

**PUBLIC UTILITIES COMMISSION**

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



April 10, 2024

Clarissa Michaud  
Compliance Team Leader, West  
Henrietta Solar Facility  
19117 Kent Ave, Lemoore, CA 93245

**SUBJECT: Generation Audit of Henrietta Solar Facility (Henrietta) - Audit Number GA2024-02HS**

Dear Ms. Michaud:

On behalf of the Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC), Brandon Vazquez and Christopher Villalobos of ESRB staff conducted a generation audit of Henrietta from February 5 through February 7, 2024.

During the audit, ESRB observed plant operations, inspected equipment, reviewed data, interviewed plant staff, and identified potential violations of General Order (GO) 167-B. A copy of the audit findings itemizing the violations is attached. Please advise me by email no later than May 8, 2024 by providing an electronic copy of all corrective actions and preventive measures taken and/or planned to be taken to resolve the violations.

Your response should include a Corrective Action Plan with a description and completion date of each action and measure completed. For any violations not corrected, please provide the projected completion dates to correct the violations and achieve full compliance with GO 167-B.

Please submit your response to Brandon Vazquez at [Brandon.Vazquez@cpuc.ca.gov](mailto:Brandon.Vazquez@cpuc.ca.gov). Please note that although Henrietta has been given 30 days to respond, it has a continuing obligation to comply with all applicable GO 167-B requirements; therefore, the response period does not alter this continuing duty.

The CPUC intends to publish the audit report of Henrietta on the CPUC website. If you wish to make a claim of confidentiality covering any of the information in the report, you may submit a confidentiality request pursuant to Section 15.4 of GO 167-B, using the heading "General Order 167-B Confidentiality Claim" along with such redactions. Per GO 167-B Rule 15.4, the confidentiality claim should be for specific items and provide its corresponding justification, as opposed to a blanket confidentiality claim on the entire audit report. The request and redacted version of the audit report should be sent to Brandon Vazquez with a copy to me and the GO 167 inbox [GO167@cpuc.ca.gov](mailto:GO167@cpuc.ca.gov) by May 8, 2024.

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Please note that ESRB will also post Henrietta's audit report response on the CPUC website. If there is any information in your response that you would like us to consider as confidential, we request that in addition to your confidential response, you provide us with a redacted version of your audit response that can be posted on the CPUC website.

Thank you for your courtesy and cooperation throughout the audit process. If you have any questions concerning this audit, please contact Brandon Vazquez at [Brandon.Vazquez@cpuc.ca.gov](mailto:Brandon.Vazquez@cpuc.ca.gov) or (628) 249-2867.

Sincerely,

A handwritten signature in blue ink, appearing to read "Banu Acimis".

Banu Acimis, P.E.  
Program and Project Supervisor  
Electric Safety and Reliability Branch  
Safety and Enforcement Division  
California Public Utilities Commission

Attachment: CPUC Generation Audit Findings

Cc: Lee Palmer, Director, Safety and Enforcement Division, CPUC  
Nika Kjensli, Program Manager, ESRB, SED, CPUC  
Rickey Tse, Program and Project Supervisor, ESRB, SED, CPUC  
Nathan Sarina, Senior Utilities Engineer- Supervisor, ESRB, SED, CPUC  
Brandon Vazquez, Utilities Engineer, ESRB, SED, CPUC  
Christopher Villalobos, Utilities Engineer, ESRB, SED, CPUC

**CPUC AUDIT FINDINGS OF  
HENRIETTA SOLAR FACILITY (HENRIETTA)  
February 5-7, 2024**

**I. Findings**

**Finding 1: Henrietta Solar (“The Plant”) needs to install and/or replace deteriorated high voltage signage.**

**General Order (GO) 167-B, Maintenance Standard (MS) 1: Safety** states:

*“The protection of life and limb for the work force is paramount. The company behavior ensures that individuals at all levels of the organization consider safety as the overriding priority. This is manifested in decisions and actions based on this priority. The work environment, and the policies and procedures foster such a safety culture, and the attitudes and behaviors of individuals are consistent with the policies and procedures.”*

