



Photo: Justin Cox Photography

Marilyn Kray: Leading the change

A champion of nuclear power and a veteran of the industry, the 65th ANS president aims to make the society more relevant today than ever.

By Tim Gregoire

As an internationally recognized leader in the commercial nuclear power industry, Marilyn Kray has been at the forefront of a number of landmark initiatives. She spearheaded efforts to purchase nuclear power plants from other owners, which led to a wave of plant sales and consolidations, and she initiated and headed the consortium that developed the industry process for licensing new nuclear plants in the United States. With more than 30 years in the industry, Kray continues to keep her eye on the future, working to usher the American Nuclear Society through a phase of needed change while, ultimately, making it more relevant than ever to its members.

The fifth of six children, Marilyn C. Kray was born on October 23, 1961, to John and Helen Ley in Pittsburgh, Pa., at a time when the city could still rightfully claim the moniker “Steel City.” John supported the Ley family as a beer distributor worker and, later, as a bus driver, while Helen was a stay-at-home mom who later went to work as a telemarketer. Kray says that today her siblings are scattered across the country, but they all remain loyal Pittsburgh Steelers fans.

While Kray was still in elementary school, the Ley family moved to the nearby borough of Verona, which she describes as a blue-collar industrial town. The small

borough, however, shares a school district with the tony suburb of Oakmont, home of the prestigious Oakmont Country Club, which has hosted numerous U.S. Open golf tournaments, most recently the 2016 U.S. Open. “Through my friends in Oakmont, I was exposed to a whole different lifestyle,” Kray said of her experience growing up along the Allegheny River.

Kray graduated first in her class in 1979 from Oakmont’s Riverview High School, where she was active in various clubs and class committees. Most of her time, however, was spent with the cheerleading squad. A cheerleader in junior high and

all four years of high school, Kray served as captain of the junior and senior varsity cheerleading squads. “The summer before my senior year, I spent a week at cheerleading camp and another week at engineering camp,” she said. “Cheerleading camp was much more fun, but I figured my future was with engineering.”

Kray credits her high school chemistry teacher, Mrs. Rocchini, with steering her into engineering. The week at engineering camp solidified that decision, providing her with a glimpse into the world of science and engineering. “The true credit for my going to college, however, goes to my sister Jan, who passed away a few years ago, and my uncle Tom,” Kray said, “both of whom encouraged me to go to college, which was a big deal for my family.”

Moreover, on the practical side, Kray said that Jan helped her secure her spot at Pittsburgh’s Carnegie Mellon University by providing the deposit money needed to confirm her enrollment after being accepted to the private university. Her uncle, meanwhile, paid the SAT registration and college application fees. “While my sister’s and uncle’s contributions don’t seem like a lot now, at the time they helped overcome what would otherwise have been significant obstacles,” Kray recalled. The university offered her a generous scholarship, and student loans helped pay the small remainder of her tuition.

As a chemical engineering major at the



Marilyn Kray (Ley) at age 4.



Kray's 1979 high school yearbook photo.

academically challenging Carnegie Mellon, Kray spent most of her time studying, and she says that most of her memories are of being engaged in study groups. "Carnegie Mellon gave me an appreciation for diverse talents, as most of my classmates were either fellow engineering students or performing arts students," she said. Kray received her bachelor's degree in chemical engineering from Carnegie Mellon University in 1983.

Introduction to nuclear

As a chemical engineering student, Kray assumed that she would eventually find a position in the oil and gas industry. In the early 1980s, however, the petroleum industry was in a downturn, and so she looked elsewhere in her job search. "I wasn't familiar with the nuclear industry at the time," she noted, "but the Nuclear Regulatory Commission was recruiting heavily, due in part to the recovery from the Three Mile Island accident in 1979."

Shortly after graduating, Kray joined the NRC and was immediately assigned to the position of project manager in the Office of Nuclear Reactor Regulation at the agency's Bethesda, Md., headquarters. There she worked on new plant licensing for the Beaver Valley-2 power reactor near Shippingport, Pa., as well as the Palo Verde plant in Arizona and Diablo Canyon in California. "It was rather daunting," Kray said of her first year with the NRC. "I had just turned 22 years old, and my counterparts were all experienced utility licensing managers or directors."

