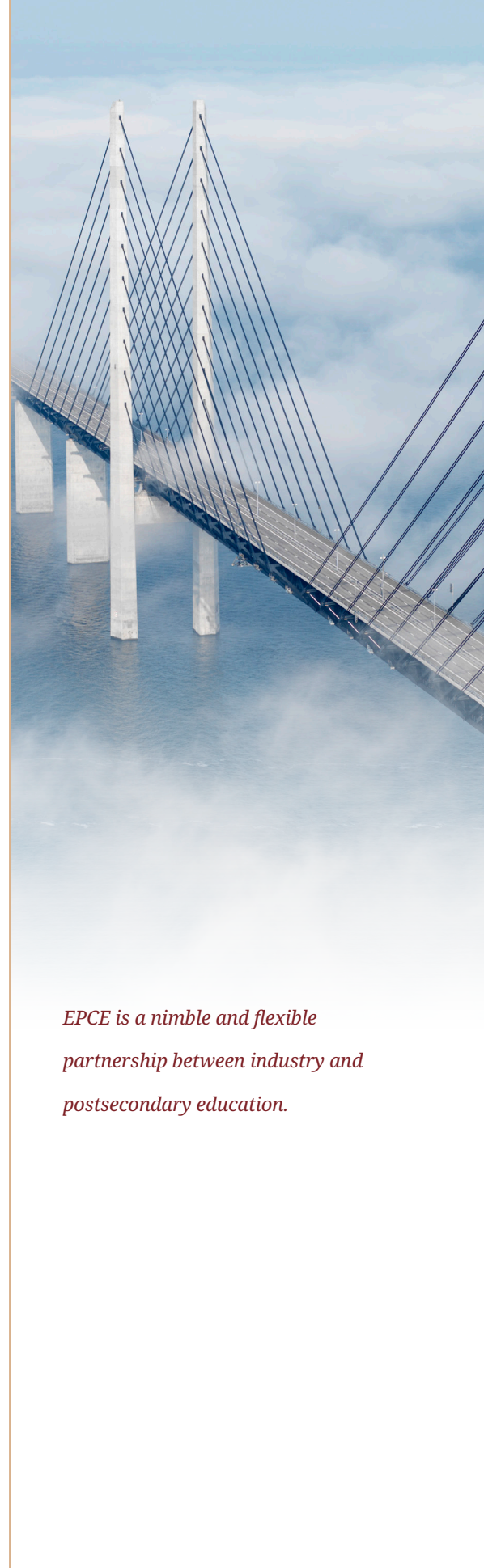


# Bridging the Energy Industry and Education to Meet Workforce Skill and Credential Needs

## SNAPSHOT

### Energy Providers Coalition for Education (EPCE)

- ▶ **The basics:** Established 22 years ago by the Council for Adult and Experiential Learning (CAEL) to address talent pipeline needs in the energy sector.
- ▶ **A model for education-industry partnership:** EPCE brings together industry and education in a highly collaborative model that can respond quickly to changing industry training and workforce development needs, while ensuring a strong academic foundation.
- ▶ **The credentials:** The EPCE partnership has developed approximately 40 credential programs, ranging from short courses to master's degrees. All are online, and many are stackable and interactive. The programs also offer credit for prior learning, so students can get credit for what they have already learned on the job or other learning experiences.
- ▶ **The learners:** Since inception, more than 46,000 learners have enrolled in EPCE's industry-designed, accredited courses and programs.
- ▶ **Employers and industry members:** The members represent more than 3,500 entities, including private and public utilities, energy contractors and suppliers, industry associations, unions, and workforce investment boards. Approximately 75% of the nation's energy workforce is employed by an EPCE company or organization.
- ▶ **Academic partners and programs:** Bismarck State College, Excelsior University, Worcester Polytechnic, and Clemson University are all regionally accredited and collaborate to ensure seamless transition from one institution to another.
- ▶ **Tuition incentives:** Since the start of the initiative, EPCE members have offered employee tuition reimbursement so that their incumbent workers can take advantage of the programs.
- ▶ **CAEL expertise:** As the partnership administrator, CAEL provides management services; serves as EPCE's fiscal agent; facilitates regular meetings between the education and industry members to review curricula and identify new program needs; assists with the logistics of applying tuition benefits to the programs; offers "deep dive" customized sessions with members to address specific needs; and organizes semiannual EPCE meetings.
- ▶ **Cross-industry focus:** EPCE's strategic focus is increasingly centered on the training needs of multiskilled technicians who can move from one energy sector to another, as well as from energy to other fields such as manufacturing and construction. An emerging opportunity is in the growing intersection of energy and telecommunications.



