

**PURPOSE/APPLICATION**

To provide information about arc flash and how to safely mitigate the risks associated with it.

**PPE**

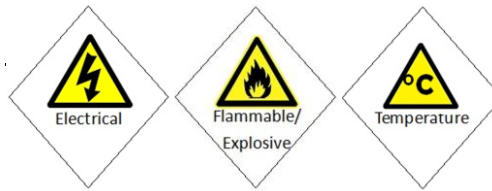
- Canadian Plains Minimum Requirements
- Arc Flash-Specific PPE

**TRAINING**

- Review of this SWP

**HAZARDS & CONCERNS**

- Personal injury (burns)
- Explosions
- Electrical

**PRECAUTIONS**

Before energized electrical work begins, qualified electrical workers involved in the work are to complete a pre-job meeting to address the work to be performed, the electrical hazards, energy-source controls, the hazard assessment, any associated safe work permits, safe approach and arc-flash boundaries, and the required PPE.

**ARC FLASH**

Arc Flash is a dangerous event associated with the release of energy caused by an electric arc. It occurs when electrical insulation or isolation between conductors is broken or can no longer withstand the applied voltage. The possibility of an arc flash increases when there are exposed energized electrical conductors or circuit parts.

Arc Flash can occur under any of the following conditions:

1. If an employee is working on or near energized conductors or circuits.
  - Incorrect installation of arc-resistant equipment.
  - Incorrect work procedures.
2. If an employee moves near or comes into contact with the equipment.
  - A tool contacts live parts.
  - A tool is dropped on the ground, which creates a spark that starts an arc discharge.
3. A failure of the equipment occurs.
  - Equipment failure due to corrosion of contact surfaces or loose contacts, worn or damaged insulation, dust and condensation on the insulating materials.
  - Incorrect installation of conductors, such as when conductors of different phases are installed too close. Any of these may cause a phase-to-phase and/or phase-to-ground electrical fault.

Prior to starting the task, complete an assessment of:

- The hazards and the voltage levels involved.
- Identify secondary voltage sources.
- The protection boundaries.
- The available incident energy. This is essential for selecting the right rating for the ARC flash PPE and if not known, stop work immediately and reassess the situation or request more information.
- Review if the equipment can be de-energized.
- The single line diagrams and vendor prints.

**Stop work and reassess** the task if equipment condition, system configuration, available fault current, protective-device settings, work scope, or other conditions differ from those used to establish the arc-flash risk assessment, equipment label, or PPE requirements.

### THE DO'S

- DO** Lock out equipment before working on it wherever possible.
- DO** Identify the location of all fire extinguishers before starting work.
- DO** Identify if the work location would be classified as a confined space.
- DO** Isolate any exposed live parts so you cannot come into contact with them. Wear proper PPE when doing so.
- DO** Identify arc flash hazards before starting any work.
- DO** Determine the likelihood of an arc flash and the injuries it may cause.
- DO** Ensure the arc-flash risk assessment has established the required arc-flash boundary and PPE using either the incident-energy analysis method or the applicable arc-flash PPE selection table.
- DO** Ensure only qualified electrical workers enter the approach boundary.
- DO** Inspect all arc flash PPE and ensure it has been certified and maintained according to the manufacturer's specifications.
- DO** Ensure that a Hazard Assessment (HIAC) is completed, which includes the risks associated with arc flash.

### DE-ENERGIZING / LOCK OUT TAG OUT

Whenever possible, live components which are worked around or that might be contacted should be de-energized in accordance with Canadian Plains' COP 05 Lock Out – Tag Out. Assume electric circuits are energized until it has been verified that they are not. Test every circuit and conductor every time you work on them.

Six steps to ensure conditions for electrically safe work are:

1. Identify all sources of power for the equipment.
2. Interrupt the current load, then open the disconnecting devices for each power source.
3. Where possible, visually verify that blades of disconnecting devices are fully open or that draw-out-type circuit breakers are fully withdrawn.
4. Apply lock-out/tag-out devices in accordance with lock-out/tag-out policy.
5. Test each phase conductor or circuit part with an adequately rated voltage detector to verify that the equipment is de-energized. Check the voltage detector before and after each test to be sure it is working.
6. Properly ground all possible sources of induced voltage and stored electric energy (such as, capacitors) before touching. If the conductors or circuit parts that are being de-energized could contact other exposed conductors or circuit parts, apply ground-connecting devices rated for the available fault current.

