

Plans

HMIS-PLN-EU-63025

Electrical Utilities Contractor Safety Program

Revision 0, Change 2

Published: 08/26/2025

Effective: 08/26/2025

Program: Electrical Utilities

Topic: Electrical Utilities

Subject Matter Expert: Sorensen, Daniel P

Functional Manager: Johnson, Robert A

Use Type: Administrative



- No USQ Required

JHA: Administrative

Periodic Review Due Date:07/23/2030

Rev. 0, Chg. 2

Change Summary

Description of Change

Correction to information in sections 3.8 and 3.9

Electrical Utilities Contractor Safety Program

Published Date: 08/26/2025

Effective Date: 08/26/2025/

Table of Contents

1.0 INTRODUCTION1
1.1 Purpose.....1
1.2 Scope.....1
2.0 ROLES AND RESPONSIBILITIES1
2.1 Lead Worker (Foreman)1
2.2 EU Interface with Subcontractor/Vendor1
2.3 HMIS Construction Manager.....1
2.4 Subcontractor2
3.0 PLAN
3.1 Subcontractor/Vendor Interfaces2
3.1.1 Medical Services and First Aid.....2
3.1.2 De-Energizing Lines and Equipment for Employee Protection3
3.2 Training and Qualifications3
3.2.1 General Requirements for Qualified Employees3
3.2.2 Minimum Training Requirements.....4
3.3 Pole Climbing4
3.4 Traffic Control5
3.5 Job Briefings5
3.6 Arc Flash Hazard Analysis5
3.7 Safe Energized Work Practices.....6
3.8 Work Area Boundary6
3.9 Personal Protective Equipment (PPE)7
3.9.1 Rubber Protective Equipment7
3.9.2 PPE for Arc Flash Protection.....7
3.10 Working on or Near Exposed Energized Parts8
3.10.1 Minimum Approach Distances8
3.10.2 Initial Determination (Worksite Hazard Evaluation).....8
3.10.3 Working Position9
3.10.4 General Work Practices9
3.10.5 Noncurrent-Carrying Metal Parts9
3.11 Overhead Lines10
3.11.1 General Safety Requirements10
3.11.2 Operations of Insulated Utility Equipment Near Energized Lines or Equipment10
3.12 Grounding for the Protection of Employees12
3.12.1 General.....12
3.13 Testing.....13
3.14 Working Near Energized Cables13
3.15 Chain Saws.....14

NOTE: Employees may print off this document for reference purposes but are responsible to check HMIS Procedure System to ensure the most current version is used to prevent unintended use of obsolete versions.

Electrical Utilities Contractor Safety Program

Published Date: 08/26/2025

Effective Date: 08/26/2025/

4.0	DELIVERABLES.....	14
5.0	REFERENCES	14
5.1	Source Requirements	14
5.2	References.....	15
	Appendix A. Tables	15

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

1.0 INTRODUCTION**1.1 Purpose**

The purpose of this plan is to provide the essential requirements and safe working practices to be utilized by qualified electrical utility workers while planning and performing work on the Hanford site Electrical Utilities transmission and distribution systems and equipment.

1.2 Scope

This Level 2 Plan applies to systems that are under the exclusive control of Hanford Electrical Utilities (EU) for the operation and maintenance of the site electrical power control, transformation, transmission and distribution lines and equipment. This also covers related equipment for control and metering of electrical transmission and distribution systems.

2.0 ROLES AND RESPONSIBILITIES**2.1 Lead Worker (Foreman)**

- Performs Pre-Job Briefings prior to each shift.
- Directs work activities in accordance with this safety procedure and established safe work practices.
- Ensures the following conditions are met:
 - Each member of the crew is aware of the nominal voltage, approach distances, and arc flash boundaries as it pertains to energized parts.
 - Hazards are communicated, boundaries are established and controlled such that unqualified personnel are kept clear from hazards associated with the work activity.
 - Ensure crews wear the proper PPE.
- Ensures proper use of safety devices and equipment (e.g., barricades, rubber goods, warning signs, etc.).
- Ensure the job site is left in a safe condition.

