# Electrical Work & Workers Safety Policy

Work performed on energized electrical equipment is extremely hazardous and subject to strict regulations under not just OHS regulations but also other laws and standards, including the Canadian Electrical Code and CSA Z462. Here's a general policy template outlining the required safety measures for such work based on Ontario law. **Caveat:** Electrical safety policies aren't one size fits all and you'll need to adapt this template to the specific conditions, hazards, work operations, safety protocols and other circumstances that pertain to your own workplace, particularly if you're not in Ontario.

1. **PURPOSE**

ABC Company has adopted this Policy to prevent electrical injuries and property damage and ensure compliance with the *Canadian Electrical Code* (CEC), [*province*] *Occupational Health and Safety Act* ("Act"), the *Occupational Health and Safety Regulations* ("Regulations"), applicable provincial safety laws governing electrical work, the ABC Company Occupational Health and Safety Program ("OHS Program") and other applicable requirements standards for electrical safety at ABC Company workplaces.

2. **POLICY**

All electrical work performed at ABC Company workplaces must be carried out safely and in accordance with the requirements of the CEC, the Act, the Regulations, the OHS Program, and

other electrical safety standards that apply.

3. **DEFINITIONS**

The following definitions apply for the purposes of this Policy:

**Affected worker:** a worker who is not directly involved in the work requiring the hazardous energy control, but who is (or may be) located in the work area;

**Arc flash hazard:** a dangerous condition associated with the possible release of energy caused by an electric arc;

**Authorized worker:** a worker who is qualified because of knowledge, training, and experience and has been assigned to perform lockout;

**Boundary, arc flash protection:** when an arc flash hazard exists, an approach limit at a distance from a prospective arc source within which a person could receive a second degree burn if an electrical arc flash were to occur;

**Boundary, limited approach:** an approach limit at a distance from an exposed energized electrical conductor or circuit part within which a shock hazard exists;

**De-energize:** shutting off the energy sources to circuits and equipment and depleting any stored energy;

**Energized:** machines and equipment are energized when they are connected to an energy source or contain residual or stored energy;

**Energy-isolating device:** a mechanical device (e.g., a disconnect switch, line valve, block, blank off plate) that physically prevents the transmission or release of an energy source to machinery or equipment;

**Guarded:** covered, shielded, fenced, enclosed, or otherwise

protected by suitable covers, casings, barriers, rails, screens, mats, platforms, or other equally effective means;

**High voltage:** any voltage exceeding 750 V;

**Low voltage:** any voltage exceeding 30 V but not exceeding 750 V;

**Lockout:** a device that uses a positive means (such as a lock) to hold an energy-isolation device in a safe position and prevents the energizing of a machine or a piece of equipment;

**Practicable:** possible given current knowledge, technology and invention;

**Qualified (Electrical) Worker:** a qualified person trained and knowledgeable of construction and operation of equipment or a specific work method and is trained to recognize and avoid the electrical hazards that might be present with respect to that equipment or work method, including an employee while undergoing on-the-job training has performed duties safely at their level of training and who is under the direct supervision of a qualified person; **Note:** A person may be considered qualified for certain equipment and methods but unqualified for others.

**Reasonably practicable:** practicable unless the person on whom a duty is placed can show that there is a gross disproportion between the benefit of the duty and the cost, in time, trouble and money, of the measures to secure the duty;

**Zero Energy State:** an energy level that is not harmful to an individual. Methods for achieving a zero-energy state in a system include de-energization of electrical sources and discharging of capacitive and inductive elements (absence of voltage and current), blocking or total release of mechanical energy (kinetic or potential), and dissipating chemical or thermal energy.

4. **WORKERS THIS POLICY IS INTENDED TO PROTECT**

ABC Company is committed to protecting the health and safety of **all workers** at its site regardless of who pays or employs them. Accordingly, this Policy is intended to protect:

- Full- or part-time workers employed by ABC Company;
- Temporary employees placed by an outside agency to work at the site;
- Contract labourers engaged to perform work at the site;
- Volunteers who work at the site for free; and
- Workers employed by prime contractors, contractors, and subcontractors to perform work at the site under a contract with ABC Company.

5. **ELECTRICAL HAZARD ASSESSMENT**

**To provide for electrical safety,** ABC Company **will ensure** electrical hazard assessments are carried out. Electrical hazards identified during hazard assessment are rated as a high priority for purposes of determining corrective measures.

6. **WORKERS THATCAN PERFORM ELECTRICAL WORK**

Only a qualified electrical worker is allowed to work on energized circuits. Qualified electrical workers must not be assigned to work alone, except for replacing fuses, operating switches, or other operations that do not require the worker to contact energized high voltage conductors or energized parts of equipment, clearing trouble, or emergencies involving hazard to life or property. All unqualified workers are strictly forbidden from coming into contact or working near open energized equipment.

