

THE NUCLEAR NEWS INTERVIEW

# Steven Biegalski: NEDHO's role in nuclear engineering education

*The Nuclear Engineering Department Heads Organization provides a forum for addressing issues affecting nuclear engineering programs at U.S. colleges and universities.*

Steven Biegalski is the current chair of the Nuclear Engineering Department Heads Organization (NEDHO), a group formed in 1982 to provide a forum for discussion, coordination, and collaboration among university nuclear engineering department chairs on issues concerning nuclear and radiological engineering programs. Among the issues that NEDHO deals with are the accreditation of academic programs, funding for scholarships and fellowships, research funding and opportunities, and funding for training and research reactors.

Biegalski, chair of the Nuclear and Radiological Engineering and Medical Physics Program at the Georgia Institute of Technology, began his one-year term as NEDHO chair in June 2019. He was introduced to NEDHO in 2002, when he became an assistant professor at the University of Texas at Austin, where he served as director of the school's TRIGA research reactor from 2007 to 2017. He holds bachelor's, master's, and doctoral degrees in nuclear engineering from the University of Maryland, the University of Florida, and the University of Illinois, respectively. He joined the engineering faculty at Georgia Tech in 2017.

An American Nuclear Society member since 1989, Biegalski talked about NEDHO's activities with *Nuclear News* Staff Writer Paul LaTour.



**Biegalski:** "I am happy to report that the job prospects for our students appear very good and diverse."

*What is the state of NEDHO today? How many members? Who is eligible to join NEDHO?*

Currently, we have 28 full members and 16 associate members. Full members pay dues and have voting privileges. Associate members participate in meetings but do not pay dues or have voting privileges. It's an institutional membership, so an individual faculty member is not eligible to join.

We're open to any university in North America with a nuclear engineering program. We do have some institutions, particularly the military academies, that aren't allowed to pay dues. They still come and participate in the meetings, which is great. It's just that the caveat is if they're not paying dues, they don't have voting privileges. Most of the votes are for budgeting—for example, giving funds to the ANS Young Members Group. So if you're not paying dues into NEDHO, you're not able to say where the funds can be allocated.

*How often does NEDHO meet?*

We meet at least twice a year, during the ANS Annual and Winter Meetings. ANS is kind enough to allow us to use some meeting space. It's very convenient, as many of us are in town for the ANS meeting anyway. But NEDHO is not part of ANS. That gets confusing, as we meet at ANS meetings. NEDHO is a distinct and separate organization.

This year, we'll have an additional meeting in March in Washington, D.C., as part of the Nuclear Energy Institute's Nuclear Innovation Week [March 23–26]. Craig

Piercy [ANS executive director and chief executive officer] and John Starkey [ANS director of government relations] help coordinate our Capitol Hill Day. Hill Day is a time when industry representatives, as well as the nuclear university community, go to D.C. to talk to our congressional representatives—usually their staffers—about what’s going on in our universities. We’ll tell them what programs are really supportive, what things are going well, and what things are going badly.

Many times we use it as an opportunity to thank them for their support of our universities. Our senators and representatives do significantly support their home institutions. So it’s a time for communication, and that’s done with universities as well as industries in town as part of Nuclear Innovation Week. That’s a long way of saying that we’re having another NEDHO meeting after we have our day visiting the Hill. So some years we’ll have three meetings.

*What types of items were discussed at the most recent NEDHO meeting?*

The most recent NEDHO meeting was held on November 17, 2019, in Washington, D.C. We were honored to have many guest speakers at the meeting, including Rita Baranwal, the assistant secretary for the Department of Energy’s Office of Nuclear Energy; John Kotek, NEI’s vice president of policy development and public affairs; David Petersen, of the Defense Threat Reduction Agency; Katie Strangis, a senior policy advisor in the National Nuclear Security Administration’s Office of Nonproliferation and Arms Control; Craig Williamson, director and chief operating officer of the South Carolina Universities Research and Education Foundation; and John Gilligan, integration office director for the DOE’s Nuclear Energy University Program [NEUP].

We spent a lot of time discussing how universities can help advance the state of the nuclear industry and how universities can adjust to meet the breadth of needs for the future workforce.

*Are there any “action items” for the future?*

Our main action items from that meeting include working with the DOE’s Office of Nuclear Energy to align NEUP with current administrative priorities, working with NEI on the coordination of Nuclear Innovation Week, further engaging our university community on matters related to export control and nuclear security, and promoting the upcoming 2020 ANS Student Conference, hosted by North Carolina State University, within our universities.

*What kinds of programs or initiatives does NEDHO have? What areas does it focus on?*

NEDHO currently has a wide range of

initiatives and thrusts. Current highlights include communications with U.S. government agencies that interact with the university nuclear engineering community. We’ve had recent interactions with the Office of Nuclear Energy, the NNSA, the Defense Threat Reduction Agency, and the Nuclear Regulatory Commission. We have recently been working with the DOE’s Office of Defense Nuclear Nonproliferation and the FBI on nuclear security and export control issues that affect the nuclear engineering university community. We’re also working with the nuclear industry, including NEI, on workforce development. And we’re working with ANS for the professional development and engagement of our nuclear engineering students.