2.2 EU Interface with Subcontractor/Vendor

- Inform subcontractor(s) working on or near EU transmission and distribution systems of any conditions or characteristics related to the safety of the subcontract employee.

2.3 HMIS Construction Manager

- Submits to EU Work Release site form A-6001-394 either on a daily or weekly basis.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

2.4 Subcontractor

- Informs their employees of information provided by EU
- Informs employees of unanticipated hazardous conditions that arise during their work activities
- During composite crew scenarios between EU and subcontractors, during the Pre Job/Tailboard Briefing, safety practices will be covered to ensure all workers are protected

3.0 PLAN

This plan outlines requirements as well as safe work practices used by qualified electrical utility workers planning and performing work on the Hanford site's transmission and distribution systems and equipment. This program also references other Hanford site programs as it relates to work on the Electrical Utilities T&D systems. This plan implements the requirements of 29 CFR 1910.269 *OSHA Electrical Power Generation, Transmission, and Distribution*, as required by 10 CFR 851 and of Washington Administrative Code (WAC) 296-45 *Electric Power Generation, Transmission and Distribution*.

3.1 Subcontractor/Vendor Interfaces

It is the practice of HMIS to recognize the experience and craft specific training of subcontracted lineman working on the Hanford Site. The following information applies to subcontractors performing work under HMIS and at HMIS facilities:

- Subcontractors performing de-energization of EU lines and equipment are trained to HMIS-PRO-EU-066, *Electrical Utilities Lock and Tag Program*, utilizing the clearance process. Contractors working within the substation yard of T&D equipment are escorted by qualified EU Personnel.
- Contractors work under an EU Clearance holder, unless they are trained and qualified to be a clearance holder.
- Subcontractors are considered qualified to the extent they are trained and experienced in the work to be performed.

NOTE: EU will always make final connections for new loads and services to the Hanford T&D system.

3.1.1 Medical Services and First Aid

Emergency services can be obtained onsite by dialing 911 from a fixed phone or (509) 373-0911 from a cellular phone. During times when phone service is unavailable, contact the EU Dispatcher, who will then contact 911. When the health service centers are closed, medical evaluation is available at the nearest fire station.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

Site Occupational Health Services (SOMC) provides medical evaluations and treatment except those cases involving emergency treatment, self-treatment of very minor injuries or occupational conditions occurring during times when the offices are not available. A minor injury (e.g., cuts, scratches, splinters) may be self-treated at the work site if both the employee and the immediate Manager/Supervisor agree on that approach. Strains and sprains are NOT minor injuries and require medical staff evaluation.

Each vehicle and work area should have a fully equipped first-aid kit. First-aid kits shall comply with ANSI/ISEA Z308.1-2015, Minimum Requirements for Workplace First Aid Kits. Each first-aid kit shall be maintained, shall be readily available for use and shall be inspected frequently enough to ensure that expended items are replaced at least once per year. First-aid supplies shall be placed in weatherproof containers if the supplies can be exposed to the weather.

Each contractor crew shall have an Automated External Defibrillators (AED) in the Foreman's truck as a minimum. Each crew shall be responsible to have an AED at the work location.

3.1.2 De-Energizing Lines and Equipment for Employee Protection

Switching will be performed in accordance with EU-PRO-OP-60777, *Electrical Utilities General Switching*.

EU and contractors will utilize HMIS-PRO-EU-066, Electrical Utilities Lock and Tag Program, to control hazards associated with the Hanford Site transmission and distribution lines and equipment for contractor employee protection.

3.2 Training and Qualifications**3.2.1 General Requirements for Qualified Employees**

Qualified Employees shall be specifically trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from other live parts.
- The skills and techniques necessary to determine the nominal voltage of live parts.
- The minimum approach distances specified in this document corresponding to the voltages to which the qualified employee will be exposed and the skills and techniques necessary to maintain those distances.
- The proper use of the special precautionary techniques, personal protective equipment, insulation and shielding materials, and insulated tools for working on or near energized parts of electrical equipment.
- The recognition of electrical hazards to which personnel may be exposed and the skills and techniques necessary to control or avoid these hazards.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

- Operation of a bucket truck, digger derrick, or other specialized utility equipment.
- Bucket truck and pole rescue techniques.
- Skills and techniques necessary to utilize new technology, new types of equipment or changes in safety related work practices that pertain to their job assignment.