*EPCE is a nimble and flexible partnership between industry and postsecondary education.*

## Overview

Since 2000, more than 46,000 job-seeking and working adult learners have enrolled in industry-vetted courses sponsored by the Energy Providers Coalition for Education (EPCE), a talent development initiative created by CAEL that has played a pivotal role in meeting the needs of the energy sector nationwide. EPCE's 3,500-plus members represent private and public utilities, energy contractors and suppliers, industry associations, unions, and workforce investment boards. The coalition partners work with four higher education institutions to develop and offer a suite of online courses and credential programs for incumbent and future employees. These programs help prepare workers for careers needed in the generation, distribution, and transmission of utility services to customers as substation technicians, lineworkers, nuclear reactor operators, systems operators, electrical engineers, project managers, and more. The programs range from short-term certificates to associate degrees, and from bachelor's to master's degrees, with many of these programs building upon each other in an incremental, stackable way.

EPCE is a nimble, forward-looking, and flexible partnership between industry and postsecondary education. To meet the urgent need for talent development in the field (there are an estimated 600,000 job vacancies in the energy sector), EPCE's collaborative business model offers customized programs designed to:

- Meet immediate workforce needs.
- Establish fundamental energy education that supports various occupation-specific training.
- Continuously update curricula as industry needs and priorities change.
- Provide educational pathways to good jobs at scale.
- Allow energy workers to build on their current knowledge and credentials as they pursue additional training that leads to even better career opportunities.

"The challenge of getting talent into the industry is bigger than any one of us can handle on our own," observes Gary Pfann, director of executive and staff education at the National Rural Electric Cooperative Association (NRECA). This commitment to collaboration and problem solving has led EPCE to be an enduring force in energy workforce development for the past two decades.

Initially established to address a wave of retirements faced by the energy industry in the early 2000s, EPCE today is placing greater emphasis on upskilling existing employees and attracting new talent to meet the country's evolving power generation needs. The coalition seeks to grow and expand its reach to further support its mission of advancing education and training in the energy sector – a mission that is made possible by its strong public-private partnership model.



*"[The EPCE curriculum committees are] that touch point that brings industry's perspective, including in emerging technology, trends, and so forth. This is how the academic partners are able to check and adjust their curriculum to meet industry's needs and expectations. So I commend EPCE in their role in serving as that bridge."*

*— James Auld, director of external training initiatives, NextEra Energy*

## The Coalition Member and Partners

Part of the coalition’s strategic value lies in the diversity of its members, which represent 75% of the nation’s energy workforce. But even more important is the impact that the coalition has by providing a broad range of programs, ensuring that these programs meet changing industry needs, and collaborating in ways to keep the programs current. A robust partnership between industry and academia lies at the core of EPCE’s success.

Four accredited higher education institutions partner with EPCE: Bismarck State College, Excelsior University, Worcester Polytechnic Institute, and Clemson University. Each partner offers a slate of customized courses and programs. The programs chosen for the partnership are based on the education providers’ areas of strength and expertise, as well as on industry needs.

