

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



February 16, 2023,

GA2022-04BSS

David Wen
AES Director of Operation and Maintenance
44358 100th St West
Lancaster, CA 93536

SUBJECT: Generation Audit of AES Big Sky Substation

Mr. Wen:

On behalf of Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC), Eric Ujiiye, Mily Vaidya and Calvin Choi and conducted a generation audit of the AES Big Sky Substation Solar Plant from March 14, 2022, to March 18, 2022.

During the audit, my staff observed plant operations, inspected equipment, reviewed data, interviewed plant staff, and identified violations of General Order (GO) 167-B. A copy of the audit findings itemizing the violations is enclosed. Please advise me no later than March 17, 2023, by electronic or hard copy, of all corrective measures taken by AES Big Star Solar to remedy and prevent the recurrence of such violations. Your response should include a Corrective Action Plan with a description and completion date of each action and measure completed.

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". The request should be sent to Eric Ujiiye with a copy to me and the GO 167-B inbox (GO167@cpuc.ca.gov), by March 3, 2023. If you have any questions concerning this audit, you can contact Eric Ujiiye at Eric.Ujiiye@cpuc.ca.gov or (213) 620-2598.

Sincerely,

A handwritten signature in blue ink that reads "Fadi Daye".

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

Attachment: Findings

Cc: Lee Palmer, Director, Safety and Enforcement Division, CPUC
Nika Kjensli, Program Manager, ESRB, CPUC
Derek Fong, Senior Utilities Engineer, ESRB, CPUC
Eric Ujiiye, Utilities Engineer, ESRB, CPUC

I. Findings Requiring Corrective Action

1. Finding: Improper storage of waste and materials.

GO 167-B, Appendix E, Operation Standard 8: Plant Status and Configuration states:

Station activities are effectively managed, so plant status and configuration are maintained to support safe, reliable and efficient operation.

GO 167-B, Appendix D, Maintenance Standard 9: Conduct of Maintenance states:

Maintenance is conducted in an effective and efficient manner, so equipment performance and material condition effectively support reliable plant operation.

GO 167-B, Appendix D, Maintenance Standard 12: Spare Parts, Materials and Services, states:

Correct parts and materials in good condition, are available for maintenance activities to support both forced and planned outages. Procurement of services and materials for outages are performed in time to ensure materials will be available without impact to the schedule. Storage of parts and materials support maintaining quality and shelf life of parts and materials.

ESRB staff observed surplus and waste items stored outside the storage area. Items should be properly stored if intended for future use or properly disposed of for environmental and safety reasons.



Figure 1 is of a storage container that contained an unidentified fluid and a pallet supporting electrical components left outside unprotected. Figure 2 is of a photograph of a stack of disarray pallets.

2. Finding: Multiple locations had unsecured cables attached to solar panels.

GO 167-B, Appendix D, Maintenance Standard 9: Conduct of Maintenance, states:

Maintenance is conducted in an effective and efficient manner, so equipment performance and material condition effectively support reliable plant operation.

GO 167-B, Appendix D, Maintenance Standard 13: Equipment Performance and Material Condition, states:

Equipment performance and material condition support reliable plant operation. This is achieved using a strategy that includes methods to anticipate, prevent, identify, and promptly resolve equipment performance problems and degradation.

ESRB staff observed multiple solar panel areas with unsecured cables touching or almost touching the ground. The unsecured cables can be damaged by wildlife or caught in the tracker system as seen in figure 3.



Figures 3 and 4 are photographs of a cable that was caught on the strut of the solar panel structure.



Figures 5 and 6 are displaying cables that have detached from panels and contacting the ground.

3. Finding: Multiple areas had unlocked inverter cabinets

GO 167-B, Appendix D, Maintenance Standard 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.

ERSB staff found multiple inverter cabinets that were unlocked. Unauthorized access from unqualified personnel or members of the public that can lead to death, serious injury, or an interruption of service.



Figures 7 and 8 are photographs of inverter cabinets that were not locked allowing access to the internal components.

4. Finding: ERSB Staff observed multiple spill kits throughout the solar facilities were missing items.

GO 167-B, Appendix D, Maintenance Standard 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.

ESRB staff opened and observed multiple spill kits located throughout the areas that did not have all the items listed on the contained check lists. The lack of spill supplies will result in being unprepared for a spill that can result in injury and environmental hazard.



