

Gone Fishin'?

A looming shortage of skilled electricians is being fueled by retirement, attrition and job growth.

Application Note



Fluke thanks Joe Salimando for providing the research for this story.

It's the flip side of the slow job growth we have seen in the economy.

Industry is not training nearly enough electricians to cope with the projected need over the next eight years. Compounding the problem is the aging of the industry, with more electricians retiring every year, and the increasing complexity of electrical systems.

Without a sharp rise in training, a shortage of electricians could prevent contractors from finding the skilled talent they will need to cope with increasingly difficult and complex tasks – or even just get the job done. For electricians, advancing electrical systems may soon require increased skills, suggesting the need for additional training.

A shortage of workers is expected to hit many skilled trades. A recent page one story in the *Wall Street Journal* focused on a shortage of skilled machinists. But the paper reported that the number of electricians needed is growing almost three times as fast – up 23.5 percent over the next eight years, according to the U.S. Bureau of Labor Statistics (BLS).

The government projects that economic growth and new tasks done by electricians will add nearly 155,000 new electrician jobs by 2012. Normally, that kind of outlook would be something to celebrate. But there are reasons the industry might well hesitate.

Industry experts say the recent recession and limited job opportunities, together with the more challenging nature of today's electrician training, have combined to slash the number of apprentices now in training. Today, no problem. But tomorrow could be very different.

Contractors face a "chicken-and-egg" situation. If the shortage isn't yet obvious, why should anyone (union or non-union) ramp training up at this minute?

"Right now, there isn't a shortage," says John M. Grau, CEO of the National Electrical Contractors Association. "The industry has a history of ups and downs in employment. In a way, this is a structural problem. How does our industry train in the down times to get ready for the boom times?"

The weak 2001-2003 economy may have worsened the problem. According to NECA-IBEW data, the number of new apprentices indentured in 2003-2004 declined by roughly 20 percent from earlier periods. Decisions on how many apprentices to indenture are made locally, by committees of contractors and IBEW members.

"We always need to do a better job selecting, employing and training apprentices across all of our electrical apprenticeship programs," said Mike Callanan, executive director of the National Joint Apprenticeship and Training Committee (the NECA-IBEW education and training organization). "But as long as the work picture remains as it is in many parts of the country, I fear there will be little movement at the local level to increase apprenticeship opportunities, despite BLS predictions."

Why are we growing?

A reasonable question might be: **why is the number of electricians in construction slated to increase at nearly twice the country's and industry's rate?**

Here are some likely factors:

1. It's business as usual. Electrician employment has increased faster than the economy for many years.
2. Some growth in "electricians" has come in related occupations, such as security installers, datacom technicians and building automation integrators.
3. Electrical contracting is more than "construction," with a significant 'service' component as well. Service needs are soaring. BLS data for employment growth in a related service business — HVAC/R — show a need for 38 percent more technicians over the next ten years.

Bye-bye boomers

In addition to filling newly created jobs, the industry must also replace skilled, veteran electricians who leave the field every day. Some are fired. Some leave for other trades. Some are promoted, like the field electrician who becomes an estimator or project manager. And many who leave will be older workers who retire — either to pursue less-strenuous work, or to sit back and enjoy.

Add the two trends together, and BLS estimates that those who hire electricians — contractors, industrial plants, and others — will need 28,000 new electricians a year. This is the number of new professional electricians the nation needs to create.

What's being done?

Trainees follow three main paths to qualify as electricians. Technical schools offer a range of training, from two-year certificates to four-year degrees. These programs often combine schooling with on-the-job training (OJT). Another avenue is the five-year apprenticeship program offered by the National Joint Apprenticeship Training Committee, a cooperative

program of NECA and the International Brotherhood of Electrical Workers (IBEW). The third path: a combination of OJT and formal training provided by the employer.

By 2012, electrical contractors may well need more than 190,000 new electrical journeymen. The industry "should" graduate 19,000 apprentices annually.

To reach that number, the industry would need at least 100,000 apprentices in training. As of early 2003, NECA-IBEW programs had roughly 50,000 apprentices; non-union programs (as reported by the Independent Electrical Contractors) tallying roughly 11,000.