7. **WARNING SIGNS**

An entrance to a room or similar enclosure containing exposed live electrical parts must have a conspicuous sign that warns of the danger and bans entry by unauthorized persons.

8. **LOCKING OUT**

**8.1 When Lockout Is Required**

The power supply to electrical installations, equipment or conductors must be disconnected, locked out of service and tagged before any work is done, and while it is being done, on or near live exposed parts of the installations, equipment or conductors. Before starting the work, each worker must that the above requirements have been met.

**8.2 When Lockout Is Not Required**

Locking out is not required if either:

- The conductors are adequately grounded with a visible grounding mechanism; or
- The voltage is less than 300 volts and there is no locking device for the circuit breakers or fuses and procedures are in place adequate to ensure that the circuit isn’t inadvertently energized.

(4) If locking out isn’t required for the reason set out in the second bullet, ABC Company will take steps to ensure that the required procedures referred to in that bullet are carried out.

**8.3 Lockout Tagout Protocols**

If more than one worker is involved in the work referred to in subsection 8.1, the worker who disconnected and locked out the power supply must communicate the purpose and status of the disconnecting and locking out. If a tag is used as a means of communication, it must:

- Be made of non-conducting material;
- Be secured to prevent its inadvertent removal;
- Be placed in a conspicuous location;
- State the reason the switch is disconnected and locked out;

- Show the name of the worker who disconnected and locked out the switch; and
- Show the date on which the switch was disconnected and locked out. O. Reg.

**8.4 Alternative Protocols for When Lockout Isn’t Practicable**

If it’s not practicable to disconnect electrical installations, equipment or conductors from the power supply before working on, or near, live exposed parts of the installations, equipment or conductors, workers must use rubber gloves, mats, shields and other protective equipment and procedures adequate to ensure protection from electrical shock and burns while performing the work. If the installation, equipment or conductor is operating at a nominal voltage of 300 volts or more, a suitably equipped competent person who’s able to recognize the hazards and perform rescue operations, including artificial respiration, must be available and able to see the worker performing the work. **Exception:** The immediate requirement related to installation, equipment or conductors operating at nominal voltage of 300 volts or more doesn’t apply to equipment testing and trouble-shooting operations.

**8.5 High Voltage Work**

Work performed on electrical transmission systems or outdoor distribution systems rated at

more than 750 volts must be performed in accordance with the requirements set out in “Electrical Utility

Safety Rules”, published by the Infrastructure Health and Safety Association (IHSA) and revised in 2019.

9. **TOOLS & EQUIPMENT**

Tools and other equipment capable of conducting electricity and endangering a worker’s safety

may not be used in such proximity to any live electrical installation or equipment where they might make electrical contact with the live conductor. Cord-connected electrical equipment and tools must have a casing that’ adequately grounded, other than: i. cord-connected electrical equipment or tools that are adequately double-insulated and whose insulated casing shows no evidence of cracks or defects; or ii. a portable electrical generator in which the electrical equipment or tools aren’t exposed to an external electric power source if the casing of portable electrical equipment or tools connected to the generator is bonded to a non-current-carrying part of the generator.

Portable electrical tools used outdoors or in wet locations must be protected by a ground fault circuit interrupter installed at the receptacle or on the circuit at the panel. A ground fault that may pose a hazard must be investigated and immediately removed from service.

10. **PORTABLE ELECTRICAL EQUIPMENT & EXTENSION CORDS**

**10.1 General Requirements**

All electrical equipment including extension cords, power bars and portable equipment must have an approved CSA label and be properly maintained in good working condition. Workers must inspect their electrical equipment each time before they use it. Equipment that’s damaged must immediately be taken out of service and either destroyed to prevent accidental use or tagged as being damaged and warning against its use.

**10.2 Cord-and-Plug Connected Equipment**

Extension cords may be used only to provide temporary power and must not be used as permanent wiring. In addition:

- Extension cords must be of the three-wire type;
- Extension cords and flexible cords must be designed for hard or extra hard usage with the rating or approval

visible;
- Job-made extension cords are not allowed;
- A Class A ground-fault circuit interrupter (GFCI) must be provided for renovation or construction sites, or work in outdoor or damp/wet locations;
- Extension cords should be plugged in to a Class A GFCI, or an in-line GFCI plugged directly into the supply receptacle if a Class A GFCI isn’t available;
- Flexible electric cords connected to equipment must not be used for raising or lowering the equipment;
- Cords must be covered by a cord protector or tape when they extend into a walkway or travel path to avoid creating a trip hazard;
- Extension cords used with grounding-type equipment must accept a three-prong, or grounded, plug;
- Attachment plugs and receptacles may not be connected or altered to interrupt the continuity of the equipment grounding conductor;
- Clipping the grounding prong from an electrical plug is not allowed;
- Flexible cords may be plugged only into grounded receptacles;
- The continuity of the ground in a two-prong outlet must be verified before use;
- Adapters that interrupt the continuity of the equipment grounding connection may not be used;
- Portable electric equipment and flexible cords used in water or other highly conductive work locations or locations where workers are likely to contact water or conductive liquids must be approved for use in those locations;
- Workers must ensure their hands are dry when plugging/unplugging flexible cords and cord-and-plug connected equipment if energized equipment is involved;
- The energized plug and receptacle connections must be handled only with insulating protective equipment if the connection could provide a conducting path to hands,

