



ELECTRICAL HOT WORK (ENERGIZED WORK INCLUDING TESTING)

The purpose of this policy is to ensure that electrical work around or on energized electrical equipment, parts, and circuits is performed only when necessary and only when it is a critical task or for the purposes of troubleshooting and testing. It is the intention of E Light Electric Services to work on equipment and systems while they are in an electrically safe work condition. We recognize that it is not always possible to achieve an electrically safe work condition and it is our intention to have all energized electrical work performed in a safe manner according to this policy and to be compliant with the requirements of The Standard for Electrical Safety in the Workplace [NFPA 70E] 2009 Edition.

DEFINITIONS

Critical Task

Any task requiring work to be performed on electrical equipment or systems where it has been determined that interrupting the electrical power to that equipment or system will cause greater hazard to persons or property. The designation of a work as a critical task must be approved by the electricians performing the work, the electrician's supervisors and project manager, the Director of Education and Loss Prevention and the Vice President of Operations.

Exception: In an emergency during other than normal working hours, approval may be granted by the electrician's project manager and one other member of management. Notification must be made to the Vice President of Operations and the Director of Training and Safety via voice mail. This exception may only be utilized if attempts to contact the Director of Training and Safety and the Vice President of Operations have been unsuccessful.

Electrically Safe Work Condition (De-energized)

Equipment and circuitry shall be de-energized and in an electrically safe work condition if all of the following steps have been successfully completed:

All sources of potential power have been identified.

All sources of potential power have been locked out and tagged according to company lock out and tag out procedures

All circuitry and equipment has been tested to ensure that it is de-energized and no voltage is present.

This test is to be done utilizing a solenoid type (Wiggly) tester. Multimeters are not to be used for this purpose unless a live, dead, live test has been performed. NO PROXIMITY TESTERS MAY BE USED TO DETERMINE THE PRESENCE OR LACK OF PRESENCE OF ENERGY. E LIGHT ELECTRIC SERVICES, INC.



**EMPLOYEES ARE NOT ALLOWED
TO HAVE PROXIMITY PENS OR
TESTERS ON ANY E LIGHT**

ELECTRIC SERVICES, INC PROJECT.

Energized

For the purposes of this policy energized shall mean that equipment or wiring is a source of or connected to electrical energy in excess of 50 volts. Any equipment or wiring that has not been placed in an electrically safe work condition shall be considered to be energized. See Electrically Safe Work Condition.

Electrical connections at Solar Panels, once connected and during anytime which the sun is shining shall be considered to be energized and under load. Only journeymen or authorized and qualified personnel shall be allowed to disconnect MC4 and other type connectors while in this condition and then only while wearing insulated rubber gloves.

Energized Electrical Work

Any work on electrical equipment, circuits, devices, systems, or any other energized parts, where an employee is required to deliberately, or could accidentally, place any part of the body, tool or materials into or around electrical devices in excess of 50 volts. Work on electrical equipment or system installed in a building that has an energized service if the equipment or system has not been placed in an electrically safe work condition.

Testing and troubleshooting plans shall be approved by the project manager or service manager responsible for the project.

Energized Work Permit (Standard) must be reviewed and approved by the project manager responsible for the work, the Vice President of Operations or the Area Manager responsible for the work and by the Director of Education and Loss Prevention. In an emergency, an approval may be obtained by voice communication. This is limited to extreme conditions. In the event a person that is responsible for approvals is not able to be reached, that person's direct supervisor may provide the approval necessary. If the direct supervisor cannot be reached the energized work must be postponed until review and approval can be obtained.

Qualified Person

One who has skills and knowledge related to the construction and operation of electrical equipment and installations and has received training to recognize and avoid the hazards involved. E Light Electric Services recognizes licensed Journeyman and Master Electricians who have successfully completed our "Energized Electrical Work" training program as qualified.

Exception: Fourth year apprentices that have completed the "Energized Electrical Work" training program may participate in energized electrical work under the direct supervision of a qualified person.



ENERGIZED EQUIPMENT PROGRAM

General

Safety-related work practices must be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contact. The requirements of NFPA 70E shall be followed when developing these work practices.

Live Parts of Electrical Equipment

- Live parts to which an employee may be exposed must be de-energized before the employee works on or near them. (See lock out tag out section)
- When this is not possible or certain conditions may cause additional hazards, other safety-related work practices must be used to protect employees from any contact.
- The practices must be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electrical conductors or circuit parts.
- The practices must be compliant with NFPA 70E

WORKING ON OR NEAR EXPOSED ENERGIZED PARTS OR EQUIPMENT

This section applies to work performed on live parts or near enough to them to be a hazard.

WORK ON ENERGIZED EQUIPMENT

Only qualified persons (see definition) may work on electric circuit parts or equipment that has not been placed in an electrically safe work condition.