*The longstanding collaboration ensures that programs meet changing industry needs and stay current.*

EPCE’s Education Partners and Their Programs/Offerings		
<b>Bismarck State College</b>	Certificates	Electric Power Technology Nuclear Power Technology Energy Services & Renewable Technician Electrical Transmissions System Technology Power Generation Technology Cybersecurity and Computer Networks Waste & Wastewater Technology Instrumentation and Control Technology
	Degrees (Associate of Applied Science)	Electric Power Technology Nuclear Power Technology Energy Services & Renewable Technician Electrical Transmissions System Technology Power Generation Technology Cybersecurity and Computer Networks
	Degrees (Bachelor of Applied Science)	Cybersecurity & Information Technology
	Non-credit Offerings	Smart Grid (four training courses) Orientation to the Electrical Industry (course) and Industrial Aptitude (prep course)
<b>Excelsior University</b>	Certificates (stackable into a degree)	Energy Leadership (undergraduate) Energy Organizational Leadership (graduate) Energy Project Management (undergraduate) Energy Project Management (graduate)
	Degrees	Bachelor of Science in Nuclear Engineering Technology Bachelor of Science in Electrical Engineering Technology Bachelor of Science in Information Technology Bachelor of Science in Business Bachelor of Professional Studies in Technology Management Bachelor of Professional Studies in Business and Management Master of Business Administration Master of Science in Cybersecurity
<b>Worcester Polytechnic Institute</b>	Certificates	Power Systems Engineering (graduate certificate) Power Systems Management (graduate certificate)
	Degrees	Master of Engineering Power Systems Engineering Master of Science Power Systems Management
<b>Clemson University</b>	Certificates	Power Systems Engineering Renewable Engineering
	Degrees	Bachelor of Science in Electrical Engineering

## Educational Programs: Industry-Focused, Stackable, Online, Student-Centered, and Employer-Supported


### Focusing on Industry Needs

Bismarck State College (BSC) was the first institution to partner with the coalition. BSC Dean of National Energy Center of Excellence Bruce Emmil says during EPCE's early days, members had identified a need for formal training in electrical power technology, specifically in the areas of transmission and distribution. "We quickly found out that a lot of these companies had their own internal training programs, but a lot of it was on-the-job training, and there weren't a lot of defined outcomes or objectives." From this first collaborative venture, BSC's partnership with EPCE now includes 26 different programs/offerings that provide consistency for the industry in terms of curricula. Other education partners have also seen their roles grow along with the needs of the industry; Jane Kelley, partnership manager at Excelsior University, notes that its contribution "was initially just focused on nuclear technologies, but then the industry had a need to skill up managers," resulting in several leadership and project management offerings at both the undergraduate and graduate levels.

### Stacking to Higher Credentials

Although the vast majority of participants in EPCE programs engage with learning through individual courses targeting specific skill needs, nearly 2,000 students have completed associate, bachelor's, and master's degrees through the various EPCE programs. These include students who have started with individual courses or certificate programs and then "stacked" on to complete degrees, including gaining credits for prior learning from work, life, and military experiences.

EPCE strategies have opened up several innovative educational pathways. For example, matriculation agreements between BSC and Excelsior enable students in the BSC nuclear power technology program to build on that program and complete a bachelor's degree at Excelsior. In another arrangement, New England energy provider Eversource works with local community colleges in Connecticut on a degree program that includes online technical courses provided by BSC. Students enroll in person at their local community college in Connecticut and take BSC courses online as part of their degree program. In this way, Eversource workers enroll in and earn degrees from their local community colleges, and the community colleges in turn can count those conferred degrees as their own, without having to build specialized degree programs from scratch.



*By collaborating as an industry, EPCE can provide training and degrees in a consistent way.*

### Innovating in Online Delivery

All EPCE programs are fully online, and most learners enroll on a part-time basis. Engaging learners in an online environment, particularly in a technical field, is challenging. BSC formed a dedicated curriculum development team made up of animators and graphic designers to work with faculty on building models of different mechanical and electrical systems that learners can interact with. The college has a number of different full-system simulators online, including a fossil-fuel power plant, a combined cycle unit, a miniature transmission power grid system, and a nuclear power plant. BSC also has designed and built hundreds of interactive learning tools including animations, mini-simulations, exercises, and more. Excelsior offers similar tools to enhance the learning experience.

