

Protecting the Industry: NFPA 70E

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Convincing customers to shut down power may be the biggest challenge for contractors hoping to comply

The electrical industry can expect greater worker protection with the coming changes to NFPA 70E—a standard that offers guidelines for arc flash safety and can keep electrical workers in compliance with Occupational Safety and Health Administration (OSHA) safety standards. The National Fire Protection Association (NFPA) has been taking suggestions from the electrical community as it prepares the amended 2009 version, which will be made available in late 2008.

Parts of 70E have been around since 1979, but awareness about the standard within the electrical industry began to emerge in the past 10 years. That is due, in part, to the fact that the OSHA adopted new regulations on safe electrical work practices in 1990 based on 70E. And, more recently, compliance officers seem to be relying more heavily on 70E for enforcement of details not addressed in the OSHA regulations. Currently, the industry is operating with 2004's version of 70E.

Electrical contractors have begun taking a leadership role in applying and educating others about the NFPA 70E arc flash safety guidelines, and safety trainers, as well as members of the NFPA and OSHA, say they are gratified to see the safety guide beginning to take root.

At the same time, NFPA is taking change requests and comments from the public to begin the process of amending and updating those guidelines. With 500 pages of changes, contractors can expect to see some new specifics with the 2009 edition. Proposals and comments came from the public, including contractors, electricians, safety experts, manufacturers and anyone else.

“We have 600 proposals,” said Joe Sheehan, NFPA 70E expert and principal electrical engineer. “There is tremendous public input in this document.”

The proposals and comments can be accessed at the NFPA's Web site, www.NFPA.org.

Expected changes include requiring more personal protective equipment (PPE) in more cases. There likely will be requirements for more training documentation, more retraining and the removal of the exception allowing the use of nonmelting untreated natural fiber clothing at low hazard levels. The criteria for establishing the flash protection boundary may change from an approach limit from “exposed live parts” to “energized electrical equipment.” This could mean that PPE will be needed even when the live parts are

enclosed. And while administrative provisions will become more complicated, tables are expected to be easier to use, allowing electricians to rely more on the tables and less on their own calculations. Ultimately, contractors can expect increased safety measures.

One proposed change expected to be included in the 2009 version would require electrical employees to take refresher training every three years to stay current with safety procedures.

Another expected addition to the standard will require employee training in voltage testing devices.

“That’s never been mentioned [in 70E],” Sheehan said. “It’s always been taken for granted.”

However, the voltage tester may be the most valuable tool an electrician carries, and its proper use is the only thing that can ensure he doesn’t get hurt. In addition, voltage testing vendors have improved on the technology so much that a tester a few years old may be considerably less effective than the latest versions.

Training documentation is another expected change to 70E. There has never been required documentation proving an employee has been through the safety-training program. OSHA has required a written program on lockout/tagout, but has no mandate for paperwork on training. Although training documentation may be used by a compliance officer if the employer has it, typically employee qualifications are determined by observations and interviews, although OSHA does require documentation. The 2009 70E version is likely to include a documentation requirement.

“If you’ve been trained, you’ve got to document it,” Sheehan said.

Suiting up

Like voltage meters, PPE is evolving, and regular training is one way to keep abreast of what PPE is available and best suited for certain applications. Of course, those who work on an electric system when it is in an electrically safe work condition don’t necessarily have to worry about electrical hazard PPE, which is the work style that safety trainers hope to become the norm.

PPE can be expensive—protective equipment costs between \$500 and \$600 for a full suit. Even gloves, which often need to be replaced every six months, cost about \$100. Contractors have to decide whether to pass that cost on to their electricians, the customer or take it on themselves. Steve Abbott, vice president of Abbot Electric, said that PPE is a tool like any other tool used on a construction site and, therefore, can be billed that way,



The minimum PPE requirements of NFPA 70E-2004 Hazard Risk Category 4 include protection such as an Arc40 coat, pants and hood with hard cap. The worker is preparing to rack a Square D Masterpact circuit breaker from its cell.

passing the cost on to the customer. Just as they charge rent for tools, they can charge rent for PPE.

