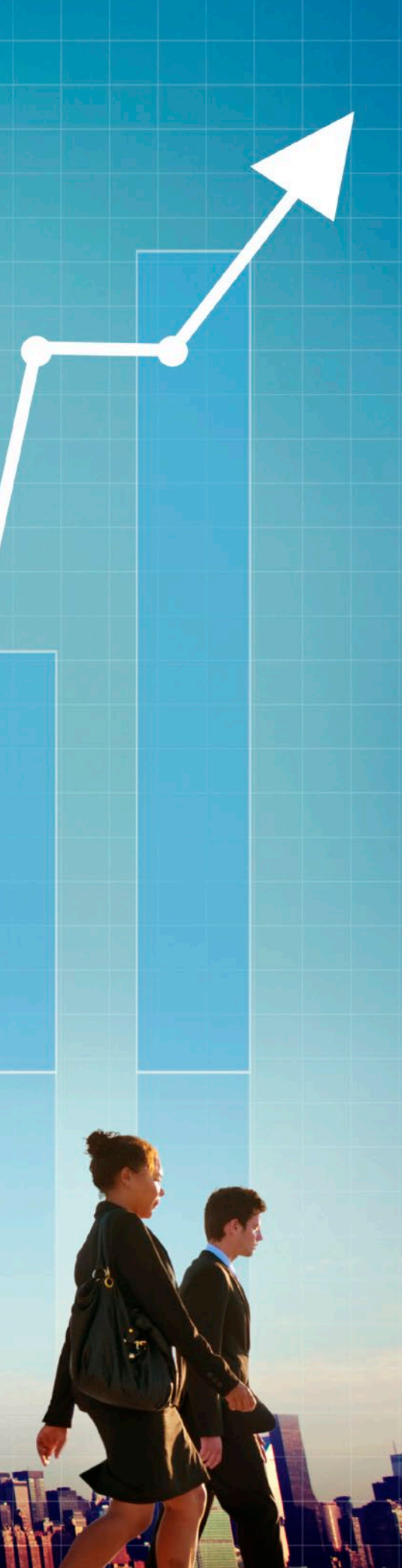


# A review of **workforce trends** in the **nuclear community**

A *Nuclear News* interview with  
Kostas Dovas and Darren Stiles





**T**he nuclear community is undergoing a moment of unprecedented interest and growth not seen in decades. The passage of the bipartisan Infrastructure Investment and Jobs Act and the Inflation Reduction Act are providing a multitude of new funding opportunities for the nuclear community, and not just the current fleet. A mix of technologies and reactor types are being evaluated and deployed, with Vogtle Units 3 and 4 coming on line later this year, the Advanced Reactor Demonstration Projects of X-energy and TerraPower, and NuScale’s work with Utah Associated Municipal Power Systems to build a first-of-a-kind small modular reactor, making this is an exciting time to join the nuclear workforce.

But the recent interest, funding, and growth come on the heels of a decadal period of industry consolidation and contraction that drained expertise in the nuclear workforce. Adding to that, the recent struggles seemingly across the board to attract and maintain talent during the “Great Resignation” are putting strain on many industries—not just nuclear.

These trends place workforce development as a top concern for nuclear utilities and designers. The lack of a strong nuclear workforce could limit the extent of the deployment of advanced and small modular reactors and impact the industry’s ability to maintain the current fleet, which requires thousands of temporary construction jobs as well as thousands of permanent technical positions at current and future nuclear power plants.

John Fabian, director of publications at the American Nuclear Society, talked with Constellation Generation’s vice president of training Kostas Dovas and Southern Nuclear’s fleet training director Darren Stiles about current workforce trends and issues facing the nuclear community.

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### **What about the nuclear industry makes you excited about the future of nuclear now, compared with 10 years ago?**

**KD:** For those of us that love this industry, these are truly exciting times! Instead of seeing the early retirement of domestic nuclear assets, we are seeing additional investment to ensure they run for the long-term. This includes power uprates and license extensions to maximize the contribution to clean energy needs and minimizing America’s carbon footprint. The overall result of the change is a renewed interest in nuclear power as a career choice. New workers will see an industry with the longevity to entice new workers into the field with family-sustaining careers.

**DS:** As Kostas said, there is a renewed interest in nuclear power, but we need to make sure to capitalize on that interest. The largest gain for us would be to raise awareness of the wonderful opportunities offered by a career in nuclear power. When I was younger, nuclear was seen as the place to be for emerging technical employees. Anything we can do from a communication, engagement, and awareness point of view for the emerging generations of workers would benefit our industry.

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## Kostas Dovas (KD)

*Kostas Dovas is the vice president of training at Constellation Generation and is responsible for safe, effective, and efficient implementation of the training programs across Constellation's fleet of 12 nuclear power plants.*



### **How can the industry rally around the recent injection of government funding to quickly build a pipeline of a new nuclear workforce?**

**KD:** The industry must strategically look ahead at the workforce needs both from the existing commercial nuclear fleet but also taking into account the projected growth through small modular and advanced reactor builds. Organizations such as the DOE and ANS's Education, Training & Workforce Development [Division] are already looking ahead to project the needs for workers in a variety of functional areas, including those needed as a construction workforce.