### Ensuring Student Success

EPCE programs are designed to offer flexibility and support to working adults who may progress through a program one course per semester, or may stop out and resume studies later, depending on their individual needs. EPCE's education partners are acutely aware of the needs of working adults taking online programs and have structures in place to ensure learners are supported as they progress through the courses or programs. These include:

- Dedicated advisors and/or frequent check-ins to make sure students are receiving the support they need.
- Opportunities to earn credit for prior learning (CPL), as many students bring learning from work, life, and military experiences.
- Interactive learning tools to enhance the online learning experience.
- Flexible programs offered in shorter doses and with frequent start dates.

### Providing Tuition Reimbursement Options

EPCE members typically identify specific training needs within their organizations and send a cohort of employees to participate in a set of targeted courses at BSC. In addition to this group training pathway, employees seeking professional development can enroll in certificate or degree programs themselves. EPCE members receive tuition discounts for their employees who enroll in these programs, which can be up to 40%, depending on the college. Members offer tuition reimbursement incentives—one of the tenets of energy employers right from the beginning—ranging from \$5,000 to \$10,000 per year for each employee. CAEL works with member organizations to assist with the logistics of applying these benefits to the programs.



**Josh Pepple,**  
director of smart grid  
technology planning,  
National Rural  
Telecommunications Cooperative

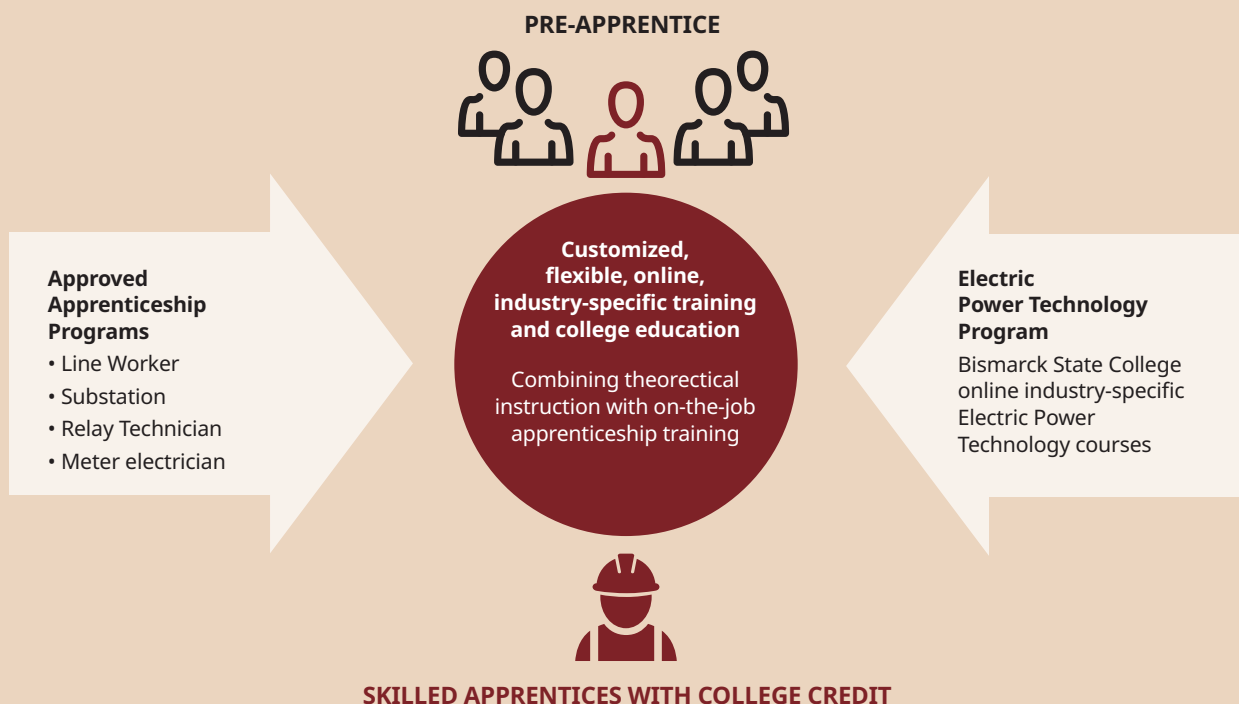
A veteran of the Illinois National Air Guard, Pepple served in Iraq and Afghanistan before being honorably discharged in 2008. He began to work with a local electric cooperative and soon advanced to the position of journeyman lineman. Realizing the challenges posted by the technical advances occurring in the electrical utility industry, Pepple decided to build on his skills and pursued an undergraduate degree from Excelsior University. A year later, he went on to pursue his master's degree, graduating with an M.B.A. in 2019. "My education has completely underwritten the successes I've had and continues to open the door for new opportunities," says Pepple.