Remember that the process of de-energizing is itself "live" work and can result in an arc flash due to equipment failure.

### WORKING ON, OR NEAR LIVE CIRCUITS

Where deactivation is not possible or impracticable due to the nature of the task. *Note: The Canadian Electrical Code, Part I, Subrule 2-304 1), requires that "no repairs or alterations be carried out on any live equipment except where complete disconnection of the equipment is not feasible" (i.e., not practicable).*

**Working on live circuits** - Tasks that require touching energized parts.

**Working near live circuits** – Tasks that require working within the approach boundaries of energized components.

Common tasks that may require work near live circuits include:

**SAFE WORK PRACTICE****Revised: September 2026****SWP-38****ARC FLASH**

- Taking voltage measurements
- Opening and closing disconnects and breakers
- Racking breakers on and off the bus
- Removing panels and dead fronts
- Opening electric equipment doors for inspection

***Before any work may be completed on energized equipment, verify that all required Safe Work Permits have been obtained from the site Owner/Prime Contractor. Ensure all Canadian Plains requirements and a risk assessment (HIAC) specific to the work are completed.***

**APPROACH BOUNDARIES**

According to NFPA 70E, electrical equipment such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are in locations other than dwelling units and that are likely to require examination, adjustment, servicing, or maintenance while energized shall be marked with a label containing all the following information:

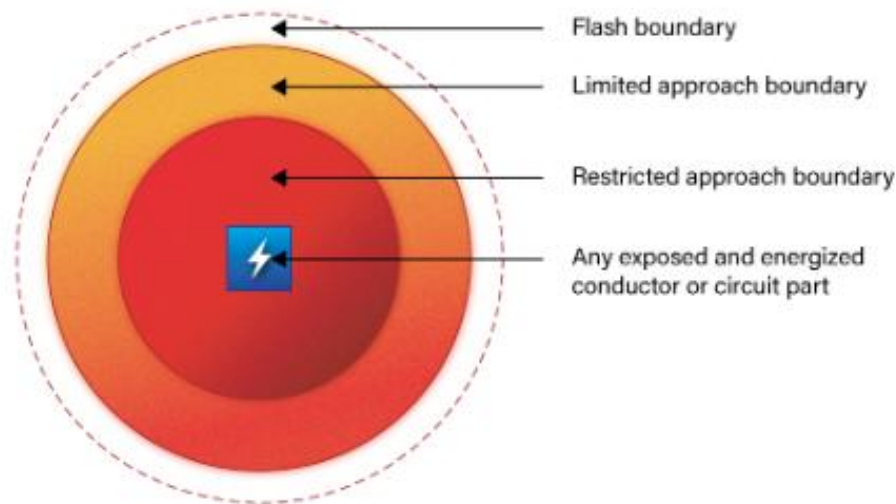
1. Nominal system voltage
2. Arc flash boundary
3. At least one of the following:
  - a. Available incident energy and the corresponding working distance, or the arc flash PPE category in Table 130.7(C)(15)(a) or Table 130.7(C)(15)(b) for the equipment, but not both
  - b. Minimum arc rating of clothing
  - c. Site-specific level of PPE

Boundaries are used to limit how close workers can be to live equipment or circuits when work is being done. NFPA 70E recommends that the closer a worker gets to an electrical hazard the more training and protection they should have.

**Arc Flash Boundary** is the term used to describe the distance at which a person without personal protective equipment (PPE) can get before a second-degree burn would occur if an arc flash occurred. It is assumed that a second-degree burn occurs when the incident energy received by the skin equals 5 J/cm<sup>2</sup> (1.2 cal/cm<sup>2</sup>).

**Limited Approach Boundary** the distance from an exposed energized electrical conductor or circuit part an unqualified person may approach when a shock hazard exists (unless the person is not wearing appropriate PPE and is supervised by a qualified person).

**Restricted Approach Boundary** is the closest distance to exposed live parts a qualified person can approach without proper PPE and tools.



