

FACILITIES SERVICES

ENERGIZED ELECTRICAL WORK PRACTICE

Responsibilities

Manager:	<p>Assure that the Energized Electrical work practice is understood and implemented by Supervisors, Lead's, and employees.</p> <p>Assure any energized work meets the strict exemption requirements</p>
Project Manager/ Maintenance Coordinator	<p>Be familiar with FS electrical safety practices for working on energized equipment, as well as when shutdowns are required.</p> <p>Assure that time schedules, project estimates, client contact, etc. allow for adequate time to complete work safely, including shutdowns, if necessary.</p>
Supervisor/Lead	<p>Review the Energized Electrical work practice with all affected employees</p> <p>Assure all energized work meets the exemption requirements.</p> <p>Assure workers use the required PPE when working on energized electrical systems and equipment.</p> <p>Assure the Energized Electrical Work Permit and Work Plan (UoW 1393) is completed prior to the start of work.</p>
Employee	<p>Read and be familiar with the contents of this work practice.</p> <p>Work only on energized electrical systems or equipment that meet the exemption requirements.</p> <p>Work only on energized electrical systems and equipment that you are qualified for.</p> <p>Obtain a completed Energized Electrical Work Permit prior to starting any energized electrical work.</p> <p>Wear all required Personal Protective Equipment (PPE) and follow prescribed work practices.</p> <p>Submit the energized work permit and other documentation (red line drawings, arc flash studies, etc.) to the Supervisor, Lead, Zone Maintenance Coordinator, or Project Manager after work is completed.</p>

Purpose

Establish the conditions in which electrical equipment and systems can be worked on in an energized state, and identify work practices for completing energized electrical work in a safe manner.

Definitions

Safety Monitor – an additional worker who is not engaged in the work who keeps unauthorized personnel out of the area and ensures all safety precautions and procedures are complied with.

Practice

Work on electrical systems or equipment must be performed with the equipment and/or system de-energized (WAC 296-24-975) unless one of the following three exemption criteria are met, and all appropriate precautions and PPE are in place:

Exemption 1

It can be demonstrated that *de-energizing introduces additional or increased hazards*.

Examples of increased or additional hazards include interruption of life support equipment, deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, or removal of illumination for an area.

Exemption 2

It can be demonstrated that *de-energizing is infeasible due to equipment design or operational limitations*.

Examples of work that may be performed on or near energized parts because of infeasibility due to equipment design or operational limitations include testing of electric circuits that can only be performed with the circuit energized, and work on circuits that form an integral part of a continuous industrial process in a chemical plant that would otherwise need to be completely shutdown in order to permit work on one circuit or piece of equipment.

It should be noted that inconvenient is not the same as infeasible.

Exemption 3

Live parts that operate at *less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns or to explosion due to electrical arcs*.

If one of the exemption criteria applies, the work may be done while the equipment or system is energized. Prior to starting energized electrical work, an Energized Electrical Work Permit

and Work Plan (UoW 1393) must be completed, and made available at the worksite. The completed permit will identify any additional health and safety hazards pertaining to the work, the work to be performed, the approach boundaries, flash hazard analysis, personal and other protective equipment required, insulated tools, means of site control, work schedule and personnel assigned including safety monitor, and authorization signatures. The person assigning the work will assure assigned employees have been trained.

