Flat/Untextured
Combustion Turbine Generator	21	251	40	—	Gray	Metal	Flat/Untextured
CT Generator Step Up Transformers	20.3	64	50	—	Gray	Metal	Flat/Untextured
ST Generator Step Up Transformers	20	36	54	—	Gray	Metal	Flat/Untextured
Steam Turbine Generator	82	98	61		Gray	Metal	Flat/Untextured
Cooling Tower	23	53	715	—	Gray	Metal	Flat/Untextured
Raw/Fire Water Storage Tank	70	—	—	75	Gray	Metal	Flat/Untextured
Demineralized Water Storage Tank	21	—	—	34	Gray	Metal	Flat/Untextured
Water Treatment Building	37	117	82	—	Gray	Metal	Flat/Untextured
Neutralization Tank	40	—	—	15	Gray	Metal	Flat/Untextured
Utility Bridge	55	30	208	—	Gray	Metal	Flat/Untextured
Electric Transmission Structures	95	—	3	—	Gray	Metal	Flat/Untextured

Cooling Tower Cells

62. Please identify whether the number of cooling tower cells or the overall size of the cooling tower would be different for the GE or Siemens turbine cases.

Response: CPVVS expects the number of cells to be the same, but the tower may be slightly smaller for the GE turbine. For the purposes of this application, however, the number of cooling tower cells and the overall size of the cooling tower should be treated as the same for both cases (worst case for each aspect being considered).

Cooling Tower Fan Motors

63. *Please confirm whether the cooling tower fan motors will have two speed or variable speed/flow controllers.*

Response: The cooling tower fan motors will be single speed.

Vapor Plume Formation

64. *Please summarize for the cooling tower the conditions that affect vapor plume formation including cooling tower heat rejection, exhaust temperature, and exhaust mass flow rate. Please provide values to complete the table below, and additional data as necessary for staff to be able to determine how the heat rejection load varies with ambient conditions and also determine at what ambient conditions (i.e. wet bulb temperatures approaching or below freezing) cooling tower cells may be shut down.*

Response: Information has been provided in Table DR64-1. This information should be considered representative at this point because the cooling tower vendor has not been selected and the equipment has not yet been purchased. Please note that an exhaust flow rate of 1,513,000 CFM per cell was used in the air quality impact analysis dispersion modeling submitted on May 25, 2009. The lower flow rate will result in a slightly higher (and therefore more conservative) estimated ground level impact.

TABLE DR64-1
Representative Cooling Tower Characteristics

Parameter	Cooling Tower Exhausts							
Number of Cells	12 cells (1 by 12)							
Cell Height	52.3 feet*							
Cell Diameter	32.8 feet							
Tower Housing Length	720.7 feet							
Tower Housing Width	60.0 feet							
Ambient Temperature	26.2°F		34.4°F		75.6°F		94.9°F	
Ambient RH	81%		56%		64%		22%	
Duct Firing	Yes	No	Yes	No	Yes	No	Yes	No
Cells in operation (#)	12	12	12	12	12	12	12	12
Heat Rejection MMBtu/hr	2,116	1,549	2,095	1,534	2,038	1,491	2,009	1,448
Exhaust Temp (°F)	67.1	58.1	71.2	62.9	81.6	75.2	91.4	88
Exhaust Flow MCFM / fan	1,709	1,692	1,722	1,718	1,728	1,723	1,734	1,729

*Ambient temperatures and an estimate of the heat rejection are based on the ambient cases presented in AFC Appendix 2A. The cooling tower height is taken from the air quality dispersion modeling files.

Cooling Tower Exhaust Conditions

65. *Please use the worst-case, highest heat rejection case, which appears to be the Siemens turbine case for each ambient condition. This data should also consider the fan speed related to the answer to the data request directly above. Additional combinations of temperature and relative humidity or curves showing heat rejection vs. ambient condition and solar condition, if provided by the applicant, will be used to more accurately represent the cooling tower exhaust conditions.*

Response: Please see Table DR64-1.