## Crafting Customized Training Programs and Apprenticeships

EPCE employers benefit from the educational partners in that they have the option of creating customized programs to meet specific workforce development and training needs without having to ensure a minimum number of students enroll, as is typically the case when customizing training programs.

- Field Service Technician Program.** Eversource, an EPCE member since 2007, requires its field service technicians to complete at least eight college courses associated with the electric industry, or complete a certificate at a technical school, in order to reach their top salary level. The company’s field service technician committee, made up of union and company representatives, wanted to help more employees skill up and attain that top salary and worked with Bismarck State College (BSC) to develop a customized field service technician program. BSC provided Eversource with information about the curriculum, and Eversource then selected the most relevant courses from BSC’s EPCE programs to craft a specialized field service technician program.

- Relay Technician Apprenticeship.** Xcel Energy’s four-year relay technician apprenticeship model includes seven courses drawn from the BSC electric power technology program. Apprentices are required to take two classes per semester in the first two years while gaining experience in hands-on training, and one class per semester in the subsequent two years. The company and its employees have reaped the benefits of this collaboration, and Xcel Energy continues to provide resources for more relay technicians to participate in the apprenticeship.
- Substation Apprenticeship.** A four-year substation apprenticeship model offered by Tri-State Generation and Transmission Association, a cooperative power supplier, incorporates 14 BSC electric power technology courses that align with the substation apprenticeship program course objectives and related training requirements. These are followed by face-to-face training with Tri-State instructors. This customized instruction program complements the required hands-on work in the field, leading to graduates who are well-versed in the theory and application of their profession.