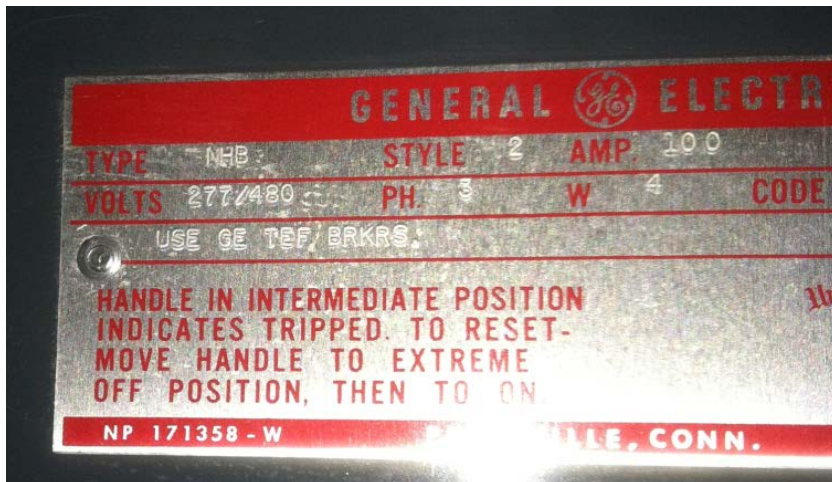
A trained safety monitor must be present when a qualified worker is working on energized equipment, and when workers are within the limited, prohibited, or restricted approach boundaries. The function of the safety monitor is to warn both qualified and unqualified workers in the area of the hazards, ensure all safety precautions and procedures are complied with, immediately stop any part of the work that they consider dangerous, and provide first aid if necessary.

Safe Work Practices

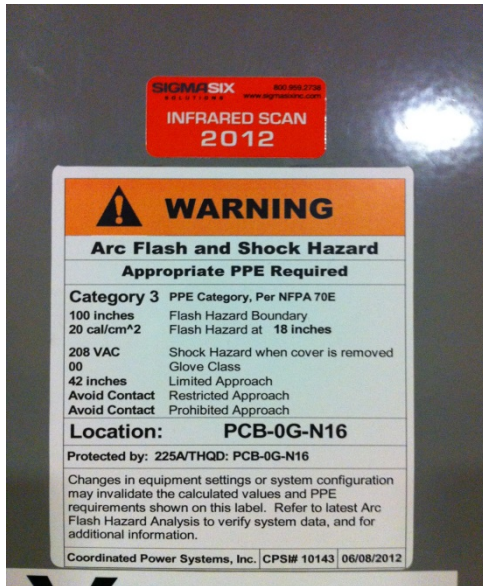
Always consider electrical equipment energized unless you have verified it is de-energized.

When normally enclosed energized parts are exposed for maintenance or repair they must be guarded when feasible to protect people from making accidental contact. Guarding can be accomplished by shielding, enclosing or protecting with electrically rated mats, barriers, rails, screens, or covers.

Safety signs, labels, and tags (?) must be used to warn employees of electrical hazards.



Example of a panel label



Example of an arc rating label

Never take any un-insulated tools within the limited approach boundary. Required PPE must be utilized within the approach boundaries.

Conductive apparel. Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) shall not be worn if they might contact exposed energized parts.

Only non-conductive ladders may be used during electrical work (both energized and non-energized work). Assure the ladder is free of contamination by oils, grease or any other liquids which could conduct electricity.

Cabinets, cutout boxes, fittings, boxes, and panelboard enclosures in damp or wet locations must be installed to prevent moisture or water from entering and accumulating within the enclosures. In wet locations the enclosures must be weatherproof. Switches, circuit breakers, and switchboards installed in wet locations must be enclosed in weatherproof enclosures. Only equipment that has been identified for use in the operating environment may be used.

Do not utilize or work on circuits in wet or damp locations or on outdoor electrical systems, equipment or devices without ground fault circuit interrupters (GFCIs) to prevent the workers body from becoming the path to ground for current.

Ensure all electrical panels remain accessible at all times. Never place materials in front of them. Flammable and combustible materials may not be stored in electrical equipment rooms.

Use signs, barriers, and instructions to protect people from electrical hazards.

Never modify electrical devices beyond the intent of their design.

References:

NFPA 70E Standard for Electrical Safety in the Workplace

NFPA 70 B Recommended Practice for Electrical Equipment Maintenance
UL 1950 Safety Information Technology Equipment, Including Electrical Business
Equipment
ANSI/ISA-16010-1(82.02.01)/UL61010-1