such as if a cord connector is wet;
- While working outside, workers must:
    - Plug into a Class “A” GFCI;
    - Use heavy duty grade cords designed for outdoor use;
    - Use heavier gauge wire for longer runs or bigger tools;
    - Protect cords from water, pedestrian and vehicle traffic, closing doors and windows;
    - Check tool ground pin or on double-insulated tools to ensure that casing is not cracked;
- Locking-type connectors must be properly locked into the connector;
- Lamps for general illumination must be protected from breakage and metal shell sockets must be grounded;
- Temporary lights must not be suspended by their cords unless they’re designed for
- this purpose;
- Portable lighting used in wet or conductive locations must either be: i. operated at no more than 12 volts, or ii. protected by GFCIs.

**10.3 Temporary Wiring**

Temporary electrical power and lighting installations 600 volts or less, including flexible cords, cables and extension cords, may only be used during renovation, maintenance or repair. In addition:

- Ground-fault protection (Class A) must be provided on all temporary-wiring circuits, including extension cords, used on construction sites;
- All equipment and tools connected by cord and plug must be grounded (grounding isn’t required for listed or labeled double insulated tools and appliances);
- Feeders must originate in an approved distribution center, such as a panel board, that’s rated for the voltages and currents the system is expected to carry;

- Branch circuits must originate in an approved power outlet or panel board;
- Bare conductors or earth returns may not be used for wiring of any temporary circuit;
- Receptacles must be of the grounding type;
- Flexible cords and cables must be of an approved type and suitable for the location and intended use and may not be used as a substitute for the fixed wiring;
- Suitable disconnecting switches or plug connects must be installed to permit the disconnection of all ungrounded conductors of each temporary circuit;
- Lamps for general illumination must be protected from accidental contact or damage, either by elevating the fixture or by providing a suitable guard;
- Hand lamps supplied by flexible cord must be equipped with a handle of molded composition or other approved material and must be equipped with a protective guard;
- Flexible cords and cables must be protected from accidental damage;
- Steps must be taken to prevent sharp corners and projections are to be avoided;
- Flexible cords and cables that pass-through doorways or other pinch points must be protected from damage.

11. **PORTABLE GENERATORS**

Portable generators with no connection between the neutral and the case may not be used as stand-alone electric supply for operation of portable equipment. Labeling on newer portable generators must indicate the status of the neutral conductor and shall be marked on each machine as follows:

NEUTRAL FLOATING or NEUTRAL BONDED TO FRAME

12. **AVOIDANCE OF WET & CONDUCTIVE LOCATIONS**

Where practicable, work in wet or conductive locations should be avoided. The use of portable tools and equipment powered by sources other than 120 V ac (e.g., batteries, air, hydraulics)

should be minimized in wet or conductive locations. Where working in a damp or wet location can’t be avoided, a ground-fault circuit interrupter (GFCI) Class A must be provided. Where possible, water should be removed and fans/dehumidifiers used to promote drying should be used before work begins.

13. **SAFETY RULES FOR WORK ON DE-ENERGIZED SYSTEMS**

**All electric circuits must be assumed to be energized unless each involved worker ensures they are not.**

Every circuit and conductor must be tested every time work is done on them. Proper PPE must be worn until the equipment is proven to be de-energized, including:

- Voltage-rated gloves;
- Leather protectors;
- Electrically insulated shoes;
- Approved insulating mats;
- Safety glasses; and
- Appropriate Arc Flash PPE

The following steps must be taken to ensure conditions for electrically safe work:

**Step 1:** Check up-to-date drawings, diagrams, and identification tags to identify all sources of power to the equipment.

**Step 2:** Remove the load current, and then open the disconnecting devices for each power source.

**Step 3:** If practicable, visually verify that blades of disconnecting devices are fully open or that draw out-type circuit breakers are fully withdrawn.

**Step 4:** Apply lockout/tag out devices in accordance with ABC Company’s lockout tagout policies and procedures.

**Step 5:** Test each phase conductor or circuit part with an

adequately rated voltage detector to verify that the equipment is de-energized. Test each phase conductor or circuit part both phase-to-phase and phase-to-ground. Check the voltage detector before and after each test to ensure it’s working.

**Step 6:** Properly ground all possible sources of induced voltage and stored electric energy before touching. Apply ground-connecting devices rated for the available fault current if conductors or circuit parts that are being de-energized may contact other exposed conductors or circuit parts.