After two years as a project manager, Kray moved to the NRC's Region I office in King of Prussia, Pa. The move was driven by Kray's pending marriage in 1986 to fellow chemical engineer Kevin Kray. At



Kevin and Marilyn Kray on their wedding day in 1986.

Region I, Kray embarked on the NRC's comprehensive reactor engineer training program, which involved extensive classroom and simulator training, as well as the completion of a set of inspection modules, all culminating in a rigorous oral board presentation. "The training program gave me a comprehensive understanding of plant operations and the reciprocal regulatory requirements," Kray said. "Having the opportunity to visit so many different sites gave me an incredibly valuable perspective."

Late in 1987, however, Kray realized that the nomadic lifestyle of an NRC regional inspector was one she could not maintain indefinitely, and so she took the initiative to enter the private power sector and joined Philadelphia, Pa.-based PECO Energy, the state's largest electric and natural gas utility. "I was living in the PECO service territory, and the Peach Bottom units had just been shut down by the NRC. I saw that as an opportunity to make a move," she said.

Kray was assigned to the team tasked with restarting the two General Electric boiling water reactors in southeast Pennsylvania. On March 31, 1987, the NRC had ordered Peach Bottom to cease operations

due to operator misconduct and lack of corporate oversight, and PECO had embarked on a campaign to improve its work culture and operations. "I am grateful that I joined PECO Energy when I did, because I got to witness and be a part of an organizational transformation," Kray said. "When I started with PECO in late 1987, I felt as if I were going back in time. There was a formality, along with an inaccessibility to management, that is drastically different from today."

According to Kray, any correspondence the company had with the NRC had to be approved by PECO's vice president, who was sequestered on the office building's 25th floor. "Entering the floor required a strict dress code," she said. "There was a communal jacket and tie hanging on the coat rack for male engineers to don when they needed to make a trip to the 25th floor. We never met or saw the VP. We simply left the document with one of the secretaries, to be picked up later."

In 1994, after nearly seven years as a PECO engineer, Kray moved into the position of manager for the Peach Bottom licensing, later becoming a director in the company's customer service department as part of a two-year rotational assign-

ment. As a customer service director, Kray led the development of PECO's deregulation pilot program to implement customer choice. "Although the assignment in customer service was rewarding, it made me realize how much better suited I was to the nuclear industry," Kray said.

Mergers and acquisitions

During the late 1990s, Kray noted, PECO's leadership saw that the existing U.S. fleet of nuclear power plants was being undervalued and that many plant owners were looking to sell off their reactors. This prompted the formation in 1997 of AmerGen Energy Company, a joint venture of PECO Energy and British Energy. The new company was formed specifically to own and operate newly acquired nuclear power plants, and in May 1998, Kray took on the role of AmerGen's vice president of acquisitions.

Kray said that as vice president of acquisitions, she had the opportunity to develop and implement the operational due diligence and evaluation process that resulted in AmerGen's purchase of the Clinton, Three Mile Island, and Oyster Creek nuclear power plants. "Each of these plants was slated to be shut down by its existing owner," she said. "The AmerGen strategy was quickly adopted by other nuclear owners, which prompted the competitive auction process leading to the sale of many plants. As a result, there was an overall industry consolidation, with many operators expanding to a fleet-level number of units." This consolidation avoided the premature closure of many plants, Kray noted.

In 2000, PECO merged with Unicom Corporation, the parent company of Commonwealth Edison, to form Exelon



Photo: Justin Cox Photography

Kray asks a question during a special session on nuclear energy's competitiveness at the 2019 ANS Annual Meeting.

Corporation, where Kray continued to serve as vice president of acquisitions. Four years later, Kray and a colleague from Entergy Nuclear formed NuStart Energy Development, with the goal of laying the foundation for the next generation of U.S. nuclear plants. With Kray leading the limited liability company as president, and with strong support from Exelon and Entergy, NuStart was able to recruit other utilities as members. One of the consortium's objectives was to obtain a license to construct and operate a power reactor using a never-before-tested licensing process developed by the NRC in 1992.