For utilities, it's important to generate interest for the long term by investing in education programs and school partnerships that highlight nuclear career choices as early as grade school. Additionally, partnerships with middle schools, technical programs, colleges, and universities are key to preparing prospective workers to seamlessly integrate into the nuclear workforce.

### **The nationwide labor shortage has been a hot topic in every industry over the last two years with the "Great Resignation" and a major shift in how nearly every industry conducts business. How has this period affected the nuclear industry?**

**DS:** Those of us who began our careers during the 1980s and '90s are reaching retirement age and leaving the workforce. On top of this, as the experienced labor pool shrinks, we have experienced difficulties attracting and retaining talent. There is a lot of competition from other industries for knowledgeable employees, especially engineers. Nuclear plants are not located near urban centers, so we lose employees seeking more variety in larger cities and industries that offer competitive pay coupled with great work-life balance.

**KD:** The nuclear industry was not immune to the Great Resignation. For the first time in my career, I saw competition for talent with very different industries such as technology and logistics. Nuclear has highly knowledgeable and skilled workers that are adept at working in high-accountability settings. Other technical sectors have caught on and started pursuing talent from nuclear.

### **What can the industry do to attract and retain top talent?**

**KD:** This issue is top of mind for nuclear utilities following the Great Resignation. Recent changes around the Inflation Reduction Act have eased concerns about long-term careers in nuclear power, which is greatly assisting in attracting and retaining talent, so that's a positive. But utilities must also go beyond pay and benefits to set themselves apart—in their mission, vision, values, and the contribution to the surrounding community. Employees and potential employees alike must see that the company is making a positive impact on the community and causes those employees are passionate about, like climate change.

Retaining talent starts with establishing an inclusive work environment that allows every employee to bring their whole

self to work. And we have learned a lot from the pandemic about offering flexibility; it's key that we find the right mix of work-life balance while providing a flexible structure that still fosters employee workplace interactions in order to drive a sense of community.

**What are some differences in the challenges facing the established fleet of reactors versus the new builds at Southern Nuclear's Vogtle?**

**DS:** Our biggest challenge is technology between Vogtle-3 and -4 and the established plants (Farley, Hatch, and Vogtle-1 and -2). Vogtle-3 and -4 is a digital plant with passive fail safe systems while the remaining plants are original analog plants with active safety systems, which introduces differences in technology and operating philosophy requiring different training and skills for the workers. Additionally, Vogtle-3 and -4 have proprietary agreements with the reactor manufacturer, which limits open sharing of some information. We are in the process of modernizing our established plants to digital technology to combat some of these issues.

**How many new employees will be required to run the Vogtle-3 and -4 reactors? Is there a need to ramp up staffing to support the new reactors? Did Southern have to focus on bringing in people from outside of the nuclear and/or energy industry, or was there some shifting around of the workforce within Southern's organization?**

**DS:** Vogtle-3 and -4 will be staffed similar to our other plants, with some economies of scale due to the common security footprint of the Vogtle site. We currently don't foresee the need to ramp up staffing as we transition to operational status on both units. For the past several years we have shifted staff internally to Vogtle-3 and -4 so they could build operational experience. We have conducted some external hiring but prefer the internal promotion of our employees.

**In order to decarbonize the economy by 2050, most experts agree there will need to be a ramp-up in nuclear power, along with renewables like wind and solar. How can the community support the training and development of a new nuclear workforce to advance new nuclear projects?**

**KD:** Community partnerships and stakeholder engagement are key to the development of a future clean energy and nuclear workforce. In the community, key educational partners, city economic development leaders, small business owners, and pre-apprenticeship programs should convene with local employers to identify future workforce needs and work together to create or enhance existing training and outreach programs. This includes reskilling and upskilling the existing workforce to prepare them for high-paying clean energy jobs.

**Darren Stiles (DS)**

*Darren Stiles is the fleet training director at Southern Nuclear and is responsible for providing governance, oversight, and support of Southern Nuclear's training programs.*



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Many industries rely on their communities to launch awareness campaigns or offer services that can attract underrepresented and underserved talent. It can be as simple as educational events and programs at the K-12 level to introduce students to STEM and nuclear power, for example. It can also include guidance counselor, parent, and mentor outreach and education so they can better help youth, as well as programs at summer camps, community colleges, and other youth-centered organizations.

Another important resource is nonprofit organizations that serve marginalized communities and work at removing barriers to education and advancement: Industry can collaborate to offer skills development and workforce training. Communities themselves can offer important support services such as work readiness, financial literacy, transportation, childcare, and tuition support.