**GO 167-B, Operation Standard (OS) 4: Problem Resolution and Continuous Improvement** states:

*“The GAO values and fosters an environment of continuous improvement and timely and effective problem resolution.”*

ESRB noted that high voltage signage on the inverters at each solar array were deteriorated and/or faded, depicted below in Figures 1 through 3. Signage is required to identify threats and safety hazards for staff, contractors, and emergency personnel. The Plant must continuously monitor the condition of all signage and replace as needed.



Figure 1: Inverter with deteriorated/faded high voltage signage at Array 1.



Figure 2: Inverter with deteriorated/faded high voltage signage at Array 2.



Figure 3: Inverter with deteriorated/faded high voltage signage at Array 3.

**Finding 2: The Plant needs to install and/or replace deteriorated confined space signs.**

**GO 167-B, OS 1: Safety** states in part:

*“The protection of life and limb for the work force is paramount. GAOs have a comprehensive safety program in place at each site. The company behavior ensures that personnel at all levels of the organization consider safety as the overriding priority. This is manifested in decisions and actions based on this priority.”*

**Occupational Safety and Health Administration (OSHA) Standard 1910.146(c)(2): Permit-required confined spaces** states:

*“If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.”*

ESRB staff identified a deteriorated/faded confined space sign on the manhole of the main transformer in the substation, see Figure 4. Confined space signage is required for the operational safety of the plant, so staff and contractors are aware of the potential safety hazards and the need to obtain a permit before entering a confined space. The Plant must continuously monitor the condition of all signage and replace them as needed.



Figure 4: Confined space sign on manhole in substation is deteriorated/faded.

**Finding 3: The Plant needs to promptly correct oil leaks.**

**GO 167-B, MS 1: Safety** states:

*“The protection of life and limb for the work force is paramount. The company behavior ensures that individuals at all levels of the organization consider safety as the overriding priority. This is manifested in decisions and actions based on this priority. The work environment, and the policies and procedures foster such a safety culture, and the attitudes and behaviors of individuals are consistent with the policies and procedures.”*

**GO 167-B, MS 9: Conduct of Maintenance** states:

*“Maintenance is conducted in an effective and efficient manner so equipment performance and materiel condition effectively support reliable plant operation.”*

**GO 167-B, OS 4: Problem Resolution and Continuous Improvement** states:

*“The GAO values and fosters an environment of continuous improvement and timely and effective problem resolution.”*

**GO 167-B, OS 11: Operations Facilities, Tools and Equipment** states:

*“Facilities and equipment are adequate to effectively support operations activities.”*

**GO 167-B, OS 13: Routine Inspections** states in part:

*“Results of data collection and monitoring of parameters during routine inspections are utilized to identify and resolve problems, to improve plant operations, and to identify the need for maintenance.”*

ESRB staff observed that the main transformer in the substation had a minor oil leak. The oil leak was observed on the low side of the main transformer, coming from the flange shown in Figure 5. Per ESRB’s review of the Plant’s substation inspection records, the oil leak was noted periodically by the Plant staff in the 8/7/2023 through 12/4/2023 substation inspection records. Leakage of oil poses risks to worker safety, environmental hazards, and operational reliability and efficiency. The leak had been noted since August of 2023, and was still present by the time ESRB conducted the audit in February of 2024 and had not been resolved. The Plant must promptly generate and execute corrective maintenance work orders and repair leaks to maintain safety, reliability, and efficiency of the Plant.



Figure 5: Oil leak at the low side flange of the main transformer.

