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Focus on Building the Education Pipeline

Scouting for the Next Generation of Energy Workers

Energy companies looking for new ways to engage young people's interest in the careers they have to offer may wish to take a look at an old one: merit badges.

For 65 years, Wisconsin Public Service (WPS) has been teaching kids about energy through an electricity merit badge workshop they offer in partnership with the Boy Scouts of America (BSA). Right alongside them is We Energies, which has been offering a similar program for almost as long. The two utilities now operate as part of WEC Energy Group.

Together, they reach more than 150 young scouts in Green Bay, Milwaukee, and Wausau, WI, each year.

"It's a great opportunity to engage the scouts, who are young boys who are interested in electricity," said Lynn Kroll, Community Relations Leader, WPS. "We get to expose them to our company and we expose them to different careers in energy throughout the day."

Both WPS and We Energies follow the merit badge requirements established by the BSA in half-day workshops held once a year. The workshops, staffed by employees from the utilities who volunteer their time, cover basic electricity knowledge, including electrical terms, and hands-on projects such as how to read a meter, build a circuit, and make an electromagnet (as well as demonstrating that it works).

"They start out doing some electricity safety inspections at home, where they also build their electromagnet," said Kroll. "At the clinic, they show us how the magnet works. They hook it up to a D battery and show us they can pick up a paper clip with it."

At the We Energies workshop, a company lineman gives a lesson on power line safety that concludes with a demonstration of what happens when a hot dog comes in contact with the power line: it gets fried.

Ted Sniegowski, Manager of Steam Services, We Energies, said he has volunteered at the workshops and spoken with dads who went through the merit badge program as kids. They told him they were motivated to become engineers because of that experience.

"The electricity merit badge may help kids think about careers in the energy industry they wouldn't otherwise be aware of," he said. "Scouts come up to me and ask about my job. They're curious. If we can foster that curiosity, it can help not only our industry, but also help these young people find something they are passionate about."

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Center for Energy Workforce Development (CEWD)©

At Southern Nuclear, a subsidiary of Southern Company based in Birmingham, AL, the idea of reaching young people through scouting is much newer. Southern Nuclear hosted its first nuclear science merit badge workshop last year, but opened it to both Girl Scouts as well as Boy Scouts.

“The American Nuclear Society developed the guidelines for both badges and they are essentially the same, so we put them together into one workshop,” said Katie Sheibley, Engineer, Southern Nuclear.

As at WPS and We Energies, the workshop is taught by employees at the company who volunteer their time. At the Southern Nuclear clinic, most volunteers come from two employee resource groups: Women in Nuclear (WIN) and the North American Young Generation in Nuclear. “We had 20 volunteers from all different business units,” said Sheibley, including engineering, communications, finance, and even the legal department.

The program includes the basics of nuclear science, radiation protection, a cloud chamber presentation, fission and fusion, and careers in nuclear energy, among other topics. Each of the 80 scouts attending (40 girls and 40 boys) was able to complete the requirements and earn the badge, said Sheibley.

Southern Nuclear hopes to make this an annual event, she said.

“We’re really interested in investing in the younger generation,” said Sheibley. “We want to raise a generation that is pro-nuclear and interested in nuclear power and have the community support us in our efforts as we provide them with clean, reliable power.”

Michelle Tims, Communications Supervisor, Southern Nuclear, said they consider the workshop to go further than just raising awareness. “We always see outreach activities as a means for training our future workforce.”

Scaling Back to Increase Returns

Sometimes, less is more.

This is the lesson CEWD learned through its experience with FIRST® Robotics/FIRST® Tech competitions and its Get Into Energy / Get Into STEM initiative launched in 2014. The initiative was created to raise awareness of the energy industry and energy careers through sponsorship of FIRST® teams and competitions across the nation.

FIRST® (which means “For Inspiration and Recognition of Science and Technology”) is a national organization that helps students in K–12 build self-confidence, knowledge, life skills, as well as technical skills through robotics competitions that expose and motivate young people to pursue careers in STEM.

Initially, CEWD and a group of 10 energy companies provided support to rookie teams as well as the Super Regional and National competitions, providing Robot Doctor Stations, exhibit space, and branding for sponsor companies and industry at all events.