3.2.2 Minimum Training Requirements

Subcontractor personnel are required to complete HMIS General Employee Training (HMIS GET) and Hanford General Employee Training (HGET) (4-hour average per individual). Radiological Worker II Training is required for all personnel working under a Radiological Work Permit (RWP).

NOTE: HMIS GET and HGET must be completed to be issued a Hanford Site security identification badge. These trainings are an ANNUAL requirement.

In addition to the training listed above, subcontractor and lower-tier employees will complete the following training courses:

- HMIS-PRO-EU-066, *Electrical Utilities Lock and Tag Program*, is required for any work performed under an electrical clearance.
- First Aid/CPR/AED training
- Additional training may be required for contractor employees, as defined in the construction statement of work, including but not limited to:
 - Hanford Site Confined Space Entry
 - DOE-0336, *Hanford Site Lockout/Tagout Procedure*
 - DOE-0359, *Hanford Site Electrical Safety Program*

3.3 Pole Climbing

Qualified climbers must use fall protection equipment or work positioning equipment with climbing or changing location on poles, towers or similar structures unless it can be demonstrated that climbing or changing location with fall protection is infeasible or creates a greater hazard.

Before climbing poles, employees shall determine, to the extent practical, that the structures can sustain the additional or unbalanced stresses to which they will be subjected. Visual and physical inspections must be performed to verify structural capability.

- a. 29 CFR 1910.269, Appendix D shall be referenced for “Methods of Inspecting and Testing Wood Poles”.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

- b. Where there are indications that poles and structures may be unsafe for climbing, they shall not be climbed until made safe by guying, bracing, or other means.

3.4 Traffic Control

When working where vehicle traffic poses a hazard, HMIS approved traffic control plans are to be utilized. The HMIS Traffic Engineer provides either “Washington State Department of Transportation Work Zone Traffic Control plans” or location/activity specific plans developed by the HMIS Traffic Engineer. If traffic control plans require flaggers, then qualified/current trained flaggers are used.

HMIS Traffic Management must approve traffic control plans except when typical plans provided in Part 6 of the Manual for Uniform Traffic Control Devices or the Washington State Department of Transportation Work Zone Traffic Control Guidelines, Manual M 54 44.05 are used.

3.5 Job Briefings

Prior to beginning work, workers will have a pre-job briefing. The Pre-Job Briefing communicates to the workers the work scope, hazards and controls to safely perform the task. The following should also be discussed during the briefing:

- Energy Source Controls
- Personal Protective Equipment
- Work Methods
- Weather
- LOTO
- Site Conditions
- Assignments
- Equipment Configuration
- Emergency Response
- Take Cover Locations
- AED/First Aid Locations

Any change in work activity that is unique or different from the original scope of work requires additional job briefings or reviews of briefings.

3.6 Arc Flash Hazard Analysis

An assessment will be performed to determine potential exposure to an electric arc for employees who work on or near energized lines, parts or equipment. Arc flash hazards may exist while working on or near the following systems that are under the exclusive control of EU:

- Overhead transmission/distribution lines including 230 kV, 115 kV, 13.8 kV and 2.4 kV
- Outdoor Substations, including 230-13.8 kV and 115-13.8 kV

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

- Underground distribution systems, including 2.4 kV and 13.8 kV
- Low voltage (below 600V) systems including secondary terminals of transformers, metering enclosures and premise wiring systems in substation facilities.

3.7 Safe Energized Work Practices

The utility industry faces unique challenges when planning and performing work on electrical systems under their exclusive control. Equipment design, operational limitations, and reliable continual power for customers often prevents performing work on de-energized systems. Utilities personal strives to perform all work in a deenergized state but recognizes that there are instances where performing the work energized may be determined to be a lessor hazard.