## 14. SAFETY RULES FOR WORKING ON OR NEAR ENERGIZED EQUIPMENT

For purposes of this Section, **working on** live circuits means actually touching energized parts; **working near** live circuits means working close enough to energized parts to pose a risk even though work is on de-energized parts.

### 14.1 General

Where practicable, work on energized equipment should be avoided and efforts should be made to turn off the power or isolate the power source before starting work. If it’s not practicable to turn off or isolate the power, work on energized equipment is permitted only if:

- The equipment is rated at a nominal voltage of 600 volts or less AND disconnecting would create a greater hazard than proceeding without disconnecting it;
- The work consists of diagnostic testing ONLY.

If the work (other than diagnostic work) involves a nominal voltage above 300 volts, an adequately equipped competent worker must be stationed in view of the worker to perform rescue operations, including CPR.

### 14.2 Permits

A written electrical safety work permit is required in the

circumstances outlined in CSA Z462-21. Work related to testing, troubleshooting, and voltage measuring may be completed without a permit provided appropriate safe work practices and PPE are used. The permit must be issued by the qualified electrical worker, posted in an appropriate location where the energized work occurs for the duration of the task and maintained for one year after the work has been completed. Work permits are NOT required if a qualified person is provided with and uses appropriate safe work practices for engaging in:

- Testing, troubleshooting or voltage measuring;
- Thermography, ultrasound or visual inspections if the restricted approach boundary is NOT crossed;
- Access/egress into an area with energized equipment if no electrical work is performed and the restricted approach boundary is not crossed;
- General housekeeping and miscellaneous non-electrical activities if the restricted approach boundary is not crossed.

**14.3 Limits of Approach**

Energized electrical conductors and circuit parts operating at voltages > 30 V ac or 60 V dc must be put into an electrically safe condition before a worker works within the following limited approach boundary of those conductor parts.

1. **Restricted approach boundary** is the distance from an exposed energized electrical conductor or circuit part within which there is an increased likelihood of electric shock, due to electrical arc over combined with movement. To cross the restricted approach boundary, the qualified person must:

- Have an energized work permit approved by the responsible supervisor or manager;
- Use PPE suitable for working near exposed lived parts

and rated for the voltage and energy level involved;
- Minimize the likelihood of bodily contact with exposed energized conductors and circuit parts from inadvertent movement by keeping as much of the body out of the restricted space as much as possible, using only protected body parts in the space to the extent necessary to accomplish the work;
- Use insulated tools and equipment; and
- Not approach or bring conductive objects within the restricted approach boundary > 30 V ac or 60 V dc unless CSA-Z462 requirements are followed.

1. **Limited approach boundary** is the distance from an exposed live part within which a shock hazard exists. Workers may not cross the limited approach boundary unless they are trained and qualified for the task which includes being able to identify the hazards and associated risks. To cross the limited approach boundary, the qualified person must wear flash protective equipment. Unqualified persons should generally not work near or close to the boundary, but if they do a qualified person must advise them to stay outside of the boundary.
2. **Arc flash boundary** is the approach limit at a distance from exposed live parts within which someone could receive a second degree burn if an electrical arc flash were to occur. The arc flash boundary is defined as the approach limit from an arc source at which incident energy equals 1.2 cal/cm2 (5 J/cm2 ). Rules:

- Use of PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved is required;
- For systems of 600 volts and less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA and a clearing time of 6 cycles for the circuit breaker to act, or any combination of fault

currents and clearing times not exceeding 300 kA cycles;
- Labels on panels containing information about energies and boundaries must be checked before starting work;
- When working on de-energized parts and inside the flash protection boundary for nearby live exposed parts, if the parts can’t be de-energized, barriers such as insulated blankets must be used to protect against accidental contact or the worker must wear proper PPE;
- When working near exposed live parts, suitable safe work zone barriers must be provided to maintain a safe distance for non-workers in the area.

15. **EQUIPMENT ARC FLASH LABELING**

Equipment must be field marked with a label specifying the: i. Available incident energy or required level of personal protective equipment; and ii. Date of evaluation.

**15.1 CSA Z462-1 Requirements**

Labels must meet the following CSA Z462-21 requirements:

- Label content must consist of a signal word panel (“DANGER”, “WARNING”, or “CAUTION”) plus a message panel (concise explanation of the hazard). The signal word panel may include a safety alert symbol (triangle and exclamation mark). The label may also include a safety symbol panel (a symbol that effectively communicates the message in the message panel).
- Where used, a safety alert symbol must precede the signal word with the base of the symbol on the same horizontal line as the base of the signal word and the height of the symbol equal to or greater than the signal word.
- The label may include a contrasting border.
- Danger labels must have the word “DANGER” in safety white letters on a safety red background.
- Warning labels must have the word “WARNING” in safety

black letters on a safety white background.
- If used, a safety alert symbol must be the same colour as the signal word lettering and the exclamation mark needs to be the same colour as the signal word panel background.
- The label must be readily visible to and alert the worker to the potential hazard in time to take appropriate action.