**Finding 4: The Plant has not conducted fire protection system inspections every 3 years.**

**GO 167-B, MS 1: Safety** states:

*“The protection of life and limb for the work force is paramount. The company behavior ensures that individuals at all levels of the organization consider safety as the overriding priority. This is manifested in decisions and actions based on this priority. The work environment, and the policies and procedures foster such a safety culture, and the attitudes and behaviors of individuals are consistent with the policies and procedures.”*

**GO 167-B, OS 20: Preparedness for On-Site and Off-Site Emergencies** states in part:

*“The GAO plans for, prepares for, and responds to reasonably anticipated emergencies on and off the plant site, primarily to protect plant personnel and the public, and secondarily to minimize damage to maintain the reliability and availability of the plant.”*

**National Fire Protection Association (NFPA) 25 Chapter 4, Section 4.1.1 Responsibility for Inspection, Testing Maintenance and Impairment** states:

*“The property owner or designated representative shall be responsible for the proper inspection, testing maintenance and impairment management of water-based fire protection systems in accordance with this standard.”*

The Plant has not had any fire protection system inspections since commercial operation of the Henrietta Solar began in September 2016. Per ESRB's review of the Plant's records, this issue was first identified in the Aegis 1/27/2020 Risk Assessment. The Aegis Risk Assessment states: *"Fire detection in the Substation Control Building and in the O&M Building has not been tested."* During ESRB's audit of the facility, the Plant staff made it known that they were aware of the deficiency and were currently in the process of contracting Cosco Fire to conduct the inspection this year.

**Finding 5: Vegetation control around inverters – grass growing into the inverter and very close to the surrounding concrete base.**

**GO 167, MS 1: Safety** states:

*"The protection of life and limb for the work force is paramount. The company behavior ensures that individuals at all levels of the organization consider safety as the overriding priority. This is manifested in decisions and actions based on this priority. The work environment, and the policies and procedures foster such a safety culture, and the attitudes and behaviors of individuals are consistent with the policies and procedures."*

**GO 167, OS 12: Operations Conduct** states in part:

*"D. Personnel take immediate actions to prevent or correct unsafe situations."*

**Henrietta Owner Manual, Section 3.3.1**, states in part:

*"Maintain vegetation free margins of approximately 3' (1 m) around all site equipment ... Add a layer of gravel to help maintain vegetation free margins."*

During the audit of the facility, ESRB inspected inverters in each array. There is a total of 51 SMA type inverters which convert DC solar array power to AC power. There are also transformers at the inverters which step up the low-voltage, high current output from the inverters. ESRB observed overgrown vegetation extending under the inverter, as seen in Figure 6 and 7. Some of the vegetation under the inverter is cut or dead vegetation which also poses a significant threat because it can act as loose, flammable debris. Figure 7 also shows a wider view of an inverter with vegetation surrounding the entirety of the inverter all the way up to the concrete pad. The close proximity of vegetation to an inverter and transformer poses a potential fire hazard and safety risk. Section 3.3.1 of *Henrietta Owner's Manual* provided to Henrietta Solar by SunPower outlines the recommended vegetation management practices for the Plant. The Plant should follow the recommendations in the owner's manual and remove vegetation around all site equipment to mitigate the fire risk. The overgrown vegetation was seen at multiple inverter locations and should be corrected throughout Henrietta Solar.





Figure 6: Overgrown vegetation at Inverter



Figure 7: Invasive Loose Vegetation

## II. Observations

### Observation 1: ESRB staff observed that notes in Plant records lacked detail.

**GO 167-B, MS 4: Problem Resolution and Continuing Improvement** states:

*“The company values and fosters an environment of continuous improvement and timely and effective problem resolution.”*

**GO 167-B, MS 6: Training Support** states:

*“A systematic approach to training is used to achieve, improve, and maintain a high level of personnel knowledge, skill, and performance.”*

**GO 167-B, OS 13: Routing Inspections** states in part:

*“Among other things, the GAO creates, maintains, and implements routine inspections by:*

*B. Establishing procedures for routine inspections that define critical parameters of these systems, describe how those parameters are monitored, and delineate what action is taken when parameters meet alert or action levels.”*

Regarding the Plant’s Evacuation Drill Report & Critiques, ESRB staff observed that notes tracked in Maximo lacked clarity as to what tasks were conducted and the roles/responsibilities of staff. Concerning the Plant’s substation inspection records, ESRB staff observed that the notes and findings written by Plant staff lacked detail. The findings often do not list specific equipment, the phase, etc. ESRB staff believes detailed notes would be helpful to Plant staff and ESRB staff when reviewing the records, so that issues/findings noted are clearly communicated, and the issue or observation is understood and can be corrected as appropriate.