No one shall approach or bring conductive objects closer to exposed energized electrical conductors or circuit parts operating at voltages greater than 30 V ac or 60 V dc than the restricted approach boundary specified in the table below unless the person is qualified and insulated or guarded from the hazard, or the energized electrical conductors or circuit parts are insulated or guarded by a barrier:

**CSA Approach Boundaries to Exposed Energized Electrical Conductors or Circuit Parts:**

| AC Systems                                   |                                                     |                                                      |                              | DC Systems                          |                                                     |                                                      |                                                                    |
|----------------------------------------------|-----------------------------------------------------|------------------------------------------------------|------------------------------|-------------------------------------|-----------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------|
| Nominal system voltage range, phase to phase | Limited Approach Boundary Exposed movable conductor | Limited Approach Boundary Exposed fixed circuit part | Restricted approach boundary | Nominal voltage conductor to ground | Limited Approach Boundary Exposed movable conductor | Limited Approach Boundary Exposed fixed circuit part | Restricted approach Boundary (includes inadvertent movement adder) |
| Less than or equal to 30V                    | Not Specified                                       | Not Specified                                        | Not Specified                | Less than or equal to 60 V          | Not Specified                                       | Not Specified                                        | Not Specified                                                      |
| 31-150 V                                     | 3.0 m (10' 0")                                      | 1.0 m (3' 6")                                        | Avoid Contact                | 61-300 V                            | 3.0 m (10' 0")                                      | 1.0 m (3' 6")                                        | Avoid Contact                                                      |
| 151-750 V                                    | 3.0 m (10' 0")                                      | 1.0 m (3' 6")                                        | 0.3 m (1' 0")                | 301 V-1 kV                          | 3.0 m (10' 0")                                      | 1.0 m (3' 6")                                        | 0.3 m (1' 0")                                                      |
| 751 V-15 kV                                  | 3.0 m (10' 0")                                      | 1.5 m (5' 0")                                        | 0.7 m (2' 2")                | 1.1-5 kV                            | 3.0 m (10' 0")                                      | 1.5 m (5' 0")                                        | 0.4 m (1' 5")                                                      |
| 15.1-36 kV                                   | 3.0 m (10' 0")                                      | 1.8 m (6' 0")                                        | 0.8 m (2' 9")                | 5.1-15 kV                           | 3.0 m (10' 0")                                      | 1.5 m (5' 0")                                        | 0.7 m (2' 2")                                                      |
| 36.1-46 kV                                   | 3.0 m (10' 0")                                      | 2.5 m (8' 0")                                        | 0.8 m (2' 9")                | 15.1-45 kV                          | 3.0 m (10' 0")                                      | 2.5 m (8' 0")                                        | 0.8 m (2' 9")                                                      |
| 46.1-72.5 kV                                 | 3.0 m (10' 0")                                      | 2.5 m (8' 0")                                        | 1.0 m (3' 6")                | 45.1-75 kV                          | 3.0 m (10' 0")                                      | 2.5 m (8' 0")                                        | 1.0 m (3' 6")                                                      |
| 72.6-121 kV                                  | 3.3 m (10' 8")                                      | 2.5 m (8' 0")                                        | 1.0 m (3' 6")                | 75.1-150 kV                         | 3.4 m (10' 8")                                      | 3.0 m (10' 0")                                       | 1.2 m (3' 10")                                                     |
| 138-145 kV                                   | 3.4 m (11' 0")                                      | 3.0 m (10' 0")                                       | 1.2 m (3' 10")               | 150.1-250 kV                        | 4.0 m (11' 8")                                      | 4.0 m (11' 8")                                       | 1.6 m (5' 3")                                                      |
| 161-169 kV                                   | 3.6 m (11' 8")                                      | 3.6 m (11' 8")                                       | 1.3 m (4' 3")                | 250.1-500 kV                        | 6.0 m (20' 0")                                      | 6.0 m (20' 0")                                       | 3.5 m (11' 6")                                                     |
| 230-242 kV                                   | 4.0 m (13' 0")                                      | 4.0 m (13' 0")                                       | 1.7 m (5' 8")                | 500.1-800 kV                        | 8.0 m (26' 0")                                      | 8.0 m (26' 0")                                       | 5.0 m (16' 5")                                                     |
| 345-362 kV                                   | 4.7 m (15' 4")                                      | 4.7 m (15' 4")                                       | 2.8 m (9' 2")                |                                     |                                                     |                                                      |                                                                    |
| 500-550 kV                                   | 5.8 m (19' 0")                                      | 5.8 m (19' 0")                                       | 3.6 m (11' 8")               |                                     |                                                     |                                                      |                                                                    |
| 765-800 kV                                   | 7.2 m (23' 9")                                      | 7.2 m (23' 9")                                       | 4.9 m (15' 11")              |                                     |                                                     |                                                      |                                                                    |

*Refer to the most current edition of CSA Z462 where any discrepancy exists*

### **EMERGENCY RESPONSE**

Workers exposed to shock hazards shall be trained in methods of safe release of a person from contact with energized electrical conductors or circuit parts. Workers designated to respond to electrical emergencies shall have appropriate first-aid and CPR/AED training in accordance with Canadian Plains requirements. Emergency response requirements and the location of emergency equipment shall be reviewed before energized electrical work begins.