But an analysis of the 2015–2016 program, as well as benchmarking with companies who have been involved with FIRST® for many years, showed that some of these efforts—in particular, the National competition—were not quite providing the return on investment we would like, said Rosa Schmidt, Consultant, CEWD, who oversees FIRST® involvement for CEWD members. In particular, the analysis showed the National competition efforts were not providing members with the personal engagement and awareness that was possible through the Robot Doctor Stations.

“The cost for supporting the National competition was high,” said Schmidt, “and it was not as impactful as we would have liked. Even though we were reaching many more students, some of them were from around the globe. Our members who sponsor teams really want to focus on local brand recognition, and on getting to know students within their service territories.

“The biggest bang for brand recognition is at the Super Regional events,” she said. “At these competitions, companies would be recognized by students in the regions where they operate. The top students who return each year to the Super Regional competitions know us and know about careers in our industry.

“Diversity is important to our member companies and we learned from our past efforts the students that were part of the FIRST® Tech Challenge, ages 7 through 12, were the most diverse population in FIRST®, allowing us to reach populations that are often unaware of the opportunities our industry provides. FTC teams tend to have between 5 and 10 students on the teams and all students, due to team size, must learn a wider range of skills,” said Schmidt.

“What we’re finding at FIRST® Tech is that students have to play multiple roles. They learn how to do it all: business planning, programming, problem solving, communications, and outreach. This gives them much greater flexibility and the ability to work as a team—all skills of great value to energy companies. In fact, students who participate in FIRST® have not only the technical skills we need, but also the soft skills outlined in tiers one through five of the Energy Industry Competency model, which they are learning through the FIRST® programs.”

Schmidt said they also learned that the best place to interact with students was at the Robot Doctor Stations. “We’re right in the pit area and they all get to know us before the end of the competition. The students all come by, whether it’s to work on their robot or just to say hello and find out more about who we are and why we are there. Typically, we are the only industry there.”

The Robot Doctor Stations provide students with the tools they need to repair their robots. While they’re there, representatives from CEWD and its members talk to the students about the energy industry and the energy career pathways available to them. With 75 teams competing at each Super Regional, CEWD and its members are able to reach between 500 and 700 students at each of four events, Schmidt said. “Plus, there are parents, coaches, and mentors who attend, so we are really reaching everyone with whom we need to connect to get the word out there about careers in energy.

“This is a career awareness and industry awareness event for us, more than anything else. We are focused on building awareness with a population that has the skills we need, and creating a future pipeline for the industry,” she said.

CEWD has also added a strong social media component to its involvement at the four Super Regional competitions, reaching more than 22,000 users on Twitter, nearly 600 of whom liked, clicked on, followed, or retweeted CEWD’s tweets. Another 10,515 people saw CEWD’s Facebook posts from the events, with 77 users reacting to, commenting on, or sharing them. The Facebook posts also generated 469 viral impressions, extending their reach even further.

A new feature this year, said Schmidt, was a Get Into Energy Geofilter that students could add to their Snapchat posts. The Geofilter featured a cartoon representation of the Robot Doctor and the Get Into Energy logo, along with customized company logos for CEWD sponsors. Users viewed these more than 8,100 times, with more than 200 of them adding the filter to their Snaps.

Because of the lessons we’ve learned engaging with FIRST®, said Schmidt, CEWD will now provide support only to the four Super Regional competitions, in the form of the Robot Doctor Stations. However, it will continue to encourage its members to sponsor local teams. This year, participating CEWD members included NextEra, Southern Company, National Grid, PSEG, AEP, Consumers Energy, DTE, PG&E, Edison International, and Tacoma Power.

CEWD will also continue to connect members not currently involved with FIRST® with teams in their service regions if they’d like to sponsor a team or become more involved, she said. “If you’re interested in connecting with a team,” she said, “just reach out to me at rosa@cewd.org.”

In Florida, Robotics Experience Comes FIRST®

Energy companies are always looking for new ways to engage with students, hoping to encourage greater interest in the energy industry and the careers they have to offer. Programs like FIRST® Robotics have long offered an opportunity to do just that. But now companies like NextEra Energy/Florida Power and Light (FPL) are learning FIRST® can do even more: it can nurture exactly the type of job applicants they need.