**15.2 Arc Flash Label**

When a detailed arc flash hazard analysis has been completed, a detailed label may be used to provide additional information, which typically consists of four sections that contain:

- The information from the label required by Rule 2-306 of the Canadian Electrical Code, Part I;
- Information on arc flash hazards, such as arc flash protection boundary distances and the required PPE;
- Information on electrical shock hazards, such as voltage level, safe approach distances and insulation value of insulating tools and required PPE;
- Information on the designation of the equipment, the name of the individual or company that performed the analysis, the power system study file designation and the date the analysis was completed.

**15.3 Labeling Procedures**

Switchboards, panel boards, industrial control panels, and motor control centers must be field marked to warn workers of potential electric arc flash hazards. Markings (labels) must be located where they’re visible to the personnel before examination, adjustment, servicing, or maintenance of the equipment. The first, “WARNING or DANGER” label must be used when information is not presently available. The DANGER label should remind a qualified worker who intends to open the

equipment for analysis or work:

- That electric arc flash hazard exists;
- To turn off all power before opening;
- To follow all CSA Z462-21 safe work practice requirements;
- To wear appropriate PPE.

The second DANGER label must be used when a qualified electrical worker or electrical engineer determines the values of the shock and flash protection information. When arc flash and shock data are available for industrial control panels, labels must include information on flash hazard boundary, the hazard category, required PPE, minimum arc rating, limited approach distances, restricted approach distances and prohibited approach distances.

16. **POLICY MONITORING & EVALUATION**

This Policy will be reviewed, in consultation with the JHSC or Representative, at least once a year and more often in response to incidents, injuries, illnesses, and changes affecting workers' health and safety.

## ELECTRICAL WORKERS SAFETY POLICY

*This Model Policy deals with one aspect of electrical safety: electrical workers. The Policy is based on Saskatchewan laws and you'll need to adapt it to meet the requirements of your own jurisdiction's OHS regulations.*

1. **PURPOSE**

ABC Company has adopted this Policy to prevent electrical injuries and property damage and ensure compliance with the Saskatchewan *Occupational Health and Safety Act* ("Act"), the *Occupational Health and Safety Regulations* ("Regulations") (including but not limited to Part XXX of the Regulations, the

ABC Company Occupational Health and Safety Program ("OHS Program") and other applicable requirements standards for electrical safety at ABC Company workplaces.

2. **DEFINITIONS**

**For purposes of this Policy:**

- **"Approved"** means approved by the chief inspector appointed by the Saskatchewan Power Corporation in accordance with Section 6 of The Electrical Inspection Act, 1993 ("EI Act");
- **"Competent"** means possessing knowledge, experience, and training to perform a specific duty safely and effectively;
- **"Electrical equipment":**
  - Means any apparatus, appliance, device, instrument, fitting, fixture, machinery, material, or thing used, or capable of being used, in or for: (A) the generation, transformation, transmission, distribution, supply, or utilization of electrical power or energy; or (B) the protection of buildings or premises from damage by lightning; and
  - Includes any assemblage or combination of materials or things used, or capable of being used or adapted, to serve or perform any purpose or function when connected to an electrical installation, notwithstanding that any of the materials or things may be mechanical, metallic, or non-electric in origin;
- **"Electrical installation"** includes electrical equipment and any connected wiring;
- **"Electrical worker"** means:
  - In the case of work of electrical installation regulated by the EI Act, a person who is authorized under the EI Act to perform that work;

    - In the case of any work with electrical equipment not regulated by the EI Act, a person who is qualified to perform that work;
- **“Guarded”** means covered, shielded, fenced, enclosed, or otherwise protected by suitable covers, casings, barriers, rails, screens, mats, platforms, or other equally effective means;
- **“High voltage”** means any voltage over 750 volts;
- **“Lamp”** means an artificial source of electric light;
- **“Luminaire”** means a complete lighting unit designed to accommodate a lamp and connect the lamp to an electrical power supply;
- **“Maintained”** means kept in a condition of efficient and safe functioningby a system of regular examination, testing and servicing or repair;
- **“Powered mobile equipment”** means a self-propelled machine or combination of machine, including a prime mover, that is designed to manipulate or move materials or provide a work platform for workers;
- **“Practicable”** means possible given current knowledge, technology and invention;
- **“Qualified” means** possessing a recognized degree, a recognized certificate or a recognized professional standing and demonstrating, by knowledge, training and experience, the ability to deal with problems related to the subject-matter, the work, or the project;
- **“Reasonably practicable”** means practicable unless the person on whom a duty is placed can show that there is a gross disproportion between the benefit of the duty and the cost, in time, trouble and money, of the measures to secure the duty;
- **“Readily accessible” means capable of being reached quickly for operation, renewal, or inspection, without requiring a worker to climb over or remove obstacles or to resort to a portable means of access.**

3. **POLICY STATEMENT**

All electrical work performed at ABC Company workplaces must be carried out safely and in accordance with the requirements of the Act, the Regulations, the EI Act, the OHS Program, and other electrical safety standards that apply.