**Release Methods:** Touching a person who is still in contact with a live current will make the rescuer part of the circuit. Muscle clamping ("being hung up") prevents the victim from letting go, meaning immediate intervention is necessary to stop current flow. Once the worker has been released, initiate first aid and ensure that emergency medical response has been initiated.

- **De-energize:** Turn off the main breaker, pull the plug, or hit the emergency stop button.
- **Push or Pull:** Use clean, dry, non-conductive materials to move the victim or the conductor.
- **Specialized Tools:** Utilize an insulated electrical rescue hook if one is mounted nearby.

### **TOOLS AND EQUIPMENT**

Insulated tools shall be rated for the voltages on which they are used.

#### **Equipment Condition**

The condition and maintenance status of electrical equipment must be considered when assessing the likelihood of an arc-flash event.

### **PROPER PERSONAL PROTECTIVE EQUIPMENT**

Workers who are exposed to electrical hazards when the risk associated with that hazard is not adequately reduced by the applicable electrical installation requirements must wear the PPE rated to protect against electric shock and arc flash.

Canadian Plains Minimum PPE, including hearing protection, is required. Workers must wear arc-rated clothing wherever exposure to an electric arc flash above the threshold energy level for a second-degree burn is possible. Never wear clothing made from synthetic materials, such as acetate, nylon, polyester, or rayon alone or combined with cotton, because it can burn and melt into the skin.

The type of PPE worn depends on the type of electrical work being done. Once the required arc-flash PPE has been determined, check the requirements for clothing and other PPE when working on or near energized equipment within the flash protection boundary. These PPE requirements provide protection against electrical shock and thermal injury from an arc flash; however, they do not eliminate all risk of injury, including physical injury resulting from an arc blast.

**ARC Rated PPE:** Arc-rated clothing and other PPE shall be used by the worker and selected on the basis of the incident energy exposure associated with the specific task.

**Hand protection:** Heavy-duty leather gloves or arc-rated gloves shall be worn where necessary for arc flash protection. Heavy-duty leather gloves are made entirely of leather with a minimum thickness of 0.7 mm (0.03 in), are unlined or lined with non-flammable, non-melting fabrics. Heavy-duty leather gloves meeting this requirement have been shown to have ATPV values in excess of 10 cal/cm<sup>2</sup> (41.9 J/cm<sup>2</sup>).

When rubber insulating gloves are used for shock protection, protectors shall be worn over the rubber gloves.

**Head protection:** An arc-rated hood or an arc-rated balaclava with an arc-rated faceshield shall be used when the back of the head is within the arc flash boundary. An arc-rated hood shall be used when the anticipated incident energy exposure exceeds 12 cal/cm<sup>2</sup> (50.2 J/cm<sup>2</sup>). Face shields that are not arc-rated cannot be used.

**Foot protection:** Leather footwear provides some arc flash protection to the feet and shall be used in all exposures greater than 4 cal/cm<sup>2</sup> (16.75 J/cm<sup>2</sup>).

**Clothing:** Arc-rated long-sleeve shirt with arc-rated pants (minimum arc rating of 8 cal/cm<sup>2</sup>) or arc-rated coveralls (minimum arc rating of 8 cal/cm<sup>2</sup>). Layering of arc-rated clothing is an effective approach to achieving the required arc rating. It can be used to achieve the required arc rating with the lowest number of layers and lowest clothing system weight. Garments that are not arc-rated should not be used to increase the arc rating of a garment or of a clothing system. *Flame-resistant clothing without an arc rating has not been tested for exposure to an electric arc. All arc-rated clothing is also flame-resistant.*