**In the U.S., a lot of focus is on small modular and advanced reactors. What are the differences in workforce needs for an SMR or advanced reactor, compared with the large light water reactors (LLWRs) like those that Constellation and Southern currently operate?**

**DS:** I haven't seen the workforce projections for construction and operation of an SMR, but I imagine they will be quite a bit smaller and more advanced than legacy LLWRs, which would impact both the number and skill level of employees needed—fewer people with the most up-to-date training. I don't foresee a project the scale of Vogtle-3 and -4 being undertaken again in the United States as the cost and scope of construction is too high in today's marketplace.

**KD:** New reactor designs will have more digital systems and passive safety system designs requiring less operator action while maintaining increased safety margins. As such, they will require less staff than what we are used to in the current operating fleet with more diverse skill sets. In many cases, we will see differences in the variety of tasks that an employee may be qualified to perform. For example, a field operator at an SMR may perform maintenance and chemistry tasks in addition to traditional operations tasks.

Additionally, with more standardized designs, the original equipment manufacturer may be able to offer support services like training and qualification for utility and plant employees.

**Do either Constellation or Southern currently take advantage of any community programs that educate and train future employees? Are there any programs that are specifically targeting underserved communities?**

**KD:** Constellation has a focus on providing opportunities to the local workforce and uplifting those parts of the community that need it the most. Each of our nuclear sites provides scholarships and educational funding to their local community partners and schools that serve minority populations. Our company also provides scholarships to high school students from underserved communities to participate in college summer camps and STEM education across five universities. In addition to our educational partnerships, our company actively participates on the board and committees of various trade groups and builds partnerships with our major allies and partner contractors for talent recruitment. We also work through local site partnerships such as Career Technical Education and vocational schools to host site tours and live demonstrations to raise awareness of the career possibilities in technical trades and the ways they support Constellation's facilities.

**DS:** Southern Nuclear has a university co-op program that has been very successful in attracting quality technical employees. We also strive to recruit talent from historically underrepresented groups and nontraditional or geographically marginalized areas.

**What sets the nuclear industry apart from others with regard to training programs?**

**DS:** I would say it's the sharing of operating experience and performance standards that set nuclear apart, along with how much we train. We have a culture of continuous improvement and advancement of excellence. When new excellence standards are set, the entire industry shifts to meet this, and everyone benefits.

**KD:** Nuclear training programs use the systematic approach to training, as mandated by the *Code of Federal Regulations*. Something that is unique to the core commercial nuclear power plant training programs in operations, maintenance, and technical disciplines is that they are accredited by the National Academy for Nuclear Training through the Institute of Nuclear Power Operations (INPO). Maintaining accreditation requires extremely high standards for the content and conduct of training. Failure to maintain accreditation of these programs has the potential to result in a probationary status or even a plant shutdown until the programs are deemed healthy.

**How can a well-run training program create operational efficiencies? Can you provide any examples?**

**KD:** Well-run training programs pay for themselves through high levels of workforce performance and safety. Ideally, robust training programs find and fix gaps in worker knowledge or skills before it becomes apparent in the plant. An operator, engineer, or technician who, through his or her knowledge or skills, prevents an unnecessary plant shutdown that would cost millions in lost revenue, or who prevents a workmanship issue that could have damaged a multimillion-dollar piece of equipment because he or she is trained to complete every task to the highest quality standards, saves on costs and time and improves efficiency.

**DS:** Standardizing tasks across all of Southern’s plants and developing common training across the fleet that can be led either by one site or remotely has increased our efficiency.

**What organizations are involved in maintaining nuclear training programs? Does each company maintain their own program, or are there certain goals or minimums that need to be met by the Nuclear Regulatory Commission or another organization?**

**DS:** Southern Nuclear is accredited by the National Nuclear Accrediting Board through INPO in lieu of the NRC inspection to meet the training rule. At a minimum, we apply the systematic approach to training to meet the three required objectives and criteria for accreditation. If our performance does not meet rigorous standards, we would be subject to accreditation probation or have our accreditation removed. The NRC still maintains inspection of the operator initial license and continuing license exam requirements for our plants, and we must meet their nuclear regulations and inspection procedures. Finally, excellence in training is driven through the INPO plant evaluation process, which has a separate set of training performance objectives.

**The ANS Conference on Nuclear Training and Education (CONTE) meeting is held every two years, with the latest held February 6–9 in Florida. As a training professional, what do you feel are the benefits of going to CONTE? And what are some of the topics that you are interested in hearing at the meeting?**

**KD:** CONTE is the premier venue for nuclear training and education professionals to share best practices and hear from keynote speakers in similar high-impact industries. It’s a great experience for those who are already training professionals, as well as an excellent opportunity for high-potential future leaders to see best practices in people development from across the industry. The conference has more than 12 tracks (topical areas), each of which includes a series of presentations on industry best practices. It’s hard to narrow down, but I’m especially interested in this year’s discussions on strategically aligning training to workforce challenges, best practices in leadership development, and tracks on innovative training tools and techniques.

**DS:** CONTE allows us to learn from others in the industry, to benchmark, and to network with other industry professionals. I have been attending for quite some time and find it to be very beneficial. This year, I am participating as a member of the operator licensing panel. I’m looking forward to hearing about training accreditation continuum implementation through INPO.