“All of the FIRST® students we meet have really good interpersonal skills,” said Maureen Wilt, Education Program Manager, FPL, who oversees the company’s support of FIRST® Robotics programs in Florida. “They have good teamwork skills. They understand project management. They’re an excellent fit for us.

“So when we look for new hires, of course we’re looking for the right educational background and other criteria. Our recruiters now also look on the resume to see if there’s FIRST® experience. It’s that FIRST® piece that makes us take a closer look.”

Wilt said her company’s support of FIRST® programs has grown over the past several years from providing financial backing and mentorship to local teams to judging statewide competitions, providing machine shops to repair robots at competitions, and holding onsite promotional events that encourage even greater engagement from employees.

Wilt intentionally stages FIRST® Robotics showcases with their sponsored high school student teams at a NextEra office that is staffed largely by engineers “because these are the business units that have the greatest need for talent from FIRST®,” she said. Doing so resulted in a hire that has worked out extremely well for both the company and the employee, she added.

“We had IT management come down to see students demonstrate the robots,” she said. “One of the directors was intrigued by the robot and the programming behind it.

“The director met a young man who was chaperoning his brother’s team and a recent graduate with a master’s in mechanical engineering. Even though he wasn’t there that day for a job interview, that young man took advantage of the opportunity in a very confident way,” said Wilt. He has now been working for NextEra for two years and has contributed to a team that initiated using drones to inspect storm damage and robots to inspect substations, among other innovations, she said.

Wilt also asks company vice presidents to judge FIRST® competitions, giving them greater exposure to the program and the students they sponsor. That exposure has convinced at least one hiring manager to search for FIRST® experience on the resumes of new recruits. Doing so resulted in at least two recent hires, both female graduates from Auburn University.

“Because of her experience as a judge, our VP was able to have a conversation with the Auburn students about FIRST® during a recruiting visit to the university,” said Wilt. “When this particular VP is on a campus looking for hires, she is looking for FIRST® on the resume.”

One of the Auburn graduates she hired has since become a FIRST® mentor to a team the company sponsors in Naples, FL. That team went on to compete in the world championship after she and another coworker got involved. In all, FPL has sponsored 72 teams in the past two years.

“What I love is that this employee sent a note to the VP who hired her to let her know about the team’s success, and that VP sent it on to the business unit leadership, so the entire group could celebrate this team,” said Wilt.

“We really have to get the word out about the great skills these students have.”

Leveraging Resources: Why Partnerships Benefit Everyone

For utilities situated in remote parts of the country, finding—and keeping—a sufficient number of qualified applicants to replace workers who retire can be a challenge.

For colleges that want to provide training for entry-level job applicants in those areas, ensuring that they'll all find jobs once they graduate is also a challenge.

That's why CEWD encourages partnerships between community colleges and not just one, but multiple utilities that serve the same state or region. "*Leverage your resources*," Ann Randazzo, Executive Director, CEWD, often encourages members. "*No one utility can do it all.*"

That's exactly what Northland Pioneer College (NPC), Arizona Public Service (APS), Tucson Electric Power (TEP), and the Salt River Project (SRP) are doing—through several job training programs that benefit them all.

Kenny Keith, Faculty and Program Coordinator, NPC, oversees the programs enabled by these partnerships at NPC, including Industrial Maintenance and Operations; Mechatronics; Electrical and Instrumentation; Welding; NCRC and pre-employment testing; and high school dual enrollment programs through the Northern Arizona Vocational Institute of Technology (NAVIT).

It's not only utilities that make these programs possible, added Keith. Companies such as Nestle-Purina, NOVO Power LLC, Forest Energy Products, Amazon, and Cascade Tissue also provide support through partnerships with the college.

Some of these programs have been in place for years, he said. But recently they've been able to expand their course offerings due to a Department of Labor grant obtained in 2012 by the Arizona Sun Corridor Get Into Energy Consortium, an even broader collaborative effort of five community colleges and 10 industry partners across the state. The collaborative also includes CEWD.

Keith said he was initially reluctant to make changes to his program, which focused on the skills needed to work in coal-fired power plants. Other members of the collaborative encouraged him to look at CEWD's Energy Industry Fundamentals (EIF) course, developed with the federal grant money, and consider including it in his program.

"I already had my curriculum laid out," he said. "I felt like I was already teaching these things."

