1. General Information

Location:	**Author:** FM Last
Document Title:	

2. Approvals

Role	Name	Approval Signature/Date
CM:	FM Last	
Construction Safety WS&H:	FM Last	
Electrical Safety SME: *(If required)*		

3. Work Scope (description of work to be performed)

☐ Visual inspections, thermography, or miscellaneous non-electrical tasks

☐ Diagnostic and testing electrical work

☐ Establish an electrically safe work condition

4. Engineering Controls and Work Considerations

Consider the following as the work is being performed:

- **Disconnect:** The energized source is known and may be de-energized by a disconnecting means.
- **Illumination:** Is adequate lighting available for the task to be performed?
- **Grounding:** The equipment is grounded.
- **Proper Working Clearance:** The system has a proper working clearance of 36 inches or greater.
- **Equipment is in Good Condition:** There is no apparent evidence of physical damage or impending failure.
- **Energized Parts Guarded:** To the extent possible (except those being worked on, which are not to be left unattended).

5. Pre-Job Briefing

Conduct a pre-job briefing in accordance with CESH.

5.1 Emergency Power Shut Off Location

6. Worker Qualification

Prior to performing the work, verify the QEW(s) performing the scope of work covered by this EWP have the experience and training qualifications necessary to safely execute the work.

7. Shock and Arc-Flash Hazard Analysis

7.1 Shock Hazard/Risk Assessment (select the box that corresponds to entered voltage):

Voltage	Limited Approach Boundary Moveable	Limited Approach Boundary Fixed	Restricted Approach Boundary
☐50–150 VAC	**10′–0″**	**3′–6″**	**Avoid Contact**
☐151–750 VAC	**10′–0″**	**3′–6″**	**1′–0″**
☐50–300 VDC	**10′–0″**	**3′–6″**	**Avoid Contact**
☐* Other:			

*Contact electrical safety SME for shock boundaries of voltage ranges not included on this form.

7.2 Arc-Flash Hazard/Risk Assessment

☐ No arc-flash hazard

- Single-phase lighting systems with ≤ 277V line-ground voltage
- Single-phase AC voltage < 240V or
- DC systems < 100V

☐ Arc-flash hazard present (if this box is selected, complete one of the columns below)

☐ AVT/PESD

7.3 Method of Determining Incident Energy and Arc-Flash Boundary

☐Not applicable (If "No arc-flash hazard," was selected in section 7.2, then section 7.3 is not required to be completed)

☐Incident energy analysis (arc-flash label) ☐Temporary engineering calculation Voltage (Volts): ☐ AC ☐ DC Incident energy (cal/cm^2) : Working distance (inches): Arc-flash boundary (inches):	☐Arc-Flash PPE Category Method Voltage (Volts): ☐ AC ☐ DC Maximum available fault current (amperes): Clearing time of overcurrent protection device (seconds): Working distance (inches): Arc-flash boundary (inches): Arc-flash PPE Category: ☐ 1 ☐ 2 ☐ 3 ☐ 4

7.4 Additional Shock & Arc-Flash Considerations

Risk: ☐ Low : ☐ Medium : ☐ High ☐ AED location: ☐Safety signs and tags ☐Barricades and barriers ☐ Attendant [1]	☐Technical work document[1] ☐Two-person rule[2] ☐Notifications ☐Communication: ☐Other:	☐Electrical safety SME (present) ☐Equipment not properly maintained ☐ Evidence of impending failure(s) ☐Limited egress ☐Safety standby person[1]

Additional information:

[1] Refer to CESH, Section 20, *Definitions*.

[2] The second person means a QEW is within visible and audible contact with the other electrical worker(s) who has been briefed on the specific work procedure and the scope of work, be able to de-energize equipment and alert emergency rescue personnel, and must be trained in first aid/CPR and methods of contact release. Two-person rule required for 3 phase 480V equipment or if arc-flash incident energy is > 1.2 cal/cm^2

8. Personal Protective Equipment (PPE)

- All arc-rated PPE must be worn/used for all parts of the body inside the arc-flash boundary and voltage-rated PPE inside the restricted approach boundary. Arc protective clothing must have an arc thermal protective value (ATPV) or energy breakopen threshold (EBT) rated greater than the calculated arc incident energy.
- All voltage-rated PPE shall be adequately rated for the highest voltage to be encountered.
- All meters must be CAT III or IV rated and listed by a nationally recognized testing laboratory (NRTL).
- All PPE must be visually inspected prior to use and used in accordance with the manufacturer's instructions.

Note: All QEWs shall be familiar with the PPE that is required on this EWP.

8.1 PPE selection for Shock Hazard

Select voltage-rated insulated gloves with external leather protectors per the voltages specified in section 7.1 of this EWP from drop-down menu.

Click **here** and use dop-down menu to select voltage rated gloves.

Other shock hazard PPE (PPE must be rated for voltages specified in section 7.1 of this EWP):

☐ Insulated Shielding ☐ Hard Hat (Class G ≤ 2,200V) ☐ Hard Hat (Class E ≤ 20,000V)

☐ Voltage Rated Sleeves ☐ Insulated Hand Tools

8.2 PPE selection for Arc-Flash Protection (Minimum Rating)

Select PPE per arc-flash method selected in section 7.2 or 7.3 of this EWP.

Click **here** and use drop-down menu to select arc-flash PPE

8.3 Other Protective Equipment

☐ Test Instruments ☐ Temporary Protective Grounds ☐ Ground stick

☐ Other:

9. Special Instructions

10. EWP QEW Sign In Sheet

I have been briefed and understand the hazards and mitigations detailed in this EWP.

Print Name	Signature	Date

SEND completed EWP to MSIN J2-38 or send a scanned copy to Worker Safety and Health Records at ih.os.records@pnnl.gov (Ctrl and Click).

Approval History for: CESH-EWP-Form-01, R1 - Electrical Work Plan - Construction and CESH-EWP-Form-01-Instruction, R1 - Electrical Work Plan Instructions

Final Process State: APPROVED

Name	Activity Name	Date
✔ Thompson, Hunter	Review Concurrence 3	5/1/2025 4:01:55 PM
✔ Kirkpatrick, Evan	Review Concurrence 2	5/1/2025 4:32:12 PM
✔ Sweesy, Jason J	Review Concurrence 1	5/2/2025 7:54:35 AM
✔ Madison, Michael D	Review Concurrence 4	5/6/2025 3:23:53 PM
✔ Jivelekas, Adam P	Review Approval 5	5/8/2025 10:36:33 AM
✔ Grover, Sam B	Review Approval 3	5/8/2025 1:55:15 PM
✔ Haller, Alisa D	Review Approval 7	5/12/2025 3:53:33 PM
✔ Buchanan, Clint R	Review Approval 6	5/15/2025 7:14:56 AM
✔ Cruz, Joe	Review Approval 4	5/16/2025 8:56:53 AM
✔ Morris-Benavides, Sarah	Review Approval 2	5/16/2025 3:45:28 PM
✔ Deichman, Mark L	Review Approval 1	5/19/2025 7:07:21 AM
✔ Martin, Jennifer	Review Approval 8	6/10/2025 10:46:28 AM

*** All actions are stored digitally and viewable at https://approvals.pnl.gov/ProcessView.aspx?pid=6506610**