**Arc flash suit:** A total clothing system consisting of arc-rated shirt and pants and/or arc-rated coveralls and/or arc flash coat and pants (clothing system minimum arc rating of 75 cal/cm<sup>2</sup>)

| Minimum PPE Requirements by Arc-Flash PPE Selection Table |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>C<br/>A<br/>T<br/>1</b>                                | <ul style="list-style-type: none"> <li>• Arc-Rated Clothing, Minimum Arc Rating of 4 cal/cm<sup>2</sup> (16.75 J/cm<sup>2</sup>)</li> <li>• Arc-rated long-sleeve shirt and pants or arc-rated coverall</li> <li>• Arc-rated face shield or arc-rated arc flash suit hood</li> <li>• Arc-rated jacket, parka, high-visibility apparel, rainwear, or hard hat liner (AN)</li> <li>• Protective Equipment</li> <li>• Hard hat</li> <li>• Safety glasses or safety goggles (SR)</li> <li>• Hearing protection in the form of ear canal inserts</li> <li>• Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with protectors (SR)</li> <li>• Leather footwear (AN)</li> </ul>                                                                                                                                        |
| <b>C<br/>A<br/>T<br/>2</b>                                | <ul style="list-style-type: none"> <li>• Arc-Rated Clothing, Minimum Arc Rating of 8 cal/cm<sup>2</sup> (33.5 J/cm<sup>2</sup>)</li> <li>• Arc-rated long-sleeve shirt and pants or arc-rated coverall</li> <li>• Arc-rated arc flash suit hood or arc-rated face shield and arc-rated balaclava</li> <li>• Arc-rated jacket, parka, high-visibility apparel, rainwear, or hard hat liner (AN)</li> <li>• Protective Equipment</li> <li>• Hard hat</li> <li>• Safety glasses or safety goggles (SR)</li> <li>• Hearing protection in the form of ear canal inserts</li> <li>• Heavy-duty leather gloves, arc-rated gloves, or rubber insulating gloves with protectors (SR)</li> <li>• Leather footwear</li> </ul>                                                                                                                      |
| <b>C<br/>A<br/>T<br/>3</b>                                | <ul style="list-style-type: none"> <li>• Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 25 cal/cm<sup>2</sup> (104.7 J/cm<sup>2</sup>)</li> <li>• Arc-rated long-sleeve shirt (AR)</li> <li>• Arc-rated pants (AR)</li> <li>• Arc-rated coverall (AR)</li> <li>• Arc-rated arc flash suit jacket (AR)</li> <li>• Arc-rated arc flash suit pants (AR)</li> <li>• Arc-rated arc flash suit hood</li> <li>• Arc-rated gloves or rubber insulating gloves with protectors (SR)</li> <li>• Arc-rated jacket, parka, high-visibility apparel, rainwear, or hard hat liner (AN)</li> <li>• Protective Equipment</li> <li>• Hard hat</li> <li>• Safety glasses or safety goggles (SR)</li> <li>• Hearing protection in the form of ear canal inserts</li> <li>• Leather footwear</li> </ul> |
| <b>C<br/>A<br/>T<br/>4</b>                                | <ul style="list-style-type: none"> <li>• Arc-Rated Clothing Selected so That the System Arc Rating Meets the Required Minimum Arc Rating of 40 cal/cm<sup>2</sup> (167.5 J/cm<sup>2</sup>)</li> <li>• Arc-rated long-sleeve shirt (AR)</li> <li>• Arc-rated pants (AR)</li> <li>• Arc-rated coverall (AR)</li> <li>• Arc-rated arc flash suit jacket (AR)</li> <li>• Arc-rated arc flash suit pants (AR)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                     |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>• Arc-rated arc flash suit hood</li> <li>• Arc-rated gloves or rubber insulating gloves with protectors (SR)</li> <li>• Arc-rated jacket, parka, high-visibility apparel, rainwear, or hard hat liner (AN)</li> <li>• Hard hat</li> <li>• Safety glasses or safety goggles (SR)</li> <li>• Hearing protection in the form of ear canal inserted</li> <li>• Leather footwear</li> </ul> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### **PPE Visual Inspection**

The protective equipment shall be visually inspected for damage, wear, and defects before every use.

### **PPE Storage**

Protective equipment shall be stored in a manner that prevents damage from conditions, moisture, dust, or other deteriorating agents.

### **PPE Testing**

The insulation of protective equipment and protective tools that are used as primary protection from shock hazards and require an insulation system to ensure protection of personnel, shall be verified by an appropriate test and visual inspection before use to ascertain that insulating capability has been retained.