In addition to employee safety, the magnitude of switching operations, customer outage, and configuration limitations are some of the variables that are evaluated. Switching evolutions can expose workers to a higher degree of hazards than the actual work on energized circuits. There may be loads that are essential that cannot readily be taken out of service. Displacement of facility personnel, processes, or even crucial experiments that cannot be stopped often influences the decision to perform work energized. At certain times of the year (winter/summer) during peak loading, reconfiguring lines to provide a cleared area has the potential of placing lines and equipment near their maximum design capacity. Each of these variables needs to be considered when deciding on which work method to use.

Prior to work, a Contractor Utilities Energized Work Checklist, Form A-6009-307, will be completed documenting the following items related to the work:

- Is the work being performed on components that are under the exclusive control of Electrical Utilities?
- Have the location and status of energized lines within the immediate work area been identified?
- Has the voltage of such equipment been determined?
- Has a reasonable estimate of Incident Energy (IE) at the immediate work area been provided?
- Have hazard controls been identified and documented? (e.g. insulated tools, rubber sleeves, line cover)
- Is this work covered under the existing craft specific hazard analysis document?
- What is the justification for energized work?

3.8 Work Area Boundary

When working in areas where there is a potential for access by unqualified workers/personnel, a work area boundary must be established. At these locations, a designated Safety Watch may provide the necessary safety barrier to prevent entrance by unqualified personnel. A physical boundary shall be established if the work area is to be left unattended. The boundary distance shall be greater than:

- a. The Arc Flash Boundary (as determined by engineering)

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

- b. Limited Approach Boundary (LAB), see Appendix A Table 4
- c. The “drop zone” for aerial work
- d. Room needed for the operation of line truck and the handling of materials/equipment within the work boundary

Substations and controlled access areas under the exclusive control of EU are adequate as a work area boundary. A work area boundary is not required at locations where the likelihood of unqualified personnel approaching the work activities is low. At these locations, the designated Safety Watch shall provide the necessary safety barrier to prevent entrance by unqualified personnel.

3.9 Personal Protective Equipment (PPE)

Electrical PPE includes, but is not limited to, the equipment and clothing necessary to protect personnel performing electrical work from hazards involving electrical shock, arc flash, and any other electrical hazards that may be encountered. All parts of the body located inside the arc flash boundary must be protected. This section addresses personal protective equipment needed to safely perform electrical transmission and distribution construction and maintenance.

Electrical PPE and other protective equipment that has an expired testing date or fails visual or functional inspection must be removed from service.

PPE shall be:

- Maintained in a safe, reliable condition.
- Stored in a manner that protects against physical damage, moisture, dust, or other deteriorating agents.
- Inspected prior to use to prevent the use of defective personal protective equipment on the job.
- Suitable for their intended use and in good working condition.

3.9.1 Rubber Protective Equipment

Protective equipment must not be used at voltages more than that, for which the manufacturer recommends, see Appendix A Table 5.

Rubber protective equipment must be protected from damage. Equipment should not be stored in a manner which could cause damage to the rubber equipment or goods. All rubber goods must be inspected and tested prior to use.

3.9.2 PPE for Arc Flash Protection

The effective arc rating of the flame resistant (FR) clothing is not to be less than the incident energy at the working location. All arc rated garments shall meet the requirements of and be labeled in accordance with ASTM F1506, Standard Specification for Flame Resistant Textile

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

Materials for Wearing Apparel for use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards.

Clothing made from acetate, nylon, polyester or polypropylene is not to be worn in the arc flash protection boundary, unless arc rated. Examples of such articles may include non-arc rated traffic safety vests.

When calculated incident energy exceeds 40 cal/cm², and de-energizing is not feasible, alternate work methods and controls shall be used. Calculations will determine incident energy, and PPE shall be selected based on calculation results.

3.10 Working on or Near Exposed Energized Parts

When working on exposed live parts, or near enough to them, employees are exposed to greater hazards. Parts of electric circuits that are guarded or isolated are not considered “exposed.”

