

**Arc Flash Compliance Programs**  
Protecting Employees and the Enterprise



**Protecting**  
what matters most

**EATON**

*Powering Business Worldwide*

Arc Flash Hazard has been proven a significant and dangerous threat to electrical personnel. Eaton's Arc Flash Compliance program provides a comprehensive safety solution and helps ensure that you meet all of the arc flash requirements for a safe work environment.



### A Deadly Force

Arc Flash is the result of a rapid release of energy due to an arcing fault between a phase conductor and another phase, neutral or a ground conductor. Arcing faults are generally limited to systems where the bus voltage is in excess of 120 volts. An arcing fault is similar to the arc created during electric welding and it is initiated by an external trigger that creates the path of current conduction. This may result from human error such as the accidental contact of a test probe between an energized conductor and ground, or equipment failures such as insulation breakdown. The energy discharge from an arc flash can be significant. Hazards include extreme radiant heat reaching temperatures of up to 4 times the surface of the sun, explosive pressure waves, shrapnel, and toxic gasses.

### Compliance With Standards

Many companies have already established and implemented enterprise-wide arc flash compliance programs that assure employees are safe from arc flash hazards. OSHA mandates required safety practices for personnel working on energized electrical equipment.

Several U.S. and Canadian industry standards cover the prevention and calculation of energies resulting from arc flash incidents:

- OSHA 29 Code of Federal Regulations (CFR) Part 1910 Subparts R & S
- NFPA 70-2017 National Electrical Code
- NFPA 70E-2018 Standard for Electrical Safety in the Workplace
- IEEE Standard 1584-2002 Guide to Performing Arc Flash Hazard Calculations
- IEEE Standard C2-2017 National Electric Safety Code (NESC)
- CSA Z462-18
- CSA C22.1-18 Canadian Electrical Code

### Actions To Take

Compliance with the latest industry standards involves adherence to a six-point plan:

- A facility must provide, and be able to demonstrate, a safety program with defined processes that address arc-flash.
- Determine the severity of the arc flash hazard by calculating the incident heat energy to which a worker would be exposed.
- Issue proper personal protective equipment (PPE) for workers based on the calculated incident heat energy.
- Train workers on the hazards of energized electrical work, including electrocution and arc flash.
- Provide appropriate tools for working on energized electrical equipment.
- Affix arc flash warning labels on equipment where energized electrical work could be performed.

A conscientious safety program incorporates an arc flash hazard analysis, the implementation of mitigation techniques, and training for personnel who operate and maintain energized electrical equipment.

Eaton can help with all three.

### Arc Flash Analysis

Eaton maintains a high level of engineering expertise in arc flash analysis. The company has implemented enterprise-wide analysis for several Fortune 500 industrial companies. Implementation of an arc flash compliance program includes:

- Access to one of the largest team of field service and power system engineers across North America, to gather electrical system data necessary to complete the arc flash study.
- Using the gathered data to accurately model the facility's power distribution system, calculate short-circuit currents, and coordinate overcurrent protective devices.





- Using the system model to calculate arc flash hazards associated with energized work at locations throughout the power system in accordance with OSHA, NFPA 70E, IEEE1584, National Electric Safety Code, and CSA Z462 requirements. Calculations include arc flash boundary and incident energy at the associated working distance.
- Providing detailed recommendations to mitigate the arc flash hazard and reduce the incident energy per customer requirements.
- Supplying and installing equipment warning labels that define the calculated arc flash boundary and incident energy for each electrical equipment location that could involve energized electrical work.
- Presenting the study results and providing arc flash safety training for personnel who operate and maintain energized electrical equipment.

### Education – The Key to Better Arc Flash Safety

Eaton's arc flash safety training provides you with information on the potential hazards of working around energized equipment, the standards that address these hazards, and the safe work practices and personal protective equipment (PPE) necessary to protect workers from these hazards.

Our training will reveal how a proper examination of your power distribution system can help you avoid “overdressing” for necessary operational and maintenance tasks. In addition to our power systems training classes, we offer customized training specifically designed for your company’s unique requirements.

Furthermore, if it’s not practical for your staff to train at one of Eaton’s facilities, we can conduct the training at your site.

Eaton’s one-day “Electrical and Arc Flash Safety” training program covers:

- Existing and Proposed Standards
- Determining Safe Approach Distance
- Safe work practices
- IEEE Standard 1584 Methods for Calculating Arc Flash Boundary and Incident Energy
- Determining the arc flash hazard
- Selecting Protective Clothing Using Incident Energy Value and the PPE Matrix
- Arc Ratings for Common Types of Garments
- Practical Methods for Reducing Arc Flash Hazards

Eaton’s trainers are the same electrical engineers who perform arc flash hazard analyses and install, commission, troubleshoot, and maintain electrical equipment every day. When you train with us, you’re assured of getting the most current information, techniques, and procedures available to keep your personnel safe and your processes running. 0.8 CEUs are available for the successful completion of this training.

### Summary

Partnering with Eaton to perform arc flash analysis, implement mitigation techniques, and train your personnel will give you confidence that you have an enterprise-wide arc flash compliance program that assures employees are safe from arc flash hazards.

<b>WARNING</b>	
<b>EATON SHOCK &amp; ARC FLASH HAZARD</b>	
Location: PNL-MDP Report #: TQS12345.1 Rev. 0 Issued: JUN-2015	
13' 6"	<b>ARC FLASH BOUNDARY</b>
36cal/cm <sup>2</sup>	<b>CALCULATED INCIDENT ENERGY AT 18" WORKING DISTANCE</b>
3' 10"	<b>ARC FLASH BOUNDARY</b>
6cal/cm <sup>2</sup>	<b>CALCULATED INCIDENT ENERGY AT 18" WORKING DISTANCE</b>
480 V Shock Hazard Min. Glove Class: 00	Limited Approach Boundary: 3' - 6" Restricted Approach Boundary: 1' - 0"





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