"At the time, natural gas prices were high, and there was an expectation that we would need to build new nuclear power plants," Kray said. "The NRC had changed the licensing process in response to difficulties

faced with licensing the existing fleet. That process, however, had not been demonstrated. It seemed logical for the industry to work together as a single entity instead of each attempting the process on its own."

Through a 50-50 cost-share program with the Department of Energy, NuStart received funding to develop a standard combined construction and operating license (COL) application for two new reactors, the Westinghouse AP1000 and GE Hitachi Nuclear Energy's ESBWR. According to Kray, NuStart developed the concept of a reference plant for each technology, where the reference plant's docket would serve as the vehicle for NRC review of all standard design information. Vogtle-3 and -4 in Georgia served as the industry reference plant for the AP1000. Having served its purpose, NuStart dis-



Photo: Justin Cox Photography

Marilyn Kray with new ANS officers and directors. From left: Corey McDaniel, Olga Simbalista, Mary Lou Dunzik-Gougar (vice president/president-elect), Art Wharton (treasurer), Kray, Margaret Harding, Patricia Paviat, Peter Lyons, and Miriam Kreher. Not pictured: Charles Forsberg.

banded in 2012 after the Vogtle COL was issued. Kray then became vice president of Exelon Nuclear Partners.

Currently, Kray is Exelon's vice president of nuclear strategy and development and as such is responsible for leading major initiatives related to current and advanced reactor designs. These initiatives, Kray said, include pursuing operational service agreements in the United States and abroad, as well as engaging with advanced reactor developers to evaluate potential business opportunities and future deployment of nuclear technology. "We expect that the developers of small modular reactors and other advanced reactors will most likely be selling to nontraditional utility customers and will need operational expertise," she said.

State of the industry

As for the current state of the nuclear power industry, Kray admits that it is a confusing time. "On any given day, there are news articles on the premature shutdown of well-run plants as well as articles about advanced reactors," she noted. "This apparent contradiction is reconciled by the view that public policy will eventually change to rightfully acknowledge the clean and reliable generation afforded by nuclear power."

The expectation that state and federal laws will eventually recognize the benefits of nuclear power is a motivating factor in recent private and public investments in the next generation of nuclear reactor designs, Kray said, adding that advanced reactor designs include everything from microreactors to small modular reactors to large, gigawatt-sized power units.

"There have been measurable advancements in design breakthroughs, as well as regulatory framework changes," Kray said. "Further, advanced reactors are one of a few topics that receive bipartisan support in Congress. What is not lost on the industry and most other stakeholders, however, is that the commercial viability of advanced reactors is dependent on the continued safe operation of the current fleet."

As the new ANS president, Kray is realistic about the challenges the society faces, noting that changing demographics within the various nuclear fields have resulted in fewer new members joining ANS, while, at the same time, older members are leaving. This membership imbalance, Kray said, is having an impact on ANS financially, with a decrease in membership dues and meeting registration fees, two of the society's largest revenue streams. "This trend and the acknowledgement that things need to change have been growing over the past several years, and it appears that many of the resultant changes will need to occur during my

term," she said. "I am both excited and extremely nervous about this."

To meet these challenges, Kray said, a special committee led by ANS past president Bob Coward (2017–2018) is working to identify and recommend changes in how the society operates, adding that the ANS Board of Directors is committed to ensuring that changes are carefully considered and are for the good of all ANS members.

