

A Past, Present and Future Glance at GAIN

Kemal Pasamehmetoglu is known for being both innovative and candid. So, looking back to when the Gateway for Accelerated Innovation in Nuclear (GAIN) was founded in December 2015, he readily acknowledges that “in the first seven to eight months, we tried to define what GAIN really meant.”

There were numerous meetings with Department of Energy (DOE) program managers, a roadshow to national laboratories, emphasizing how they could be part of the program, and discussions with private industry about GAIN’s potential benefits.

“We needed to determine how to best line up the existing programs and be helpful,” Pasamehmetoglu, GAIN’s first director, said. There was a focus to ensure the “being helpful” metric applied to every corner of the nuclear community, especially private reactor developers.

GAIN has been highly successful at being helpful. In being broadly understood, not so much.

Understanding GAIN’s profile has returned to the forefront recently, primarily alongside the opening of the [National Reactor Innovation Center \(NRIC\)](#). Both NRIC and GAIN sprouted out of DOE, and while both are physically housed at Idaho National Laboratory (INL), both serve the broader national laboratory complex. Most importantly, both are dedicated to nurturing and advancing this country’s next generation of nuclear reactors.

As a DOE fact sheet explained earlier this year: “NRIC is a natural extension of GAIN as developers move to the later stages of commercialization — providing the on-the-ground capabilities to accelerate technology readiness from proof of concept through proof of operations.” To oversimplify, GAIN reaches most parts of the nuclear ecosystem that DOE-NE is responsible for. A few primary responsibilities of GAIN include matching developer needs to DOE laboratory capability, providing technical and regulatory support, and facilitating access to funding. An example of this success is the GAIN NE Voucher Program which overtly provides access to DOE laboratory expertise and capability. With a related mission, NRIC is a program that is focused on testing, validation, and development needs in support of demonstration of advanced nuclear energy technologies.

“It can be confusing, even to INL employees,” explained Pasamehmetoglu, who now serves as executive director of the [Versatile Test Reactor](#). “GAIN is not an R&D program but a collaboration framework. It is the gateway for the nuclear industry to access capabilities within the national laboratory complex and influences relevant DOE-NE R&D programs’ priorities.”

Rita Baranwal was at Westinghouse when Pasamehmetoglu and others were formulating GAIN. Today she is the Department of Energy's assistant secretary for Nuclear Energy. Prior to that, she succeeded Pasamehmetoglu as the director of GAIN.

"Westinghouse, as you know, is a big company, and understands the benefits of working with the national labs," Baranwal said. "But many smaller companies, including those developing advanced reactors, weren't well aware of the labs, their capabilities, and how to access their expertise." GAIN is especially beneficial to those entrepreneurs, she noted. Moreover, she said, it's also an excellent gateway for companies currently outside the nuclear industry that may want to become part of the supply chain, generate heat for an industrial process, or join the current push for increasing hydrogen's role in the economy.

Baranwal reminisces that more than a decade ago, she'd pick up the phone and call a colleague at, say, Oak Ridge National Laboratory in hopes of connecting with a particular subject matter expert to address a customer's needs. "Today, they tweet at GAIN, and they're instantly connected."

Moreover, Baranwal said, "GAIN represents an alignment of government and national labs realizing we've got some crown jewels here that we need to leverage."

In February, Christine King replaced Baranwal as GAIN's director, and she's driven to build on the foundation established by Baranwal and Pasamehmetoglu, while blending in a private business approach.

"From my private industry experience, we need to identify what those milestones are – and hit them. Our budget has to be on, our design has to be on, our schedule has to be on," she said. "Our focus is on really understanding the commercial needs, the industry's needs." GAIN operates at the private-public nexus, and "there's an enduring relationship-building that's needed to get your research off the benchtop and into the real world."

King is excited and confident, while also operating with an eyes-wide-open approach.

"I really believe we are at an important moment in nuclear," she said, "What we do in the next four, five, 10 years either secures nuclear's place in the United States, or we may lose it permanently. We need to use the trusted platform and reputation of GAIN such that we make building new reactors a commonplace." The plan is to also ensure that those reactors do more than just produce electricity, including such things as process heat and hydrogen.

Achieving that requires solid engineering, science, physics, and technological know-how. Also, it needs communication, which is critical to this effort.

“We need to reach out beyond our small-but-mighty community,” King said. “One of the most important things we can do is talk with non-nuclear people, and not talk with them in jargon.”

“We are doing a better job of talking about nuclear – the good and the bad. We like to talk in terms of risk, but we need to connect with the human factor,” King said. “And maybe we need to go into an uncomfortable conversation.”

Similarly, Baranwal encourages the nuclear community to not only focus on the “what,” but also on the “why.” Why is nuclear a critical part of our future?

“From what I’ve seen and what I’ve heard, there’s a lot of love for GAIN if you’ve interacted with the GAIN community, with our team.,” King said. “You come away, most of the time, at the very least, feeling energized. On a real simple level, if you’ve interacted with us and enjoyed it, share the love.”

Meet Christine King

Joining GAIN as its third director wasn't a snap decision for Christine King. She thought long and hard about whether GAIN was the right fit for her and if she was the right person to lead it.

One concern she had was that while her career has long had a strong nuclear emphasis, her experience is not with a utility, reactor developer or national laboratory. King earned her chemical engineering degree from North Carolina State University and an MBA from Lynchburg College. Prior to coming to GAIN, she worked at Nucleation Capital, a venture firm focused on investing in next-generation nuclear energy located in Menlo Park, California, which is at the intersection of technology, Stanford University and finance.



Christine King, GAIN Director

King is a business leader, who has an affinity for nuclear energy.

"I came to this industry because I think nuclear is an elegant technology," she said, "and it's one that has kept me fascinated for over two decades."

When King was selected as GAIN's director, INL's Nuclear Science & Technology Associate Laboratory Director John Wagner said, "There is a growing number of nuclear innovators in the private sector that require access to the unique assets of the DOE's national laboratory complex to achieve their commercialization goals." Wagner added, "Christine's experience in engaging with the nuclear community, particularly helping startups find their footing by connecting them with appropriate resources, makes her the ideal candidate to take on this unique leadership role."

King's advice to employees is straightforward. "Really lean in to understand what the nuclear industry is working to achieve. Tune in to this moment, identify a milestone or a project that connects to you, and incorporate that need into your day-to-day work."