Gloves - Before first issue and every 6 months thereafter – or as per the manufacturer's specification.

Sleeves - Before first issue and every 12 months thereafter - or as per the manufacturer's specification.

### **Hand and Arm Shock Protection**

Workers shall wear rubber insulating gloves with protectors where there is a danger of injury from electric shock due to contact by hand with exposed energized electrical conductors or circuit parts. Additional protective measures shall be used where there is a danger of arm contact with exposed energized electrical conductors or circuit parts. Rubber insulating gloves and the additional protective measures shall be rated for the voltage for which they will be exposed.

| <b>CSA Maximum Use Voltage for Rubber Insulating Gloves</b> |                                      |                                       |                                                                           |
|-------------------------------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------------------------------------------|
| <b>Class designation of glove or sleeve</b>                 | <b>Maximum AC use Voltage rms, V</b> | <b>Maximum DC use Voltage avg., V</b> | <b>Distances between glove cuff and rubber insulating glove cuff, min</b> |
| 00                                                          | 500                                  | 750                                   | 13 mm (0.5 in)                                                            |
| 0                                                           | 1000                                 | 1500                                  | 13 mm (0.5 in)                                                            |
| 1                                                           | 7500                                 | 11250                                 | 25 mm (1 in)                                                              |
| 2                                                           | 17000                                | 25500                                 | 51 mm (2 in)                                                              |
| 3                                                           | 26500                                | 39750                                 | 76 mm (3 in)                                                              |
| 4                                                           | 36000                                | 54000                                 | 102 mm (4 in)                                                             |

*Refer to the most current edition of CSA Z462 where any discrepancy exists*

### **Tasks Classified as "Unlikely" to result in an arc flash in the CSA Standard Z462:24**

- Reading a panel-mounted meter, whether analog or digital, while operating the meter selector switch or controls.
- Performing infrared thermography and other non-contact inspections outside the restricted approach boundary. This activity does not include opening of doors or covers.
- Working on control circuits with exposed energized electrical conductors and circuit parts, nominal 125 V ac or dc, or below without any other exposed energized equipment over nominal 125 V ac or dc, including opening of hinged covers to gain access.
- Examination of insulated cable with no manipulation of cable.
- For dc systems, maintenance on a single cell of a battery system or multi-cell units in an open rack.

### **Tasks Classified as "Possible" to result in an arc flash in the CSA Standard Z462:24**

- For ac systems, work on energized electrical conductors and circuit parts, including electrical testing.

## SAFE WORK PRACTICE

Revised: September 2026

SWP-38

## ARC FLASH

- Operation of a circuit breaker or switch the first time after installation or completion of work or maintenance in the equipment.
- For dc systems, working on energized electrical conductors and circuit parts of series-connected battery cells, including electrical testing.
- Removal or installation of circuit breakers or switches.
- Opening hinged door(s) or cover(s) or removal of bolted covers (to expose bare, energized electrical conductors and circuit parts). For dc systems, this includes bolted covers, such as battery terminal covers.
- Application of temporary protective grounding equipment, after voltage test.
- Working on control circuits with exposed energized electrical conductors and circuit parts, greater than 120 V.
- Insertion or removal of individual starter buckets from MCC.
- Insertion or removal (racking) of circuit breakers or starters from cubicles, doors open or closed.
- Insertion or removal of plug-in devices into or from busways.
- Examination of insulated cable with manipulation of cable.
- Working on exposed energized electrical conductors and circuit parts of equipment directly supplied by a panelboard or MCC.
- Insertion or removal of revenue meters (kW-h, at primary voltage and current).
- Insertion or removal of connector covers or battery intercell connector(s).
- For dc systems, working on exposed energized electrical conductors and circuit parts of utilization equipment directly supplied by a dc source.
- Opening VT or control power transformer compartments.
- Operation of outdoor disconnect switch (hookstick operated) at 1 kV through 15 kV.
- Operation of outdoor disconnect switch (gang-operated, from grade) at 1 kV through 15 kV.