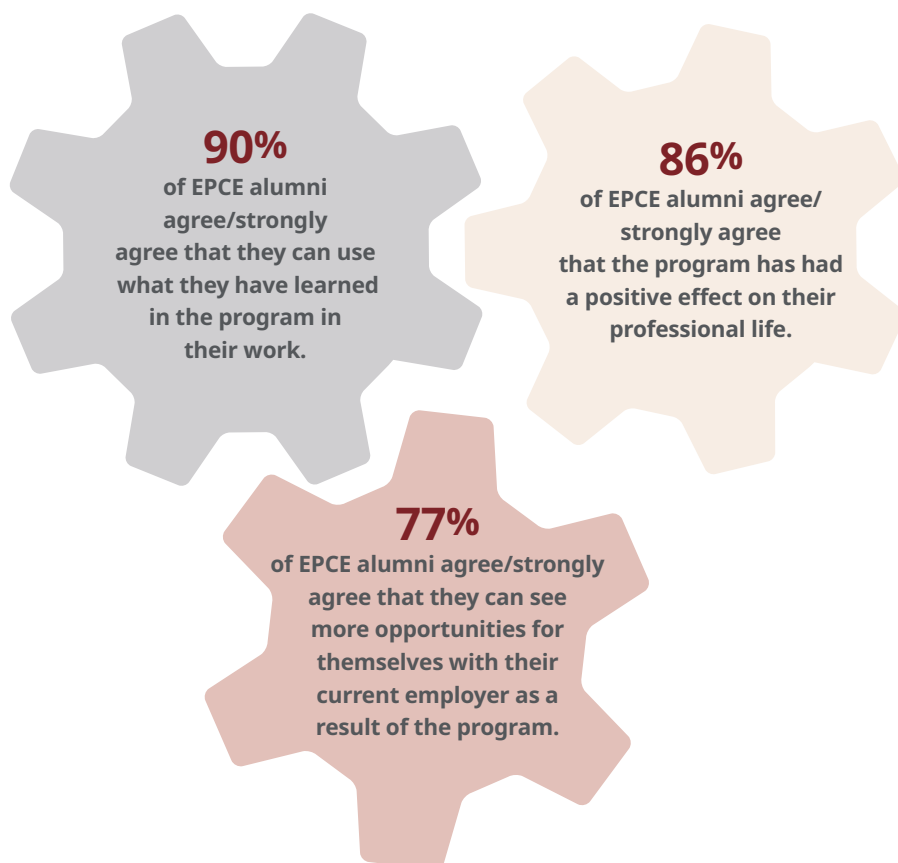


## Worker Engagement and Impact

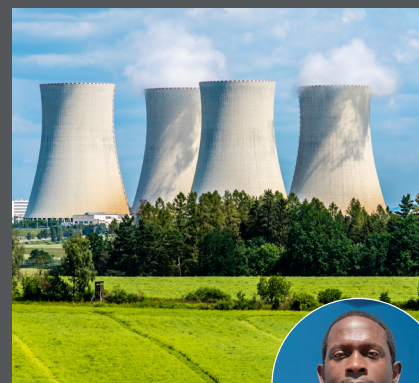
In 2021, 3,355 learners were enrolled in EPCE courses. About two-thirds of EPCE program enrollments (69%) were enrolled in individual courses, certificate programs, or associate degrees, with the remaining third (31%) in bachelor's and/or master's programs.

For EPCE students pursuing credentials, there are impressive persistence and completion results: at BSC, for example, 88% of students enrolled in Fall 2021 in the electrical power technology program either went on to continue a course in Spring 2022 or graduated. Similarly, Worcester Polytechnic Institute's (WPI) retention rate in both of its programs is approximately 90%. Excelsior, meanwhile, has successfully graduated 685 students, with 48% earning a Bachelor of Science in Nuclear Engineering Technology since the partnership's inception.

Students who graduate from EPCE programs go on to secure job promotions, pay increases, and new employment opportunities in the industry. Data from 2020 and 2022 alumni surveys show that graduates are highly satisfied with EPCE programs and that they perceive the impact of their studies positively.



Source: 2020 & 2022 EPCE Alumni Surveys (n = 76)



**Anthony Daniels,**  
radiation protection  
supervisor,  
Florida Power and Light,  
Turkey Point Nuclear  
Generating Station

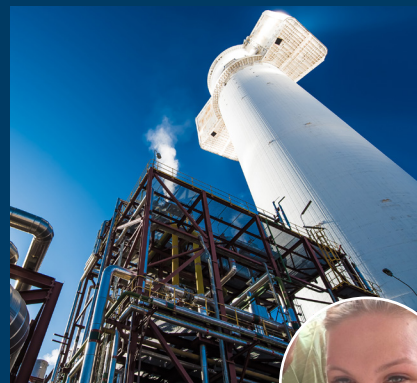
Daniels, a veteran of the U.S. Army and Marines, began his career as a junior radiation protection technician. “As I progressed in my career, I continually asked, ‘How can I improve myself?’ and the answer was education,” he says. Daniels completed a Bachelor of Science in Nuclear Engineering Technology from Excelsior University in 2017, and then went on to complete his M.B.A., making use of the tuition discount made possible by his company's membership in EPCE. “I use the knowledge I gained in the [M.B.A.] program in my supervisor position all the time—from leadership skills to business goals and strategies, and more,” says Daniels.

## The Coalition Model

All EPCE members convene during the fall Experience Power conference, an event which offers a platform for members to network and benchmark against their colleagues in the industry. While the coalition is guided by a seven-member committee that drives its strategic direction, across all of its collaborative efforts, CAEL serves as the connector, providing coordination and expertise. One of the benefits received by members are annual consultations with CAEL to identify needs or gaps in their current workforce. In addition, they can benefit from “deep dive” sessions with CAEL experts. These are customized, focused consultations that CAEL can provide to address specific needs. For example, in one consultation, CAEL experts met with Xcel Energy and Excelsior University to conduct a deep dive with their human resources department on project management and leadership programs, which led to discussions around transferable skills from one energy job to another, and the creation of Excelsior’s four certificate offerings.