Only Qualified Employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more. Electric lines and equipment shall be considered and treated as energized unless the requirements of Sections 3.1.2, De-Energizing Lines and Equipment for Employee Protection, and 3.1, Subcontractor/Vendor Interface, are met.

3.10.1 Minimum Approach Distances

No employee shall approach or take any conductive object closer to exposed energized parts than set forth in Appendix A Table 6, unless the energized part is insulated from the employee and from any other conductive object at a different potential. The following conditions are to be applied:

- Live line/insulated tools shall be used while working in the minimum approach distance.
- If use of live-line tools is not feasible, insulating cover shall be used to mitigate the hazard of entering the minimum approach distance. Rubber protective gloves can be used as an additional means of protection.
- For less than 300 volts, if applying insulating cover creates a greater hazard, then covers will not be required.
- There is no minimum approach distance for EU DC systems, employees shall avoid contact.

3.10.2 Initial Determination (Worksite Hazard Evaluation)

Before beginning work, an evaluation shall be performed to identify all hazardous conditions. This evaluation shall include the general location, energized circuit parts, support structures and associated equipment.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

No work is to be performed on energized lines or parts until the voltage of such equipment and lines is determined and a Contractor Utilities Energized Work Checklist, form A-6009-307, has been completed and approved by Contractor, Projects and EU Operations Manager.

3.10.3 Working Position

To the extent possible, working on equipment or lines in any position from which a shock or slip will tend to bring the body toward exposed parts at a potential different than the employee's body is to be avoided. Work should, therefore, generally be done from below, rather than from above.

3.10.4 General Work Practices

In connecting de-energized equipment or lines to an energized circuit by means of a conducting wire or device, wire is attached to the de energized part. When disconnecting, the source end should be removed first. Loose conductors should be kept away from exposed energized parts.

Hot sticks are used while working on energized distribution lines and equipment when it provides greater protection and increases distance from equipment with arc flash potential.

Direct contact with an energized conductor greater than 5000 volts is prohibited. Exception: metal clad switch gear or pad mounted switches that have been isolated and tested de-energized. Voltage rated rubber protective gloves can be used during the installation of equipment grounds. When using the rubber glove-work method, voltage-rated insulating sleeves must be worn in addition to rubber gloves for voltages greater than 300 volts. The voltage-rated insulating gloves and sleeves shall be put on and taken off outside the minimum approach boundary. Exception: Sleeves are not required under the conditions specified in Appendix A Table 7.

When one part of a high voltage switch or disconnect is energized the remainder of the switch or disconnect are considered energized unless approved barriers are in place. These barriers will prevent employees from coming in direct contact with the energized parts.

Conductor support tools such as link sticks, strain carriers, and insulator cradles may be used provided the clear insulation is at least as long as the insulator string or the minimum distance specified in Appendix A Table 6 for the operating voltage.

3.10.5 Noncurrent-Carrying Metal Parts

Noncurrent-carrying metal parts of equipment or devices, such as transformer cases and circuit breaker housings, are to be treated as energized at the highest voltage to which they are exposed, unless the installation has been evaluated and determined that these parts are grounded before work is performed.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

3.11 Overhead Lines

When performing work near aerial lines not owned and operated by EU (facility lighting circuits, control/signal wiring), work is performed in accordance with this section.

Contractors performing work on systems not owned by EU, are required to perform duties in accordance with DOE-0359, *Hanford Site Electrical Safety Program (HSESP)*, and DOE 0336, *Hanford Site Lockout/Tagout Procedure*.