*What specific or recent interactions have you had with any of those organizations?*

Predominantly, our communications are related to government programs with universities. For example, we’ve had recent talks with the NRC over its upcoming call for proposals for university programs. And there are going to be some changes in their programs. The good news is that the NRC is adding an additional research program for the university community. On the bad side, NRC funding was delayed this year, so awards may also be delayed in comparison to previous years. We’re having discussions with Nancy Hebron-Isreal, a program manager at the NRC’s Office of Nuclear Regulatory Research, related to how these funding delays might have an impact on the university community, how we might be able to minimize those impacts, and also using NEDHO as a mechanism to communicate to the nuclear engineering community about what’s coming down the pike so people understand what’s going on. We also talk to the DOE, especially the Office of Nuclear Energy, on a regular basis.

This is all part of the feedback loop so we’re sure that things are going well from the university perspective as well as the DOE perspective. We are constantly looking for ways to improve the process. Sometimes NEDHO makes recommendations to the DOE and they say, “Thank you, but that’s not something we can do.” Sometimes they say, “That was a great comment, and we’ll see what we can do to integrate that.”

*NEDHO sponsored a session during the Young Professionals Congress at the 2019 ANS Winter Meeting. Is that something*

*that NEDHO often does at ANS meetings?*

I have to credit Harsh Desai [chair of the ANS Young Members Group] for reaching out to NEDHO regarding the Young Professionals Congress at the ANS Winter Meeting. Growing and supporting young

**We spent a lot of time discussing how universities can help advance the state of the nuclear industry and how universities can adjust to meet the breadth of needs for the future workforce.**

professionals within the nuclear engineering community is important to NEDHO. Accordingly, NEDHO was excited to support this event.

This was the first time, to my knowledge, that we’ve actually supported the Young Members Group like this. NEDHO does not have a huge budget, but the meetings in D.C., in particular, seem to be well attended, and so we tend to potentially have more outreach opportunities at those meetings than some of the others.

*What other ways is NEDHO involved with ANS or other organizations?*

One of NEDHO’s main interactions with ANS is via Craig Piercy. NEDHO is indebted to Craig for his facilitating and coordinating efforts across the nuclear enterprise. He has been a significant resource to NEDHO, and I am sure he will have a tremendous impact as ANS’s executive director.

As I mentioned earlier, NEDHO interacts with many organizations, including NEI, the DOE, the Department of Defense, and the NRC. We also work to facilitate relationships between universities and our national laboratories.

*In a previous Nuclear News interview (NN, Jan. 2011, p. 44), former NEDHO chair Auden Fentiman mentioned two NEDHO reports, Nuclear Engineering in Transition and Manpower Supply and Demand in the Nuclear Industry. Are there any updates on those? Are there other reports NEDHO has produced in the past few years?*

Those reports have had a significant impact on the growth of nuclear engineering education. We have not recently updated those reports, but we continually monitor workforce demands and employment opportunities for our students. I am happy to report that the job prospects for our students appear very good and diverse.

*According to data supplied by the Oak Ridge Institute for Science and Education, undergraduate enrollment is up overall since 2001*

*but has seen some major swings in the past five years. What is the reason for that?*

Nuclear engineering undergraduate enrollment has significantly increased in the last 20 years. The last decade has seen more volatility than the decade prior. While I am sure there are many factors that contribute to the swings in undergraduate enrollment, the feedback I receive from students indicates that the volatility feeds from perceptions regarding the future of the nuclear industry. Nuclear engineering is in competition with other STEM [science, technology, engineering, and mathematics] academic programs for students, and the public messaging for the prospects of nuclear technology is not uniform. Undergraduates are making the best decisions they can with the information they have. However, this information is inconsistent and can also be politicized.

*On the flip side, graduate level enrollment has been on a smoother upward trajectory since 2001. How do the reasons for that compare with what the undergraduate trend has been?*

The consistent increase in graduate enrollment over the last two decades has been very good for the nuclear engineering university community. It is matched by outstanding prospects within the nuclear

sector for these graduates. In contrast to the undergraduate volatility, I believe that the graduate student enrollment stability is due to undergraduate students being able to make knowledgeable decisions regarding graduate education. Increased numbers of nuclear engineering faculty members and the availability of funded nuclear engineering research opportunities also strongly contribute to the stability of this trend.

*Are recent graduates able to find work in the nuclear field? In which areas are they finding the most success?*

Recent analysis of student employment shows that students are definitely finding jobs in the nuclear field. While I do not have full data that is representative of all the universities within NEDHO, I do have data representing the graduates from Georgia Tech, which show that about one-third of our graduates find employment directly within the nuclear power sector. About one-quarter of the students find jobs related to radiological engineering, including nuclear security and industrial

applications of nuclear technology. One additional quarter work in jobs supporting nuclear medicine. The balance of students find jobs supporting other employment sectors.

**The state of university nuclear engineering programs is very strong in comparison to 20 years ago. There is interest and enthusiasm from students, and employment opportunities are very good.**

*How much enthusiasm are you seeing for the overall health and future of nuclear engineering programs/degrees? What needs to be done to either continue or create more enthusiasm?*

The state of university nuclear engineering programs is very strong in comparison to 20 years ago. There is interest and enthusiasm from students, and employment opportunities are very good. For continued success there needs to be growth in the nuclear sector, positive messaging regarding this growth, and support within the universities. **EN**