4. **WORKERS COVERED BY THIS POLICY**

ABC Company is committed to protecting the health and safety of **all workers** at its site regardless of who pays or employs them. Accordingly, this Policy is intended to protect:

- Full- or part-time workers employed by ABC Company;
- Temporary employees placed by an outside agency to work at the site;
- Contract labourers engaged to perform work at the site;
- Volunteers who work at the site for free; and
- Workers employed by prime contractors, contractors, and subcontractors to perform work at the site under a contract with ABC Company.

5. **ELECTRICAL HAZARD ASSESSMENT**

**To provide for electrical safety,** ABC Company **will ensure** electrical hazard assessments are carried out. Electrical hazards identified during hazard assessment are rated as a high priority for purposes of determining corrective measures.

6. **WORKERS THATCAN PERFORM ELECTRICAL WORK**

ABC Company will ensure that only electrical workers (as defined in Section 2 above) are permitted to construct, install, alter, repair, or maintain electrical equipment. However, a competent worker who is **not** an electrical worker may be allowed to:

- Operate powered mobile equipment and perform non-electrical work on or near de-energized equipment;
- Extend a portable power cable for routine advancement by

interconnection of approved cord connectors, cord caps, or similar devices;
- Change light bulbs or tubes;
- Insert or replace an approved fuse, to a maximum of 750 volts, that controls circuits or equipment;
- Connect small portable electrical equipment that operates at less than 750 volts to supply circuits by means of attachment plugs, where the connection does not overload the circuit conductors, or to use or operate small portable electrical equipment that is connected in that way.

7. **ELECTRICAL EQUIPMENT**

**7.1. General Standards for Electrical Equipment**

ABC Company will ensure that only workers are permitted to use only approved electrical equipment that is:

- Approved for the intended use and location of the electrical equipment;
- Maintained in proper working condition and capable of safe operation; and
- Tested in accordance with the manufacturer's recommendations.

If electrical equipment is found to have any defects or unsafe conditions, EITHER:

- The electrical equipment is disconnected and removed from use; OR, BOTH:
- Immediate steps are taken to protect the health and safety of any worker who may be at risk until the defects are repaired and/or the unsafe conditions are corrected; AND
- Such defects and unsafe conditions are remedied as soon as reasonably practicable.

**7.2. Covers for Switches, Receptacles, Connections, Etc.**

ABC Company will ensure that:

- All switches, receptacles, luminaires, and junction boxes are fitted with a cover that is approved for the cover's intended use and location;
- All wire joints or connections are:
    - Fitted with an approved cap or other approved cover;
    - Enclosed in an approved box; or
    - Where the wire joints or connections are not permanently installed, protected from damage by another approved means;
- All dead, abandoned, or disused electrical conductors or equipment are removed from the workplace or disconnected and secured to prevent inadvertent energization.

**7.3. Electrical Equipment in Tunnels or Manholes**

If electrical equipment is installed in a tunnel or manhole, ABC Company will ensure, where reasonably practicable, that:

- The tunnel or manhole is kept clear of water; and
- The electrical equipment is protected from physical or mechanical damage.

**7.4. Luminaires**

ABC Company will ensure that:

- A luminaire located at a height of less than 2.1 metres above a walking or working surface is protected against physical or mechanical damage by installation of a safeguard or by the location of the luminaire;
- Where a portable luminaire is used:
    - The electrical extension cord and fittings are approved for the intended use and location of the cord and fittings;
    - The electrical extension cord and fittings are properly maintained;

        - The electrical extension cord is not used to supply power to any equipment other than the portable luminaire unless the cord meets the requirements of Section 7.5. below;
    - A portable luminaire used in a damp location or metallic enclosure, including a drum, tank, vessel, or boiler, is:
        - Operated at a potential of no more than 12 volts; or
        - Supplied by a circuit protected by a class A ground fault circuit interrupter.

**7.5. Extension & Power Supply Cords**

ABC Company will ensure that an electrical extension or power supply cord used to supply energy to any electrical equipment is:

- Approved for the intended use and location of the particular cord;
- Fitted with approved cord end attachment devices that are installed in an approved manner;
- Provided with a grounding conductor; and
- Maintained and protected from physical or mechanical damage.

**7.6. Portable Power Cables & Cable Couplers**

ABC Company will ensure that every portable power cable and cable coupler is:

- Protected from physical or mechanical damage; and
- Inspected by a competent person frequently enough to protect workers’ health and safety.

ABC Company will also ensure that:

- If any unsafe condition is identified in a portable power cable or cable coupler, the cable or coupler is either repaired or taken out of service; and

- Every splice in a portable power cable is strong enough and adequately insulated to retain the mechanical and dielectric strength of the original cable.