Design Safety Margins

66. *Please include appropriate design safety margins for the heat rejection, exhaust flow rate and exhaust temperature in consideration that the air flow per heat rejection ratio is often used as Condition of Certification confirmation of design limit.*

Response: This has been considered in developing the cooling tower specifications of Table DR64-1.

Cooling Tower Manufacturer and Fogging Frequency Curve

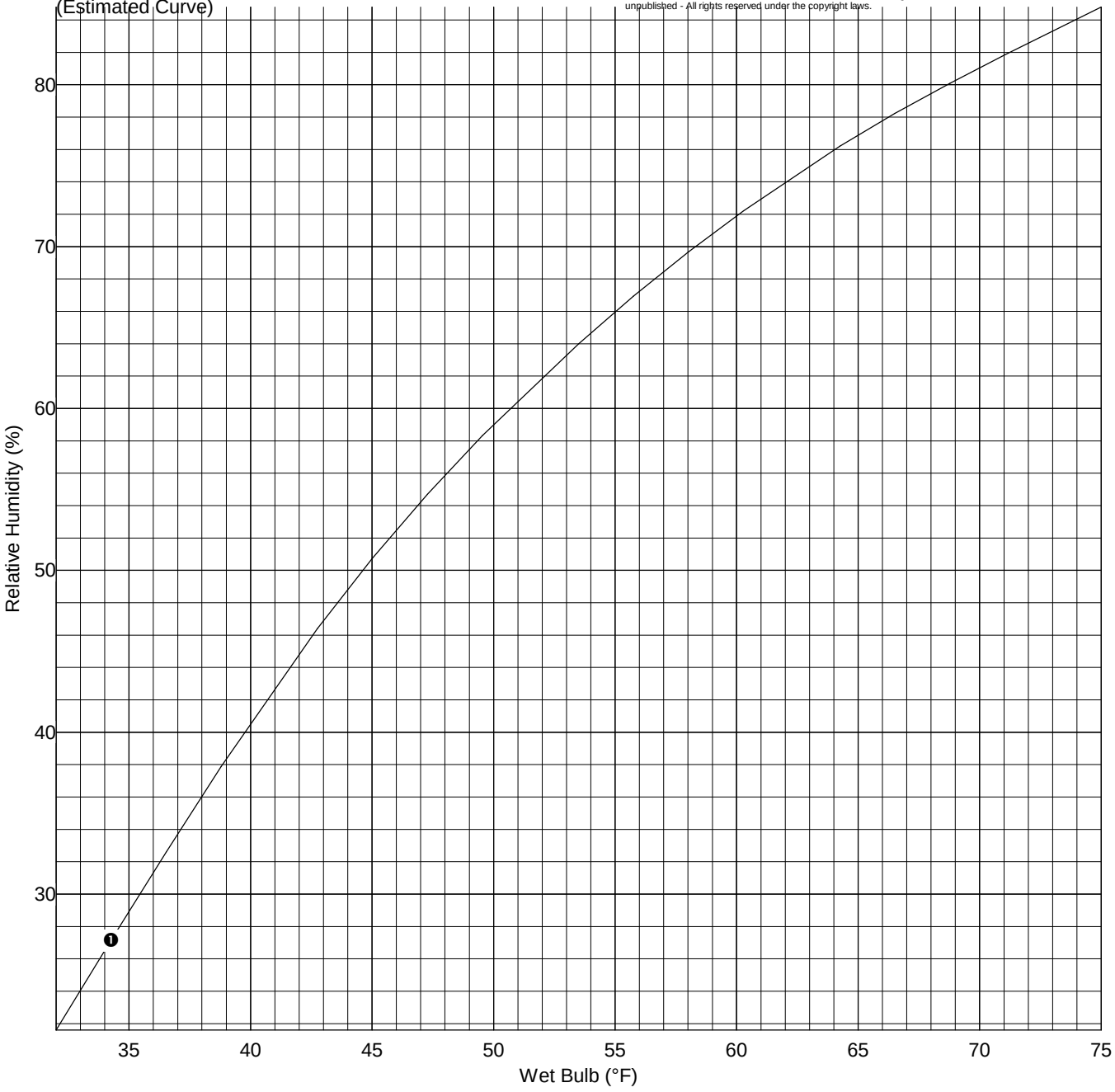
67. *Please provide the cooling tower manufacturer and model number information and a fogging frequency curve from the cooling tower vendor, if available.*