### Arc flash PPE selection table method for AC systems

| EQUIPMENT                                                                                                                                                                                                                                                    | ARC Flash PPE<br>MINIMUM ARC<br>RATING | ARC Flash<br>Boundary |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------|
| Panelboards or other equipment rated 240 V and below<br>Parameters: Maximum of 25 kA available fault current; maximum of 0.03 s (2 cycles) fault clearing time; minimum working distance of 455 mm (18 in)                                                   | 4 cal/cm <sup>2</sup>                  | 485 mm<br>(19 in)     |
| Panelboards or other equipment rated greater than 240 V and up to 600 V Parameters:<br>Maximum of 25 kA available fault current; maximum of 0.03 s (2 cycles) fault clearing time;<br>minimum working distance of 455 mm (18 in)                             | 8 cal/cm <sup>2</sup>                  | 900 mm<br>(3 ft)      |
| 600 V class MCCs Parameters: Maximum of 65 kA available fault current; maximum of 0.03 s (2 cycles) fault clearing time; minimum working distance of 455 mm (18 in)                                                                                          | 8 cal/cm <sup>2</sup>                  | 1.5 m<br>(5 ft)       |
| 600 V class MCCs Parameters: Maximum of 42 kA available fault current; maximum of 0.33 s (20 cycles) fault clearing time; minimum working distance of 455 mm (18 in)                                                                                         | 40 cal/cm <sup>2</sup>                 | 4.3 m<br>(14 ft)      |
| 600 V class switchgear (with power circuit breakers or fused switches) and 600 V class switchboards Parameters: Maximum of 35 kA available fault current; maximum of up to 0.5 s (30 cycles) fault clearing time; minimum working distance of 455 mm (18 in) | 75 cal/cm <sup>2</sup>                 | 6.1 m<br>(20 ft)      |
| Other 600 V class (277 V through 600 V, nominal) equipment Parameters: Maximum of 65 kA available fault current; maximum of 0.03 s (2 cycles) fault clearing time; minimum working distance of 455 mm (18 in)                                                | 8 cal/cm <sup>2</sup>                  | 1.5 m<br>(5 ft)       |
| NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 kV Parameters: Maximum of 35 kA available fault current; maximum of up to 0.24 s (15 cycles) fault clearing time; minimum working distance of 910mm (36 in)                                     | 40 cal/cm <sup>2</sup>                 | 12 m<br>(40 ft)       |
| Metal-clad switchgear, 1 kV through 15 kV Parameters: Maximum of 35 kA available fault current; maximum of up to 0.24 s (15 cycles) fault clearing time; minimum working distance of 910 mm (36 in)                                                          | 40 cal/cm <sup>2</sup>                 | 12 m<br>(40 ft)       |
| Metal enclosed interrupter switchgear, fused or unfused type construction, 1 kV through 15 kV Parameters: Maximum of 35 kA available fault current; maximum of 0.24 s (15 cycles) fault clearing time; minimum working distance of 910 mm (36 in)            | 40 cal/cm <sup>2</sup>                 | 12 m<br>(40 ft)       |

## SAFE WORK PRACTICE

Revised: September 2026

SWP-38

ARC FLASH

|                                                                                                                                                                                              |                        |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------|
| Other equipment 1 kV through 15 kV Parameters: Maximum of 35 kA available fault current; maximum of up to 0.24 s (15 cycles) fault clearing time; minimum working distance of 910 mm (36 in) | 40 cal/cm <sup>2</sup> | 12 m<br>(40 ft) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------|

*Refer to the most current edition of CSA Z462 where any discrepancy exists*

### **RESOURCES**

NFPA 70E

CSA Z462:24 – Workplace Electrical Safety

The Canadian Electrical Code

### **REGULATIONS**

#### **Alberta OHS Code**

Part 18 Section 228 – Duty to Use Personal Protective Equipment, Part 18, Section 232 – Use of Flame Resistant Clothing

#### **Saskatchewan OHS Regulation**

PART 7 Personal Protective Equipment - Skin Protection

#### **British Columbia OHS Regulation**

OHS Guidelines Part 19: Electrical Safety

|               |                                   |                             |       |                     |
|---------------|-----------------------------------|-----------------------------|-------|---------------------|
| Developed by: | 1. <u>Chad Stoltz</u>             | 2. <u>Dustin Moore</u>      | Date: | <u>Dec. 15/2008</u> |
| Revised by:   | 1. <u>Brian McConnell</u>         | 2. <u>Johnathan Fischer</u> | Date: | <u>Aug 13/2026</u>  |
|               | 3. <u>Kelly Titus</u>             |                             |       |                     |
| Approved by:  | 1. <u>Corporate HSE Committee</u> |                             | Date: | <u>Sep 23/2026</u>  |