3.11.1 General Safety Requirements

Before elevated structures and adjacent structures, such as poles or towers of the adjacent supporting poles, structures, and conductor supporting hardware, are subjected to such stresses as climbing or the installation or removal of equipment may impose, the qualified employee ascertains that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the loads which will be imposed, it is braced or otherwise supported to prevent failure using the following:

- When installing insulative material, it is to be installed from a position that does not expose installer to incidental contact with other energized parts.
- Poles that are set, moved or removed near an exposed energized overhead conductor, may not contact the conductor.
 - Overhead lines and equipment can be covered with insulated protective material to avoid incidental contact.
 - Voltage-rated insulating protective gloves are to be worn. Additional suitable means shall be used when voltages may exceed ratings of gloves while handling poles where conductors energized at potentials above 750 volts can be contacted.
 - Contact the pole with un-insulated parts of the employee's body is prohibited
 - Contact with trucks, or other equipment that is being used to set, move, or remove poles in or in the vicinity of energized lines is to be avoided by employees standing on the ground or in contact with grounded objects unless employees are wearing suitable protective equipment.
- To protect employees from falling into holes into which poles are to be placed, other employees are to attend to or physically guarded.

3.11.2 Operations of Insulated Utility Equipment Near Energized Lines or Equipment

Mechanical equipment is to be operated so that the minimum approach distances (MAD) of Appendix A Table 6 are maintained from exposed energized lines and equipment. However, the insulated upper portion excluding the basket/bucket of an aerial lift operated by a qualified employee in the lift is exempt from this requirement.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

A designated employee other than the equipment operator shall observe the approach distance to exposed lines and equipment and give timely warnings before the minimum approach distance is reached, unless the operator can accurately determine that the minimum approach distance is being maintained.

During operation of the mechanical equipment, the equipment could become energized, the operation shall also comply with at least one of the following:

- a. The energized lines and equipment exposed to contact are to be covered with insulating protective materials that will withstand the type of contact that might be made during the operation.
 - b. The equipment is insulated for the voltage involved. The equipment is positioned so that its un-insulated portions cannot approach the lines or equipment any closer than the MAD specified in Appendix A Table 6.
 - c. Employees are protected from hazards that might arise from equipment contact with the energized lines. The controls used ensure that employees will not be exposed to hazardous differences in potential. Unless it can be demonstrated that the methods in use protect each employee from the hazards that might arise if the equipment contacts the energized line, the controls used shall include all of the following techniques:
 - Using the best available ground to minimize the time the lines or equipment remain energized (in substations only).
 - Bonding equipment together to minimize potential differences greater than 50kV.
 - Providing ground mats to extend areas of equipotential greater than 50kV.
 - Employing insulating protective equipment or barricades to guard against any remaining hazardous potential differences.
- While working in aerial equipment, a full body harness is worn and a lanyard securely attached to the manufacturer's anchor point provided on the boom or basket.
 - No component of aerial devices are to be operated from the ground without permission from the employee in the basket except in case of emergency.
 - Operating levers or controls are kept clear of tools, materials or obstructions.
 - Climbing into or out of the basket or platform while it is elevated or change from one basket to another on dual basket equipment, except in case of emergency or when the employees involved agree that this is the safest way to perform the work are prohibited. This exception is not used to circumvent safety rules.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

- Existing safety rules governing the use of hot line tools, rubber and other protective equipment and safe work practices while performing work from poles or structures also apply to work done from aerial manlift equipment.
- The basket is to be kept clean and all tools not in use are secured or removed.
- Approved warning light are operating and visible when work is being performed in traffic areas.
- All aerial manlift equipment have both upper and lower controls. The upper controls are not to be capable of rendering the lower controls inoperative. The lower controls should be located at or near the base of the aerial structure. The lower controls are only be used; to perform monthly operational checks, in emergencies to lower injured employees, or upper operational control failure.
- Controls in aerial manlift equipment will be protected from accidental operation at all times. Controls of the outriggers will also be protected from accidental operation. When permanent guards are not available then equivalent controls will be provided.
- The manufacturer's recommended maximum load limit shall be posted at a conspicuous place near each set of controls and shall be kept in a legible condition.
- The manufacturer's operator's instructional manual is to be kept on the vehicle.
- Operating instructions, proper sequence and maintenance procedures prescribed by the manufacturer for operation of the equipment are to be followed.
- Material handler is to be placed in lowest stowed position during transport.