Figure 9 displays a spill kit that was examined to be incomplete missing multiple items.

5. Finding: Several solar array struts in multiple locations were damaged and detached

GO 167-B, Appendix D, Maintenance Standard 9: Conduct of Maintenance states:

Maintenance is conducted in an effective and efficient manner, so equipment performance and material condition effectively support reliable plant operation.

ESRB Staff observed several solar array support struts that were damaged and detached from their connection point. The disconnected strut supports can cause the solar tracking systems to malfunction, leading to inefficiency in the performance of the array of panels.



Figure 10 is displaying an observed detached solar array strut.

6. Finding: Oil leakage at an inverter panel.

GO 167-B, Appendix D, Maintenance Standard 9: Conduct of Maintenance states:

Maintenance is conducted in an effective and efficient manner, so equipment performance and material condition effectively support reliable plant operation.

ESRB staff observed a panel located at an inverter that was seeping oil from a panel that is used to observe oil levels of the inverter.



Figure 11 is a photograph of oil that was observed to be leaking at an inverter panel.

7. Finding: Oil leakage at an inverter panel.

GO 167-B, Appendix D, Maintenance Standard 9: Conduct of Maintenance states:

Maintenance is conducted in an effective and efficient manner, so equipment performance and material condition effectively support reliable plant operation.

ESRB staff observed a damaged insulator boot for a bus bar attached to an underground conductor. The issue poses a safety risk to maintenance crews or any personnel working on or near the facility.



Figure 12 is a photograph of the damaged insulator boot and Figure 13 is the structure ID of the facility.

8. Finding: Grounding wires for platform pads protruding out the ground causing tripping hazard.

GO 167-B, Appendix D, Maintenance Standard 9: Conduct of Maintenance states:

Maintenance is conducted in an effective and efficient manner, so equipment performance and material condition effectively support reliable plant operation.

ESRB staff observed multiple ground wires protruding out of the ground and attached to grounding pads, creating tripping hazards.



Figure 14 is a photograph displaying a ground wire observed by ESRB staff that was protruding creating tripping hazard.

II. Documents Reviewed

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	MSDS 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 Sprinklers Test Report (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
	17	Plant Physical Security and Cyber Security Procedures and Records
	18	Fire Protection System Inspection Record
Training	19	Safety Training Records*
	20	Skill-related Training Records*
	21	Certifications for Welders, Forklift & Crane Operators*
	22	Hazmat Training and Record*
Contractor	23	Latest list of Qualified Contractors*
	24	Contractor Selection / Qualification Procedure
	25	Contractor Certification Records
	26	Contractor Monitoring Program
Regulatory	27	Daily CEMS Calibration Records
	28	Air Permit (if applicable)
	29	Water Permit (if applicable)
	30	Spill Prevention Control Plan (SPCC) (if applicable)
	31	CalARP Risk Management Plan (RMP)

O&M	32	Daily Round Sheets / Checklists
	35	Logbook**
	36	List of Open/Backlogged Work Orders*
	37	List of Closed/Retired Work Orders (last 4 quarters)*
	38	Work Order Management Procedure (last 3 revisions, if applicable)
	39	Computerized Maintenance Management System (Demonstration Onsite)**
	40	All Root Cause Analyses (if any)
	41	Maintenance & Inspection Procedures (or Related Documents) (last 3 revisions, if applicable)
	42	SCADA system
	43	Maintenance and Inspection Records for Solar Inverters
	44	Maintenance and Inspection Records for Solar Trackers
	45	Maintenance and Inspection Records for Solar Arrays/Collectors/Solar Field
	46	Maintenance and Inspection Records for Mounting System
		47
	48	Maintenance and Inspection Records for Electrical System
	49	Maintenance and Inspection Records for Main Transformer(s)
	50	Maintenance and Inspection Records for Switchyard & Transmission Equipment
	51	Maintenance and Inspection Records for other equipment
Document	52	P&IDs*
	53	Vendor Manuals*
	54	Solar Firm Equipment Design Data
	55	Procedure Compliance Policy
Spare Parts	56	Spare Parts Inventory List
	57	Shelf-life Assessment Report
Instrumentation	58	Instrument Calibration Procedures and Records
Test Equipment	59	Calibration Procedures and Records
Internal Audit	60	Internal Audit Procedures and all Records