Workers will take all reasonably practicable steps not to drive equipment over, or otherwise damage, a portable power cable or cable coupler.

**7.7. Exposed Metal Parts of Portable Electrical Equipment**

ABC Company will ensure that every exposed metal part of portable electrical equipment that is not designed to carry electrical current is connected to the ground unless:

- The electrical equipment is of an approved, double-insulated type, and is clearly marked as such;
- Power is supplied to the equipment through an isolating transformer having a non-grounded secondary of no more than 50 volts potential;
- Power is supplied to the equipment through a class A ground fault circuit interrupter; or
- Power is supplied to the equipment from a battery of no more than 50 volts potential.

**7.8. Portable Electric Power Plants**

ABC Company will ensure that:

- A portable electric power plant that is operated at voltages exceeding 240 volts to ground or rated in excess of 12.0 kilovolt-amperes is connected to ground in a manner approved under the EI Act; and
- All electrical equipment connected to an ungrounded portable electric power plant is:
    - Of the double insulated type; and
    - Clearly marked as being of the double insulated type or is supplied from a class A ground fault interrupting device.

Exception: The above requirements do not apply where the

electrical energy is used for electric arc welding.

### 7.9. Electrical Panels

ABC Company will ensure that every electrical panel is:

- Approved for the panel’s intended use and location;
- Protected from physical or mechanical damage;
- Readily accessible; and
- Fitted with an approved cover that has an approved filler in any unused opening.

### 7.10. High Voltage Switchgear & Transformers

ABC Company will ensure that a place housing electrical switchgear or transformers operating at high voltage is:

- Guarded;
- Kept free of extraneous materials; and
- Adequately ventilated.

ABC Company will post a warning sign at a place housing high voltage switchgear or transformers that:

- Indicates the highest voltage in use; and
- States that access is restricted to authorized persons only.

ABC Company will ensure that a fire extinguisher approved for Class C fires is readily available to workers working on or near energized high voltage electrical equipment.

## 8. GROUNDING OF EQUIPMENT BEFORE WORK STARTS

Before any work on an electrical conductor or electrical equipment begins and during the progress of the work, ABC Company will ensure that:

- The electrical conductor or electrical equipment is isolated, locked out, and connected to ground; or
- Other effective procedures are followed to ensure

workers' safety.

Exception: The above provision does not apply to work performed by a qualified electrical worker working closer than prescribed minimum distance that is covered by Section 9.3. of this Policy below.

9. **ADDITIONAL REQUIREMENTS FOR ESPECIALLY DANGEROUS ELECTRICAL WORK**

**9.1. Definition**

For purposes of this Section, **"qualified electrical worker"** means a person who:

- Holds a valid journeyperson's certificate in the electrician trade, and includes an apprentice in the trade while under the supervision of a journeyperson;
- Holds a valid journeyperson's certificate in the power lineperson trade, and includes an apprentice in the trade while under the supervision of a journeyperson; or
- For the purpose of design, calibrating of equipment, inspection, monitoring, testing, and commissioning of equipment in high voltage installations, individuals who are electrical engineers, applied science technologists, or certified technicians who have achieved professional certification within an electrical, electronics, industrial, or instrumentation discipline.

**9.2. High Voltage Work**

ABC Company will ensure that a qualified electrical worker has received approved training in high voltage safety. No qualified electrical worker may perform high voltage electrical work unless the worker has:

- Written proof of approved training in high voltage electrical safety; and
- Has that written proof of approved training readily accessible at all times while working near energized

high voltage electrical conductors.

ABC Company will provide and ensure workers at risk of making contact with an exposed energized high voltage electrical conductor use approved rubber insulating gloves and mitts and approved rubber insulating sleeves.

### 9.3. Minimum Approach Distance when Working Near Exposed Energized Electrical Conductors

Except as otherwise provided in this Section, ABC Company will ensure that no worker works, no material is piled, stored, or handled, no scaffold is erected or dismantled, and no equipment or powered mobile equipment is used or operated within the minimum distance from any exposed electrical set out in Column 1 of Table 22 of the Appendix to the Regulations:

### Table 22: Minimum Distances from Exposed Energized High Voltage Electrical Conductors

| **Risk Factor** | | **Col. 1** | **Col. 2** | **Col. 3** | **Col. 4** | **Col. 5** | **Col. 6** |
|---|---|---|---|---|---|---|---|
| Voltage Phase to Phase | Voltage to Ground | Non-Electrical Worker, Material, Equipment | Qualified Electrical Workers | Vehicles & Load | Limit of approach for utility tree trimmers using conducting objects exposed to energized parts | Limit of approach for utility tree trimmers using rated tools to exposed energized parts | Limit of approach for utility tree trimmers using rated insulated booms |
| **kV** | **kV** | **Metres** | **Metres** | **Metres** | **Metres** | **Metres** | **Metres** |
| 230 | 133 | 6.1 | 1.4 | 1.83 | 2.4 | 1.41 | 1.85 |
| 138 | 79.8 | 4.6 | 1 | 1.22 | 1.9 | 0.92 | 1.35 |
| 72 | 41.6 | 4.6 | 0.6 | 0.8 | 1.6 | 0.61 | 1.05 |
| 25 | 14.4 | 3 | 0.3 | 0.6 | 1.2 | 0.12 | 0.55 |
| 15 | 8.6 | 3 | 0.3 | 0.6 | 1.1 | 0.12 | 0.55 |
| 4.16 | 2.4 | 3 | 0.15 | 0.6 | 1.05 | 0.4 | 0.50 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0.75 | 0.75 | 3 | 0.15 | 0.6 | 1.05 | 0.4 | 0.05 |

Exception: The above requirement does not apply to a worker undertaking a specific, one-time activity under the direct supervision of a qualified electrical worker;

ABC Company will ensure that no worker who is at ground potential approaches an exposed energized electrical conductor closer than the minimum distance set out in Column 2 of Table 22 above. ABC Company will ensure that only a qualified electrical worker works closer to an exposed energized electrical conductor than the minimum distance set out in Column 2 of Table 22.

Where a qualified electrical worker does, in fact, work closer to an exposed conductor than the Column 2, Table 22 distance, ABC Company will ensure that:

- The qualified electrical worker:
  - Performs the work in accordance with written instructions for a safe work procedure that have been developed and signed by a competent person appointed by ABC Company for that purpose;
  - Uses equipment approved for the intended use of the equipment; and
  - Uses appropriate personal protective equipment in accordance with the Section 04 – Personal Protective Equipment Policy;
- The conductor is operating at 25 kilovolts or less and is fitted with rubber and rubber-like insulating barriers that meet the requirements of an approved standard.

ABC Company will ensure that no part of a vehicle that is operated on a public road, highway, street, lane, or alley, or the load the vehicle is carrying comes within the minimum distance from an exposed energized electrical conductor set

out in Column 3 of Table 22.

ABC Company will ensure that no utility tree trimmer works within the minimum distance from an exposed energized electrical conductor set out in:

- Column 4 of Table 22 if the utility tree trimmer is using conducting objects exposed to energized parts;
- Column 5 of Table 22 if the utility tree trimmer is using rated tools exposed to energized parts;
- Column 6 of Table 22 if the utility tree trimmer is using rated insulating booms.

### 9.4. Exposed Energized Electrical Conductors Operating at 31 to 750 Volts

ABC Company will ensure that where work is carried out in proximity to exposed energized electrical conductors operating at 31 to 750 volts, the work is carried out in a way that prevents workers from making accidental contact with the exposed energized conductor.

## 10. EMERGENCY PROGRAM

Where an electrical worker is at risk of making harmful contact with an exposed energized electrical conductor, ABC Company will develop and implement an emergency program setting out procedures to be followed in case such contact is made, including procedures to:

- Rescue the worker who comes into contact with a live conductor;
- Administer first aid to a worker who has sustained electrical shock; and
- Obtain medical assistance.

ABC Company will ensure that workers are properly trained to implement the emergency program.

## 11. INSPECTION

Monthly workplace inspections carried out in accordance with the OHS Program will include inspection of electrical equipment, conductors, and system and verification that the electrical safety measures set out in this Policy are being effectively implemented. Any electrical safety hazards identified during such inspections will be reported and appropriately addressed, including removing defective electrical equipment from service.

12. **PRIME CONTRACTORS, CONTRACTORS & SUBCONTRACTORS**

ABC Company will ensure that any prime contractors, contractors, and subcontractors it hires to perform work involving exposure to electrical hazards at an ABC Company work site are:

- Notified of the electrical hazards at the site, the dangers they pose, and the controls used to protect exposed workers;
- Notified of the terms of this Policy and applicable ABC Company safe work procedures in place at the work site.

Prime contractors and contractors hired to control work at ABC Company work sites that involves exposure to electrical hazards must carry out the electrical safety obligations imposed on ABC Company under this Policy by either:

- Directly following the terms of this Policy and any ABC Company safe work procedures that apply to the work; or
- Developing and implementing equivalent electrical safe work policies and safe work procedures that meet the requirements of the Regulations and are coordinated with and provide workers at least the same amount of protection as this Policy and ABC Company safe work procedures.

13. **EVALUATION**

This Policy and safe work procedures developed under it will

be reviewed at least once a year and immediately in response to incidents, injuries, or significant changes to work conditions affecting electrical safety.

**Legislation/Regulations/Standards**

Occupational Health and Safety Act, 1993, SS 1993, c O-1.1

Occupational Health and Safety Regulations, 1996, RRS c O-1.1, Reg 1

The Electrical Inspection Act, 1993, SS 1993, c E-6.3