Input on courses provided by the education partners is a core component of member duties. Members are appointed to the Nuclear Power Curriculum Committee and Electric Power Curriculum Committee on a three-year term, and these committees conduct up to three course curriculum assessments in a single year. These rigorous course review sessions, held in collaboration with the education partners, often spark ideas for new areas of focus to meet emerging needs. This has been the case for WPI, whose director of power systems, Mike Ahern, says that from these meetings, the institution has been developing more courses around the implications of renewable power for power systems engineers. At the sub-baccalaureate level, curriculum meetings have also led to new and innovative offerings, such as microcredentials and courses on SCADA (supervisory control and data acquisition) being added to a certificate program. Essentially, these meetings ensure that curricula are current and relevant across organizations.

## LEARNER SPOTLIGHT



**Lana Eilertson,**  
senior program  
manager, innovation,  
Tennessee Valley Authority

Eilertson began working as a technical intern at Exelon while taking classes in BSC’s nuclear power technology program. Upon completion of her internship, she was hired as an equipment operator. “The course work was instrumental in my ability to survive a lot of my initial training; there was a great deal of similar content in my generic fundamentals portion,” she said. Learning that a bachelor’s degree would open up more career opportunities, Eilertson continued her studies at Excelsior University and graduated in 2016 with a Bachelor of Science in Nuclear Engineering Technology. She was promoted to senior site assessor, fleet assessment, at the LaSalle County Generating Station, the following year.



## The Future

Growing EPCE's member base to support the industry's talent development needs continues to be the primary goal of the coalition. As the industry advances, skill requirements change. Today, multiskilled technicians who can move from one energy sector to another are in demand, and this may have implications for the kinds of courses offered by EPCE education partners. For example, skill sets in troubleshooting, servicing, and preventive maintenance are needed in the energy sector and other industries like manufacturing and construction. Another emerging area of growth lies in the intersection of energy and telecommunications. According to Pfann, many of the rural electric cooperatives have moved into the broadband- and fiber-to-the-home business. This suggests the need for EPCE to reach out and explore collaborations with other entities such as another CAEL industry partnership, NACTEL (the National Alliance for Communications Technology Education and Learning).

EPCE's role in enabling change in the energy workforce development ecosystem is significant. Notes Pfann, "We need some kind of avenue or mechanism to ensure that we've got a good quality workforce coming through the pipeline as technology changes, and as business changes. EPCE has been in lockstep with our learning partners for a couple of decades now." With a continuing presence in the energy education sector, EPCE is ready to meet the challenge of the country's considerable workforce energy needs, a task that will require the coalition to draw on the collaborative strength that is at the core of its partnership model.

*"We need some kind of avenue or mechanism to ensure that we've got a good quality workforce coming through the pipeline as technology changes, and as business changes. EPCE has been in lockstep with our learning partners for a couple of decades now."*



### Proposed Native Energy Initiative

The Native Energy Workforce Education Consortium (NEWEC) is a proposed partnership between Haskell Indian Nations University, a tribal land-grant university, and Southwestern Indian Polytechnic Institute, with the goal of creating energy education career pathways for Tribal members in the future energy economy. Opportunities for growth in this area are strong, both for individuals seeking employment in energy companies (many of which are operating adjacent to reservation land), as well as for those who seek to form their own ventures in solar, wind, and other utilities.

Although in its nascent stage, EPCE has ambitious goals for the NEWEC consortium, and aims to operationalize the program within three to four years. During this period, the goal is to encourage more Tribal Colleges and Universities to join the consortium, create a centralized energy education hub to advance graduate students into current positions in the energy sector, and support federally required Tribal consultations through Tribal history and traditional knowledge.



Recognizing that adult learners are the backbone of the U.S. economy, CAEL helps forge a clear, viable connection between education and career success, providing solutions that promote sustainable and equitable economic growth. CAEL opens doors to opportunity in collaboration with workforce and economic developers, postsecondary educators, and employers, industry groups, foundations, and other mission-aligned organizations. By engaging with these stakeholders, we foster a culture of innovative, lifelong learning that helps individuals and their communities thrive. Established in 1974, CAEL, a Strada Education Network affiliate, is a nonprofit 501(c)(3) membership organization.