But after he looked at the modules, Keith said, he realized the EIF course provided a broader look at the energy industry that could benefit his students, so he decided to incorporate it into his program. "I didn't want to pigeonhole us into coal," he said. "I wanted students to understand the energy sector as a whole. This gives them an overview that includes natural gas, solar, and hydropower. It provides a better overview of what's out there for power generation and also the transmission and distribution side."

Lacy Greer, Senior Training Analyst, Coronado Generating Station/SRP, said his company had hired about 60 percent of its power plant operators out of NPC training programs over the past 10 years and was pleased with the recent changes because the new material gave employees more flexibility going forward.

For example, he said, if they decide to transfer to the company's hydropower plant, "it saves money on training when they get there and gives the company flexibility. Teaching about renewable energy also gives the students a perspective on clean air and gives operators an appreciation of the importance of operating within our parameters so we stay in compliance. Solar, hydro, and renewables—that's where we're going in energy."

Greer said he had hired 12 graduates out of NPC in the past year and intended to take more in May. But because of the partnership with other utilities, he said, graduates have enjoyed a 72 percent placement rate.

“There’s three power plants partnering here that all hire out of this program,” said Greer. “We’re all within 50–60 miles of each other.”

TEP hires by far the most students, said Keith.

In fact, TEP has hired 80 students from NPC’s Industrial Maintenance Operations program over the past 10 years, said Jeff LeFevre, Training Supervisor, TEP, who works at the Springerville location. That represents about 75 percent of new hires in operations during that time period, he added. In fact, most of those (48) came on board in the past three years, representing about 95 percent of new hires.

“It’s a benefit to us to hire people who have already gone through this basic training,” LeFevre said. “When they get here, they already understand how a power plant works and we can shorten that part of our internal training.”

Utilities don’t just hire from the NPC programs, said Keith; they provide a wide range of support, such as guidance on what the courses should include and trainers to ensure the students are learning the skills they’ll need to work for them when they graduate.

Greer, who works as a full-time trainer for SRP during the day, trains NPC students at night in a classroom onsite at the utility. “We can talk about a system and then go out and look at it,” he said. He teaches instrumentation, electronics, and mechanics.

“We support the college,” said Greer. “We want to make sure we have qualified instructors for them. That’s why we get involved.” He’s currently teaching two classes, one with 25 students and the other with 15.

TEP provides plant tours for the students several times each year and guidance to the college regarding what the students should be learning. “Right now, we’re primarily in an advisory role with NPC,” LeFevre said. “I’m on their advisory committee. I tell them what skills we need and what skills the students seem to be lacking once they get here, where their strengths and weaknesses are.”

While TEP doesn’t currently provide adjunct faculty, they may do so at a future time, he said. “We just started our I&E apprenticeship program and we’re about to start one for Mechanical and Maintenance. Once we establish those labs, we might also provide classrooms onsite here and with that, some adjunct faculty.”

APS sponsors the NCCER courses taught at NPC. Christopher Susag, Training Supervisor, APS, administers the NCCER program in northern Arizona and said it’s his job to make sure the program meets accreditation guidelines and industry standards. He not only oversees the program; he also trains the trainers who teach it to both NPC and dual-enrolled high school students.

“We use NCCER as our base curriculum for journeymen-level craft workers in industrial maintenance, welding, and E&I,” he said. “The college is an extension for supporting those programs for us. They teach those courses and when students graduate, we can see they meet the industry standard and we know what they’re coming to us with. It’s really a win-win for everyone.”

Though the NCCER program had been in place since 2002, Susag said the grant provided new equipment for students to learn on and allowed them to move training to a new training center in Holbrook. After a long hiring freeze, he’s ready to hire nine entry-level workers this year and expects to get them all out of NPC.

“We really try to hire locally,” he said. “Employees have to have family here and a reason to be here, because we’re in a pretty remote area. If you have roots here, you know what you’re getting into. Otherwise, they leave.”

Upcoming

South/Southeast Regional Meeting

May 17–18
New Orleans, LA

MidAtlantic/Northeast Regional Meeting

June 21–22
Long Island City, NY

Midwest Regional Meeting

June 28–29
Madison, WI

Careers in Energy Week 2017

October 16–20
TBD

CEWD Annual Summit 2017

November 8–10
Washington, DC

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