3.12 Grounding for the Protection of Employees

This section applies to the grounding of transmission and distribution lines and equipment greater than 1000 volts for the purpose of protecting employees.

3.12.1 General

For the employee to work lines or equipment as de-energized, the lines or equipment are de-energized under the provisions of Section 3.1.2, De-Energizing Lines and Equipment for Employee Protection, and are grounded as specified in this section. If it can be demonstrated that the installation of a ground is impracticable or that the conditions resulting from the installation of a ground would present greater hazards than working without grounds, the lines and equipment may be treated as de-energized provided all the following conditions are met:

- The lines and equipment have been de-energized under the provisions of Section 3.1.2, De-Energizing Lines and Equipment for Employee Protection.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

- There is no possibility of contact with another energized source. Covers shall be installed on energized lines and personnel shall wear rubber gloves when installing and tying in conductors (i.e., single phase or three phase taps).
- The hazard of induced voltage is not present.
- For equipment greater than 1000 volts, grounds will be used when there is a possibility of induced voltage, stored electrical energy or contacted with other exposed energized conductors or circuit parts.

3.13 Testing

Before any ground is installed, lines and equipment are to be tested and found absent of nominal voltage, unless a previously installed ground is present.

3.14 Working Near Energized Cables

All employees working near the pulling underground cable(s) are aware of the hazard of being caught in the sheaves, lashings or winch gears and are required to exit the utility vault (excluding cable spreading rooms) following initial tension and not enter until tension is released.

When work is performed on buried cable or on cable in utility vaults, metallic sheath continuity shall be maintained by bonding across the opening (or by equivalent means), or the cable sheath shall be treated as energized. Cables which are properly insulated for the voltages to which they are energized shall be considered as an effective barrier to protect the employees and Appendix A Table 6 need not apply.

Workers will take adequate precautions to avoid physical contact with energized cable by using approved procedures and/or protective devices. Before any work is to be performed on underground cables and equipment carrying high voltage, components are to be de-energized and grounded with the following exceptions:

- Replacing fuses, operating switches, closing or opening load-break elbows, when approved protective devices are used.
- Work in the high-voltage compartment of pad-mounted transformers and similar equipment installed above ground, provided the work is done by approved methods.
- Only one energized conductor shall be worked on at any one time, and protective means shall be used to insulate or isolate it from all others.

Energized pad-mounted transformers or similar equipment are to be left unlocked and open, and attended by a qualified employee.

Bayonet fuses are not used as a switching point and bayonet fuses shall only be removed after pad-mount transformers have been properly vented.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

3.15 Chain Saws

The use of chain saws requires the following conditions to be met:

- Equipped with a chain brake and shall otherwise meet the requirements of the ANSI B175.1-1991 *Safety Requirements for Gasoline-Powered Chain Saws*.
- Operated and adjusted in accordance with the manufacturers' instructions.
- Inspected before each use.
- Fueled and started at least 10 feet from any open flame or other source of ignition.
- Started and warmed up on the ground prior to use.

Chain saws will not be:

- Drop started. Exception: Drop starting of saws over 15 pounds is permitted outside of the bucket of an aerial lift only if the area below the lift is clear of personnel.
- Running when the saw is hoisted to an aerial work location.
- Altered by removing or disabling the chain-saw kickback device.
- Used overhead except where overhead electrical hazards prevent normal use.

Employees who operate chain saws are required to wear the following PPE:

- Leg protection constructed with cut-resistant material shall be worn. Exception: leg protection is not required while working from bucket truck, when the chain saw is started and operated outside personnel bucket.
- Foot protection that is constructed with cut-resistant material that will protect the employee against contact with a running chain saw
- Hard hat
- Safety glasses with side shields or goggles
- Face shield
- Hearing protection
- Leather gloves

4.0 DELIVERABLES

None

5.0 REFERENCES**5.1 Source Requirements**

29 CFR 1910.269, *OSHA Electrical Power Generation, Transmission, and Distribution*
ANSI B175.1-1991, *Safety Requirements for Gasoline-Powered Chain Saws*
ANSI-C2, *National Electrical Safety Code (NESC)*
ANSI/ISEA Z308.1-2015, *Minimum Requirements for Workplace First-Aid Kits*
NFPA 70E, *Standard for Electrical Safety in the Workplace*

