Wanted: Students in the Smart Grid Pipeline

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By 2020 about half the utility workforce could retire, taking with them vital experience, skills and knowledge. These retirees include engineers and technicians. Faculty in related, higher education are retiring, too.

Who is going to step in and take on the challenges involved in making Smart Grid a reality?

In a survey of electricity providers and integrated utilities, the Center for Energy Workforce Development found that, despite the projection for massive retirements, many workers may stay on for awhile due to the uncertain financial climate. This in turn has caused employers to refrain from hiring many new employees. Yet it is reasonable to expect accelerating attrition over the coming years.

This dire portrait must focus the industry on supporting increased educational opportunties in the power and energy fields. Smart Grid can be used as a draw to attract new talent to these industries. New engineers are really jazzed about renewables, automation, and high-tech solutions. This explains why more than half of the papers and seminars given at industry meetings these days are about Smart Grid.

The timing of new engineers' entry into the industry is critical because we have an existing workforce that knows the legacy systems. Their knowledge needs to be transferred to the people just coming in the door. Fortunately, the people who know legacy systems inside and out may remain in the workforce for several years to come. They, too, need to be brought up to speed on all the the new technologies.

Help Wanted

The power and energy industry's success over the next decade depends on our ability to retain existing knowledge holders and attract new talent. Historically, that has been a challenge. Yet I see a sea change taking place. Both the public and students are beginning to see power and energy as a new and exciting field, one that can provide challenging careers that enable them to contribute to society and implement exciting new technologies.

Can this new interest be constructively channeled? The lackluster hiring of the 1990s and 2000s left many university power engineering programs with declining enrollment. This situation, coupled with weak university research support, left

many traditionally strong power engineering programs in such a weakened state that university administrators closed them.

In April 2009 the IEEE Power & Energy Society (PES) wrote a report that established six objectives designed to proactively respond to the need for innovative research and increase the number of promising engineering students who are committed to power and energy careers. Three of those objectives revolved around creating scholarships and internships to rapidly fill the pipeline with more undergraduate power engineering sudents and help ensure their career development. The other three objectives focused on rebuilding the ranks of universities' power and energy faculty through centers for excellence and other resources.

The report helped drive the Department of Energy's (DOEs) decision to use $100 million in stimulus funding for Smart Grid education. The DOE granted a total of 52 awards, which are being used to help rebuild programs targeted towards Smart Grid education. The awards have been given to support craft workers, engineers, community colleges, universities and other aspects of academia and industry. This diverse mix of stakeholders are helping to rebuild all of the elements of the educational portfolio that are of critical importance to smart grid's success. Today, rising student interest and recent short-term infusions of research support are helping to rebuild universities' power and energy educational programs.

As a result of these myriad efforts, we are seeing more students enter the power and energy field. The IEEE PES Scholarship Plus Initiative is helping to attract undergraduate electrical engineering students to the Smart Grid pipeline by providing three, one-year scholarships of $2,000, $2,000 and $3,000 in students' sophomore, junior and senior years as long as they meet academic and student career experience requirements in the power and energy field. They must attend an accredited school and keep a 3.0 grade point average. The scholarships initially were targeted towards students in the U.S., but PES intends to offer them globally, as well.

Internships further aid success in getting students to commit to power and energy careers. Students are encouraged to use the IEEE PES-Careers web site to find internships in electric power and energy engineering that fit their needs and career objectives. One way to get students and others interested in Smart Grid is to attract students who are studying engineering, but remain uncertain about their specific career direction. The PES offers them a "home" and the means to connect with the industry and its professionals through actual hands-on experience and guidance.

Persuading students to commit to careers that will benefit Smart Grid and its contribution to a vibrant U.S. economy requires continuous commitment from the power and energy industry. That means industry help is needed in providing

financial support, offering meaningful career experiences and encouraging professionalism through networking and lifelong education. All of these ingredients are required to create the workforce that will make Smart Grid a successful reality.

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