After attrition, about 40,000 apprentices will achieve journey-level status in 2003-2007. **That's fewer than 10,000 new apprentices per year, and 9,000 short of total demand.**

Additionally, there is no guarantee that those graduates will stay in electrical construction. Industrial, government, and other employers — who will employ more than 295,000 electricians in 2012 — may offer attractive salaries and benefits to construction-trained electricians. They certainly have done so in the past!

Delineating the problem

1. BLS says we'll need 28,000 new professional electricians annually, in all industries, in the period 2003-2012.
2. Electrical contractors will need roughly 19,000 annually.
3. Non-construction employers may lure some journeymen away from construction, exacerbating the problem.
4. Mainstream electrical construction apprenticeship programs might graduate 8,500 new electrical professionals annually.
5. **By 2012, if the economy grows, electrical contractors might be 75,000 to 100,000 journeymen short of the needed 522,000 figure!**

A way out?

How can the worker shortage be avoided? Here are three suggestions.

- A. Industry and training centers cooperate to increase training numbers as well as skill levels.
- B. Increase the productivity of existing journeymen electricians through additional training and advanced tool applications.
- C. Discourage retirement, through incentives, if necessary.
- D. Encourage young people to pursue a career as an electrician.

An initiative by the home building industry also points toward a solution. Concerned about a shortage of skilled trades people to build houses, the National Association of Home Builders joined seven trade unions and the Department of Labor in April, 2004 to announce "Skills to Build America's Future," an initiative to attract young people to careers in the skilled trades. Similar initiatives could encourage young people to train as electricians.

How Fluke is Helping

For anyone working in the field of electrical measurement, Fluke encourages regular training and skills refreshers.

All tool users can take advantage of the Fluke Safety program and the FlukePlus membership program. Located at www.fluke.com/safety, the Fluke Safety program is offers straightforward application notes describing safe electrical test measurement practices, as well as a video and an overview of safety standards. FlukePlus offers detailed how-to's, tips, application notes, tool updates, and case studies from other tool users. FlukePlus is located at www.fluke.com/flukeplus and membership is open to all test tool users.

Fluke also supports educators and students through the Fluke Education Partnership Program, which combines a wealth of educational materials and application information with product discounts, all accessed online. The program is available to instructors in two and four year educational settings, as well as apprenticeship programs.

Modules include topics such as *Electrical Measurement Safety*, *Digital Multimeter Basics*, *Electrical Measurements on Adjustable Speed Drives*, *Insulation Resistance Testing and Troubleshooting and Servicing HVAC/R Systems*. New materials are added regularly at www.fluke.com/electrical-ed.

Through the Fluke Grants Program, Fluke has contributed more than \$1.5 million worth of equipment for use in educational facilities and training programs.

Fluke is a founding global sponsor of WorldSkills, an international non-profit organization that promotes worldwide awareness of the essential contribution that skills and high standards of competence make to the achievement of economic success and individual fulfilment. Fluke also sponsors national competitions run by SkillsUSA, the United States affiliate of WorldSkills.

Conclusion

As indicated by the Wall Street Journal article and the "Skills to Build" initiative, industry and government awareness of this issue is growing. To solve the skills shortage of tomorrow, however, awareness must turn into real action today to close the training and apprenticeship gap.

Anticipating the problem without acting to solve it is simply not an answer. The fact that we have no shortage of electricians today must not prevent industry, educators and labor unions from acting cooperatively and decisively to head off tomorrow's problems.

Fluke. *Keeping your world up and running.*

Fluke Corporation

PO Box 9090, Everett, WA USA 98206

Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands

For more information call:

In the U.S.A. (800) 443-5853 or

Fax (425) 446-5116

In Europe/M-East/Africa (31 40) 2 675 200 or

Fax (31 40) 2 675 222

In Canada (800) 36-FLUKE or

Fax (905) 890-6866

From other countries +1 (425) 446-5500 or

Fax +1 (425) 446-5116

Web access: <http://www.fluke.com>

©2004 Fluke Corporation. All rights reserved.
Printed in U.S.A. 9/2004 2395348 A-US-N Rev A