Electrical Utilities Contractor Safety Program

Published Date: 08/26/2025

Effective Date: 08/26/2025

ASTM F1506, Standard Specification for Flame Resistant Textile Materials for Wearing Apparel for use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards

Manual M-54-44.04, Washington State Department of Transportation Work Zone Traffic Control Guidelines

5.2 References

DOE-0336, *Hanford Site Lockout/Tagout Procedure*

DOE-0359, *Hanford Site Electrical Safety Program (HSESP)*

EU-PRO-WC-60777, *Electrical Utilities General Switching*

HMIS-PRO-EU-066, *Electrical Utilities Lock and Tag Program*

Appendix A. Tables

TABLE 1 – MINIMUM PERSONAL PROTECTIVE EQUIPMENT FOR WORK

Non-electrical maintenance work	Safety glasses & substantial footwear
De-energized electrical work (this does not apply to aerial hazards, or work in the substation yard)	Safety glasses & substantial footwear
De-energized electrical work in substation yards or with aerial hazard	Safety glasses, substantial footwear & hard hat.

TABLE 2 – AC/DC ARC FLASH/BLAST PPE

NOTE: Requirements of this table are in addition to the minimum PPE listed in Table 1.

Cal/cm ²	Clothing Description	Additional PPE
1-7	AR shirt and pants rated for the cal/cm ²	Leather or rubber gloves.
8-24	AR shirt / pants, FR coveralls rated for the cal/cm ²	Leather* or rubber gloves, arc-rated face shield/balaclava or hood.
25-40	AR shirt / pants, or multi-layer flash suit rated for the cal/cm ²	Rubber gloves, arc-rated face shield/balaclava or hood.
>40	Find alternate means, UNSAFE	---

*If the estimated incident energy is no more than 14 cal/cm², heavy duty leather work gloves with a weight of at least 407 gm/m² (12 oz./yd²) may be used.

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

Table 3 – CHEMICAL PPE FOR BATTERY MAINTENANCE

Acid-resistant neoprene or rubber gloves
Arc/Chemical resistant suits
Safety glasses with face shield
Hearing protection

Table 4 – Limited Approach Boundary

Voltage	Limited Approach Boundary (ft.)
50-750 V	10
2.4-13.8 kV	10
115 kV	12 ft. 2 in.
230 kV	16
500 kV	19

Table 5. Voltage Rated Gloves Class*NFPA 70E Table 130.7(C)(7)(a)*

Voltage Rated Gloves Class
00: < 500 Volts
0: < 1000 Volts
1: < 7500 Volts
2: < 17,000 Volts

Electrical Utilities Contractor Safety Program

Published Date:08/26/2025

Effective Date: 08/26/2025

Table 6. AC LIVE WORK MINIMUM APPROACH DISTANCE

Voltage (kV) Phase to Phase*	Distance to Employee			
	Phase to Ground		Phase to Phase	
	(m)	(ft-in)	(m)	(ft-in)
	Not Specified		Not Specified	
0.050 – 0.300	Avoid Contact		Avoid Contact	
0.301 – 0.750	0.33	1-2	0.33	1-2
0.751 – 5.0	0.63	2-1	0.63	2-1
5.1 – 15.0	0.65	2-2	0.68	2-3
72.6 – 121.0	1.13	3-9	1.42	4-8
169.1 – 242.0	2.01	6-8	3.08	10-2
420.1 – 550.0	5.07	16-8	8.24	27-1

*For single-phase systems, use highest voltage available.

Table 7. RUBBER GLOVE REQUIREMENTS

300-750 Volts	750-5000 Volts
<ul style="list-style-type: none"> No other exposed live parts are within the minimum approach boundary, or When exposed parts are guarded to extent feasible and insulated tools are used 	<ul style="list-style-type: none"> If exposed parts are covered with insulating protective equipment