Response: The cooling tower manufacturer has not yet been selected. A representative fogging curve provided by one of the bidders is included as Attachment DR67-1.

ATTACHMENT DR67-1

Fogging Frequency Curve

Fogging Frequency Curve for
CPV - Vacaville, CA
(Estimated Curve)



SPX Cooling Technologies
TRACS Version 18-SEP-08

Model	F4910-6.6-12
Number of Cells	12
Motor Output	250HP
Motor RPM	1800
Fan	384HP7-9
Fan RPM (Full Speed)	112

Design Conditions:

Flow Rate	142000GPM
Hot Water	106.40°F
Cold Water	78.10°F
Wet-Bulb	72.00°F

Curve Conditions:

Fan Pitch	Constant
Flow Rate (100% Design Flow)	142000GPM

Tangency 100.0%

FOGGING FREQUENCY CURVE: The curve shown to the left is referred to as a 'Fogging Freqency Curve'. The Fogging Freqency Curve separates entering cooling tower conditions that produce fog at the discharge (Top-Left region of chart) from those that do not produce fog (Bottom-Right region of chart)

❶ 28.3 °F Range
X Design Point

Time: 15:07:19 Date: 06-02-2009 Drawn By: MP

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *CPV VACA STATION* BY THE *CPV VACAVILLE, L.L.C.*

Docket No. 08-AFC-11

PROOF OF SERVICE

(Established 2/18/2009)

APPLICANT

Andrew Welch - Vice President
Competitive Power Ventures, Inc.
8403 Colesville Road, Suite 915
Silver Spring, MD 20910
awelch@cpv.com

APPLICANT CONSULTANT

Douglas M. Davy - Program Manager
CH2MHill
2485 Natomas Park Drive, Suite 600
Sacramento, CA 95833
ddavy@ch2m.com

COUNSEL FOR APPLICANT

Michael J. Carroll
LATHAM & WATKINS LLP
650 Town Center Drive, 20th Floor
Costa Mesa, CA 92626-1925
michael.carroll@lw.com

INTERESTED AGENCIES

California ISO
e-recipient@caiso.com

INTERVENORS

ENERGY COMMISSION

JEFFREY D. BYRON
Commissioner and Presiding Member
jbyron@energy.state.ca.us

ARTHUR H. ROSENFELD
Commissioner and Associate Member
arosenfe@energy.state.ca.us

Raoul Renaud
Hearing Officer
rrenaud@energy.state.ca.us

Rod Jones
Project Manager
rjones@energy.state.ca.us

Deborah Dyer
Staff Counsel
ddyer@energy.state.ca.us

Melanie Moultry
Staff Counsel
mmoultry@energy.state.ca.us

Loreen McMahon
Public Adviser
publicadviser@energy.state.ca.us

*indicates change

DECLARATION OF SERVICE

I, Mary Finn, declare that on June 8, 2009, I served and filed copies of the attached CPV Vaca Station (08-AFC-11) Response to CEC Staff Data Requests 54-67. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[http://www.energy.ca.gov/sitingcases/vacastation/index.html]**. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(C*heck all that Apply*)

For service to all other parties:

__✓__ sent electronically to all email addresses on the Proof of Service list;

__✓__ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

AND

For filing with the Energy Commission:

__✓__ **sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);**

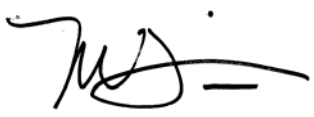
OR

____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-11
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

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



Mary Finn