Everyday wear requirements have changed over the years. Before 70E, little thought was given to the type of clothing. However, looking at the injuries from arc flash, it didn't take long to recognize clothing was critical to worker protection. The first change came with the restriction on wearing synthetic fabrics. Polyester, rayon, etc., melt in to the skin, contributing to arc flash injuries. Natural fibers like cotton became the preferred option and continue to be used today at low hazard levels. The proposed changes to 70E indicate that natural fibers don't go far enough. Treated natural fibers or synthetic fibers that are flame-resistant (FR) may be required at all hazard levels.

Increasing awareness

Although the 70E standard has been in use for years, awareness is lacking, and there's only a small army of safety trainers, contractors and even customers seeking to get the word out.

One of the misconceptions that still surrounds NFPA 70E is apparent in the common question asked of safety trainers: "When will this law take effect?" For those still asking that question, 70E is not a law, but it supports OSHA safety regulations that have been the law for decades. The facts are simple—70E is a standard developed by the public. It is not a regulation—it is a guideline—and there is little indication it will become more than just that. However, those complying with 70E can ensure they are meeting OSHA's safety requirements.

"The document itself is not a law," Sheehan said. "OSHA's requirements are the law; 70E is the solution to the law."

"What they need to comply with has been required by OSHA for decades," said Palmer Hickman, National Joint Apprenticeship and Training Committee (NJATC) director of safety, codes and standards. "People are finally starting to realize that what is required is nothing new."

Some parts of the country are more advanced in 70E adoption, in part because OSHA is more vigilant at issuing citations. In central Ohio, contractors are not waiting to adopt 70E practices. In fact, they are trying to educate their customers. Abbott also has launched Stark Safety Consultants to get contractors, electricians and clients up to speed on safety practices. According to Abbott, 70E serves to make adherence to OSHA regulations easier.

"With 70E, it's been much more cut and dry: one-two-three, here's how you protect your people," Abbott said, adding that OSHA inspectors have greater electrical training than they used to have, and many of them can walk onto a site and easily locate numerous electrical safety infractions.

Stark Safety offers training seminars for customers and electricians. According to Abbott, customers are increasingly interested in coming into compliance; however, there are still many who demand electricians work on a system live. All the same, they come to his seminars, Abbott said, because they are prepared to make a change.

“No one is saying they don’t want to comply,” he said, adding that some are simply delaying compliance.

When it comes to customers, Abbott said, “Obviously, they’re the ones paying our bills. They can say, ‘I don’t want to shut the power down.’” And there are still electrical contractors who will agree to step in when another contractor refuses to do the work live.

“The only argument I can give to that is [the replacement contractors] are not qualified people. You’re hiring someone who is putting his men in a compromising position,” Abbot said. “When I teach people about 70E, it’s not a matter of telling you to suit up for everything. It’s shut the system down. Work de-energized. We emphasize turning things off. That eliminates the hazard.”

Abbott cited a study at the NFPA that found 97 percent of electricians say they’ve been shocked while working.

“It’s a big process to change this culture,” he said. He hopes when his own children grow up, they will find a different culture.

“I hope they say, ‘How could he ever stick his hand in a live box? That’s crazy,’” he said.

Still, convincing customers to shut down power may be the biggest challenge for contractors hoping to comply.

“[Contractors] have the struggle of educating their customers, when some customers may look at a shutdown as being a nuisance,” Hickman said. “Our customers hire us because we know our business. We have people that go through the 70E training and know the OSHA regulation and try to follow the rules.”

While some perceive those that don’t follow the rules as having a competitive advantage, he said, that perception is fading.

In the meantime, Hickman takes the NJATC training program to their instructors, workers, contractors and their customers across the United States.

“70E is such a buzzword with people thirsting for information,” he said. The NJATC offers both one- and three-day training programs that have been held at various locations coast to coast. **EC**

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