WORK PERMITS

Before any work can be done on energized electrical equipment, a work permit must be completed and approved. E Light Electric Services has a Standard Work Permit and a Troubleshooting and Testing Work Permit. The Troubleshooting and Testing Work Permit may only be used for specific tasks involving troubleshooting and testing. Once a problem has been identified and it is determined that further energized work will be necessary to repair the problem a Standard Work Permit will need to be completed and approved. [See attached forms]

Troubleshooting and Testing Plan

All construction sites shall have in place an approved troubleshooting and testing plan. This plan shall be submitted for approval prior to applying power to the building service. This plan must be approved by the Project Manager with review by the Director of Training and Safety. The Troubleshooting and Testing Work Permit may be used to meet this requirement. All troubleshooting and testing on that project shall be done in accordance with the approved troubleshooting and testing plan. All personnel on the jobsite shall be briefed on the troubleshooting and testing plan for the jobsite.



Employees are required to exhaust every possible means to accomplish work in an electrically safe work condition and only after

careful planning shall they attempt any energized work.

Employees shall consult NFPA 70E, Table 130.7(C) (9) to determine the Hazard Risk Category and record the Hazard Risk Category on the Work Permit.

Employees shall consult NFPA 70E, Table 130.7(C) (10) to determine the protective clothing that will be used for the energized work based on the Hazard Risk Category. The specific equipment that will be used including the Arc Rating of the Equipment shall be recorded on the Work Permit.

All potential sources of power shall be identified and recorded on the Work Permit.

The reason the work must be performed in an energized state shall be recorded on the work permit.

All potential hazards and risks shall be recorded on the work permit, including but not limited to the following:

- Shock
- Burn
- Arc Blast
- Uncontrolled shut down of system
- Potential damage to equipment
- Potential damage to personnel

The building owner or their designated representative shall sign the work permit to acknowledge they understand the risks involved and authorize the work to proceed.

All electricians and persons involved in the work shall be briefed on the work to be performed, the safe process, the hazards involved and the personal protective equipment required and shall sign the work permit acknowledging this briefing and their understanding of the work to be performed.

All non-qualified personnel and those not directly involved in the energized work shall be kept a minimum of 10 feet from the energized work. Any person coming within 10 feet of the energized work shall be required to wear the same protective equipment as those performing the work. Caution Red Tape and barricades should be used around energized work wherever possible.

Notification must be made that energized work will be in progress and that an uncontrolled shut down could happen. This notification shall be given to all persons that operate equipment powered by the electrical system on which energized work is to be performed. They are to be given instructions on the procedures to follow in the event of



an uncontrolled shut down. A single notification given to a building owner or their designated representative shall be sufficient to meet this

requirement.

HOUSEKEEPING

Insulating equipment or barriers must be provided where employees must perform housekeeping duties near live electrical parts. Electrically conductive cleaning materials may not be used near energized parts unless procedures are followed that will prevent electrical contact.

BARRICADES

Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to un-insulated energized conductors or circuit parts. Conductive barricades or signs may not be used.

If signs and barricades do not provide sufficient warning and protection for electrical hazards, an attendant shall be stationed to warn and protect employees.

USE OF EQUIPMENT

Visual inspection, all test instruments and equipment and all associated test leads, cables, power cords, probes and connectors shall be visually inspected for defects and or damage before the equipment is used.

- Equipment must be rated for the highest potential voltage that may be encountered
- Testing equipment shall be a minimum of Category III rated and stamped with a minimum of two independent testing laboratories approval seal.
- Insulated gloves shall be tested for air leaks prior to each use.
- Insulated gloves shall not be used if they have not been certified as within 1 year. No insulated gloves shall be used that do not have a stamp indicating the last testing date.
- No insulated tools may be used if the bottom layer insulation is visible unless at the points provided to verify the bottom layer of insulation color.

Interlocks

Only a qualified person following the requirements of this policy may defeat an electrical safety interlock, and then only temporarily, when working on the equipment. The interlock system must be returned to its operable condition when work is complete.

Means of egress

Must be maintained at all times for any work on energized equipment.

Employees involved in energized work shall be informed of emergency contact numbers for medical and fire personnel and shall be briefed on how to direct emergency responders to the work site and work area should they be required.



Enforcement.

Any employee found to be in violation of this policy would be subjected to disciplinary action up to and including termination.

Overhead lines

Any work performed near overhead power lines shall be energized electrical work if it is performed within the distances listed on the following table.

Approach distances for qualified employees	
VOLTAGE RANGE) (Phase to Phase)	MINIMUM APPROACH DISTANCE
300v and less	2 feet
Over 300V, not over 750V	4 feet
Over 750V, not over 2kV	10 feet
2kV, not over 15kV	15 feet
15kV, not over 37kV	20 feet
37kV, not over 87.5kV	20 feet
87.5kV not over 121kV	25 feet
121kv not over 140kV	30 feet

All forms required by this policy shall be completed utilizing iAuditor Templates as developed through E Light Electric Services, Inc.