

# ARC FLASH ELECTRICAL SAFETY

November 2020

We are excited to get you updated with the latest Code changes to the NFPA 101 Life Safety 2021. On Friday December 4, 2020 High Noon we will have a live stream presentation on changes to the NFPA 101 Life Safety Code 2021 updates. Find out what changed and how it affects your facility for new construction. Sign up today at:

<https://www.arcflashelectricalsafety.com/>



Arc Flash Code Changes NFPA 70E and NEC 2020

What type of arc flash software can be used to obtain the following calculations?

1. Voltage Drop Calculations
2. Short Circuit Analysis
3. Protective Device Coordination
4. Arc Flash Hazard Analysis
5. Harmonics Remediation

Some of the most popular software packages are:

1. [SKM](#)
2. [eTap](#)
3. [Easy Power](#)

Is one type better than the other?

We thank our sponsors for the Arc Flash Electrical Safety Lunch Series:

- [IEEE Power and Energy](#)
- [Arc Flash Electrical Safety](#)
- [Data to Develop](#)



Arc Flash Electrical Safety - Deenergized the Equipment

The Electrical Pyramid

1. Elimination
2. Substitution
3. Engineering Controls
4. Awareness
5. Administrative Controls
6. Personal Protection Equipment

What are the important ranges for arc flash labels? Labels are listed in joules or calories per centimeter squared. This is a benchmark for electrical workers to prep their workstation for the energized work. If the label states  $1.2 \text{ cal/cm}^2$  this means the worst-case arc flash burn would be a blistering bad sunburn at the working distance which is 18 inches from the electrical energized bus at 480 volts. If the label states  $5 \text{ cal/cm}^2$  then the worker must have a minimum PPE of  $5 \text{ cal/cm}^2$  at the working distance. If the label states  $40 \text{ cal/cm}^2$  or above it is highly recommended not to work energized since projectiles/shrapnel become more pronounced and the fabric PPE may not be able to stop the shrapnel from piercing the

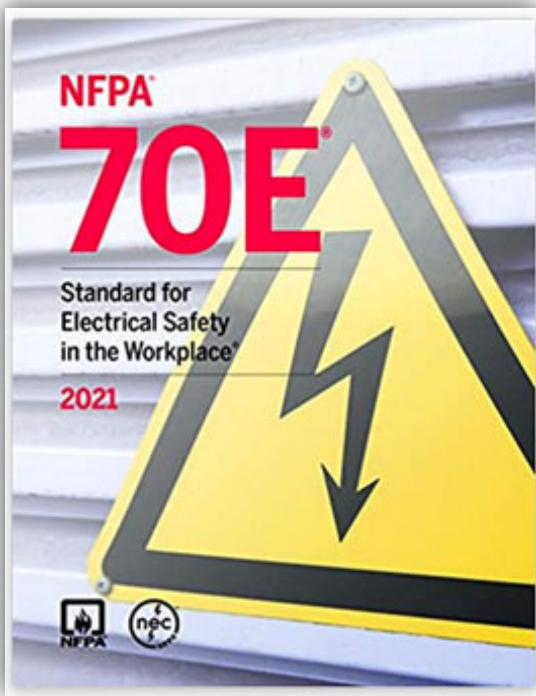
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skin. In all cases if you can de-energize the equipment DEENERGIZE!

$$1.2 \text{ calories / cm}^2 = 5.0208 \text{ joules / cm}^2$$

The label states that the arc flash boundary is 86 inches. What does this mean? At 86 inches or 7'-2" from the energized bus bar if an arc flash occurs according to the calculated value you will receive in heat 1.2 cal/cm<sup>2</sup> which is considered severe sunburn.



*NFPA 70E 2021 Standard for Electrical Safety in the Workplace*

According to the NEC 2017 a service entrance of 1200A and greater shall have an arc flash label with the following Information:

### NEC 110.16(B) Service Equipment.

In other than dwelling units, in addition to the requirements in 110.16(A), a permanent label shall be field, or factory applied to service equipment rated 1200 amps or more. The label shall meet the requirements of 110.21(B) and contain the following information:

(1) Nominal system voltage

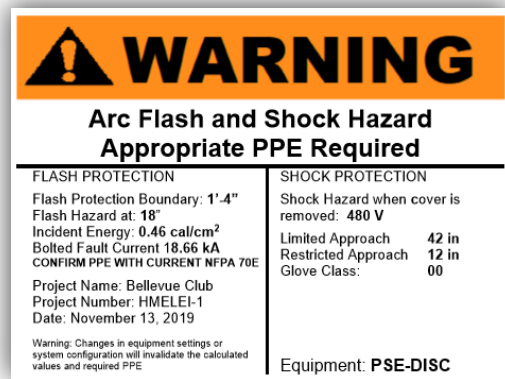
- (2) Available fault current at the service overcurrent protective devices
- (3) The clearing time of service overcurrent protective devices based on the available fault current at the service equipment
- (4) The date the label was applied

Exception: Service equipment labeling shall not be required if an arc flash label is applied in accordance with acceptable industry practice.

Informational Note No. 1: NFPA 70E-2018, Standard for Electrical Safety in the Workplace, provides guidance, such as determining severity of potential exposure, planning safe work practices, arc flash labeling, & selecting personal protective equipment.

Informational Note No. 2: ANSI Z535.4-2011, Product Safety Signs and Labels, provides guidelines for the design of safety signs and labels for application to products.

Informational Note No. 3: Acceptable industry practices for equipment labeling are described in NFPA 70E-2018, Standard for Electrical Safety in the Workplace. This standard provides specific criteria for developing arc-flash labels for equipment that provides nominal system voltage, incident energy levels, arc-flash boundaries, minimum required levels of personal protective equipment, etc.



### **Arc Flash Label: Voltage, Incident Energy & AF Boundary**

Contact us today to provide an assessment of your facility. Are you current? Mike Brisbois (708)668-5488 [mbrisbois@arcflashelectricalsafety.com](mailto:mbrisbois@arcflashelectricalsafety.com)