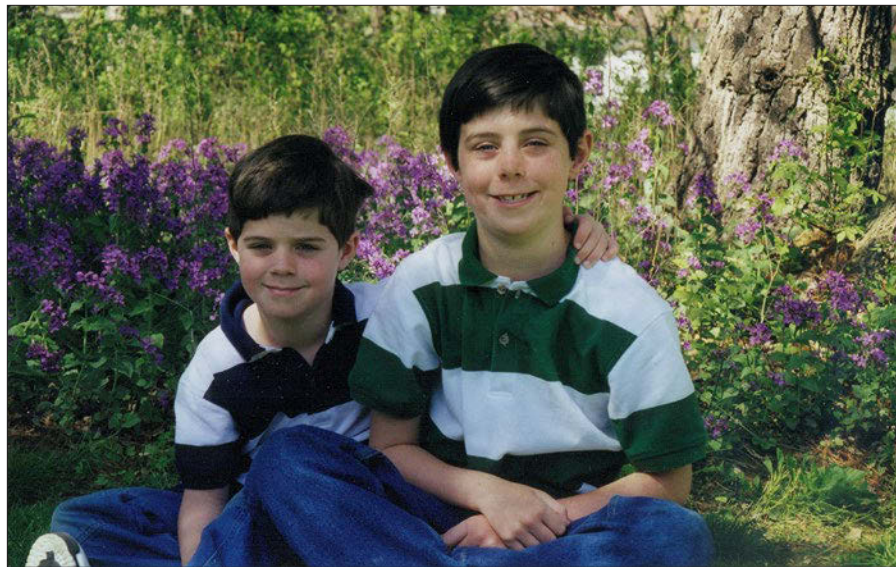
Kray said that ANS continues to serve its members well while playing a vital role within the field of nuclear science and technology. To illustrate, she pointed to the work ANS does in areas such as the development and maintenance of industry standards, the accreditation of university nuclear programs, and provid-

ing a forum for the presentation and publication of advancements in nuclear technology. "The society's policy work and public outreach, specifically the Navigating Nuclear initiative, also help us meet our stated

"This apparent contradiction is reconciled by the view that public policy will eventually change to rightfully acknowledge the clean and reliable generation afforded by nuclear power."

mission and vision," she said. "Where we need to improve is adapting to the external changes that impact our 'business as usual' approach and ensuring we are creating value for our members, particularly students and those members early in their career."

Continued



Alex, 6, and Kevin, 9, in the family's backyard.



The Krays attend a Notre Dame football game in the fall of 2009.



The Kray family on a cruise in 2015.



Marilyn and Kevin on vacation in the Bahamas in 2018.

Home life

Kray continues to live in Pennsylvania with her husband, Kevin, who is the director of technology for a plastics manufacturing company. Married for 33 years, Marilyn and Kevin owe their meeting to the NRC. As Kray tells it, a fraternity brother of Kevin's from his alma mater, Georgia Tech, worked with Kray in the NRC's Bethesda office. One weekend, Kevin came to visit his old college buddy. "I was trying to set up my coworker's friend with my roommate, but Kevin and I were the ones who hit it off," Kray said. "We decided to get married only three weeks after we met." The couple was married within the year, Kray said, adding that such quick decisions are not the norm for her. "I've been trying to decide on a color for my family room walls for the past year," she said.

The Krays have two sons, Kevin, 30, and Alex, 27. Both are graduates of the University of Notre Dame, where Kevin studied finance, and Alex, like his parents, chemical engineering. Like many Notre Dame alumnae, Kevin and Alex went to work in Chicago after graduation. After working for a few years, Kevin earned a master of business administration degree from Duke University and is now back in Chicago. Alex also is studying for an MBA degree and recently finished his first year at Yale School of Management. Both sons are fitness enthusiasts, Kray said. Kevin was a boxer all through college and is a licensed skydiver, while Alex, like his father, is an avid golfer.

When not working, Marilyn and her husband can be found at their favorite place, their beach house in North Carolina's Outer Banks, where the family has been vacationing since the early 1990s. Kray said that after so many years, they finally bought a house there in 2008. "Kevin is a phenomenal cook, and we both love to entertain, whether it's at the beach house or at home," Kray said. At home outside of Philadelphia, the two enjoy playing trivia at local bars. "We're actually pretty good, but we could use some youthful pop culture knowledge on our team," she said. "We win about 75 percent of the time and are known around town by our team name, Boris and Natasha."

Kray has testified before Congress on nuclear development in the United States on a number of occasions, and she has been the recipient of a number of honors and awards, including the World Nuclear Association award for Distinguished Contribution to the Peaceful Use of Nuclear Technology in 2005 and the ANS 2007 Utility Leadership Award. Kray also received the Distinguished Alumni Award from Riverview High School in 2012 and, as president of NuStart, was one of four finalists for the Edison Electric Institute's 2012 Edison Award. **NN**