### III. Documents Reviewed

ESRB staff reviewed the following records and documents:

Category	Reference #	CPUC-Requested Documents
Safety	1	Orientation Program for Visitors and Contractors**
	2	Evacuation Procedure
	3	Evacuation Map and Plant Layout
	4	Evacuation Drill Report & Critique (last 3 years)
	5	Hazmat Handling Procedure
	6	SDS for All Hazardous Chemicals
	7	Injury & Illness Prevention Plan (IIPP) (last 3 years)
	8	OSHA Form 300 (Injury Log) in last 4 years
	9	OSHA Form 301 (Incident Report) in last 4 years
	10	List of all CPUC Reportable Incidents (last 5 years)
	11	Root Cause Analysis of all Reportable Incidents (if any)
	12	Fire Protection System Inspection Record (last 3 years)
	13	Insurance Report / Loss Prevention / Risk Survey (last 3 years)
	14	Lockout / Tagout Procedure (last 3 revisions, if applicable)
	15	Arc flash Analysis
	16	Confined Space Entry Procedure
	Training	17
18		Safety Training Records*
19		Skill-related Training Records*
20		Certifications for Welders, Forklift & Crane Operators*
Contractor	21	Hazmat Training and Record*
	22	Latest list of Qualified Contractors*
	23	Contractor Selection / Qualification Procedure
	24	Contractor Certification Records
Regulatory	25	Contractor Safety Program Procedure and Training Records
	26	Water Permit (if applicable)
	27	Spill Prevention Control Plan (SPCC) (if applicable)
O&M	28	CalARP Risk Management Plan (RMP)
	29	Daily Round Sheets / Checklists
	30	Logbook**

	31	List of Open/Backlogged Work Orders*
	32	List of Closed/Retired Work Orders (last 2 years)*
	33	Work Order Management Procedure (last 3 revisions, if applicable)
	34	Computerized Maintenance Management System (Demonstration On-site)**
	35	All Root Cause Analyses (if any)
	36	Maintenance & Inspection Procedures, or Related Documents (last 3 revisions, if applicable)
	37	SCADA system (Demonstration On-site)**
	38	Maintenance and Inspection Records for Solar Inverters
	39	Maintenance and Inspection Records for Solar Trackers
	40	Maintenance and Inspection Records for Solar Arrays/Collectors/Solar Field
	41	Maintenance and Inspection Records for Mounting System
	42	Maintenance and Inspection Records for Switchgear/breaker/relays
	43	Maintenance and Inspection Records for Electrical System
	44	Maintenance and Inspection Records for Main Transformer(s)
	45	Maintenance and Inspection Records for Switchyard & Transmission Equipment
	46	Maintenance and Inspection Records for other equipment
Documents	47	P&IDs*
	48	Vendor Manuals*
	49	Solar Farm Equipment Design Data
	50	Procedure Compliance Policy
Spare Parts	51	Spare Parts Inventory List
	52	Shelf-life Assessment Report
Management	53	Organizational Chart
Instrumentation	54	Instrument Calibration Procedures and Records
Test Equipment	55	Measuring & Testing Equipment List
	56	Test Equipment Calibration Procedures and Records
Internal Audit	57	Internal Audit Procedures and all Records

\* Provide data in a searchable format such as a searchable PDF, Word Document, Excel Spreadsheet, etc.

\*\* These items may be provided on-site by the first day of the audit.