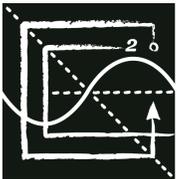


# MINUTES OF THE PARTICIPATING ORGANIZATIONS LIAISON COUNCIL

---

March 2019



**NCEES**



**Participating Organizations Liaison Council**  
*James Purcell, P.E., Chair*

---

The annual meeting of the Participating Organizations Liaison Council (POLC) was held Saturday, March 9, 2019, at the Kimpton Hotel Monaco Salt Lake City in Salt Lake City, Utah. NCEES President James Purcell, P.E. presided.

- James Purcell, P.E., NCEES President
- Dean Ringle, P.E., P.S., NCEES President-Elect
- B. David Cox, NCEES Chief Executive Officer
- Davy McDowell, P.E., Chief Operations Officer
- Sherrie Dyer, CAP-OM, CEO Executive Assistant
- Craig Musselman, P.E., AAEES— American Academy of Environmental Engineers and Scientists
- Joseph J. Cramer, Ph.D. P.E., AIChE—American Institute of Chemical Engineers
- Zhegang Ma, Ph.D., P.E., ANS—American Nuclear Society
- Martin Gordon, P.E., ASEE— American Society for Engineering Education
- Curtis Weller, Ph.D., P.E., ASABE—American Society of Agricultural and Biological Engineers
- Monte Phillips, Ph.D., P.E., ASCE— American Society of Civil Engineers
- Trent Hunt, ASHRAE— American Society of Heating, Refrigerating, and Air-Conditioning Engineers
- Robert Luna, P.E., ASME—American Society of Mechanical Engineers
- David Soukup, P.E., ASME—American Society of Mechanical Engineers
- Robert McMillan, P.L.S., E.I.T., CLSA—California Land Surveyors Association
- Ross Curtis, P.E., CESB—Council of Engineering and Scientific Specialty Boards
- John Cronin Jr., P.E. CESB—Council of Engineering and Scientific Specialty Boards
- Bland O'Connor, CPA, CAE CESB—Council of Engineering and Scientific Specialty Boards
- Nikhil Bodhandar, P.E., L.C., IEEE-USA—Institute of Electrical and Electronics Engineers—USA
- Joseph Michels, Ph.D., P.E., IISE— Institute of Industrial and Systems Engineers
- Gerald Wilbanks, P.E., ISA—International Society of Automation
- James Hollandsworth, P.S., P.E., MSPS—Michigan Society of Professional Surveyors
- Arthur Schwartz, J.D., CAE NAFE—National Academy of Forensic Engineers
- John Certuse, P.E. NAFE—National Academy of Forensic Engineers
- Alan Kirkpatrick, P.E., NCSEA—National Council of Structural Engineering Associations
- Mark Golden, NSPE—National Society of Professional Engineers
- David Martini, P.E., NSPE—National Society of Professional Engineers
- Mark Sargent, P.L.S., NSPS—National Society of Professional Surveyors
- Andrew Schissler, Ph.D., P.E., SME—Society for Mining, Metallurgy, and Exploration
- Brian Meacham, Ph.D., P.E., SFPE—Society of Fire Protection Engineers
- Carl Josephson, P.E., S.E., SEI—Structural Engineering Institute of ASCE

The following six societies could not attend.

- ACEC—American Council of Engineering Companies
- ASPRS— American Society for Photogrammetry and Remote Sensing
- AEI— Architectural Engineering Institute of ASCE
- SNAME—Society of Naval Architects and Marine Engineers
- TMS—The Minerals, Metals and Materials Society

President Purcell called the meeting to order and welcomed all attendees.

POLC member organizations submitted the following reports:

#### **American Academy of Environmental Engineers and Scientists**

AAEES is pleased to engage with NCEES through participation in the Participating Organizations Liaison Council and appreciates the opportunity to interact with NCEES and other engineering societies with a stake in engineering licensure.

AAEES has provided post licensure certification for environmental engineers for more than 50 years, certifying duly qualified engineers through the current title of Board-Certified Environmental Engineer (BCEE). The qualifications required for post-licensure board certification and the application process are rigorous, requiring documentation of education, experience, licensure, continuing professional development, absence of licensing board discipline and successful completion of an advanced certification examination.

The BCEE certification of environmental engineers provides a longstanding example of a licensure/post-licensure specialty certification system that is similar to the medical profession, in which licensure of all medical doctors is required. All who practice medicine are licensed as M.D.s, subject to rigorous scrutiny of qualifications at that level, and are held by licensure boards to appropriate standards of practice, ethics and continuing professional development. In medicine, most physicians are subsequently certified in advanced specialties requiring demonstration of the appropriate education, training and additional experience for that specialty. This is a system that has worked for many decades to protect public health, safety and welfare, as the complexity of the practice of medicine has evolved and accelerated. Currently, approximately 80 percent of licensed physicians in the United States are board-certified medical specialists.

The practice of engineering is no different. Licensure as a professional engineer is a rigorous first step, requiring successful completion of an academically challenging baccalaureate program, successful completion of the FE and PE examinations, and applicable and progressive engineering experience. Roughly two-thirds of applicants who are graduates of U.S. engineering programs are successful in that process. With that rigorous process, the public is assured of a basic level of competence of licensed professional engineers, a level often termed “minimal competence.” In engineering, there will always be a requirement on the part of the public for professional engineers competently and ethically practicing at a basic level.

In medicine, the competent and ethical practice of medicine is of the utmost importance in protecting and enhancing public health and safety. All physicians, however, do not require the specialized skillset of, for example, neurosurgeons in order to practice, and it is beyond the scope of state regulations and medical boards in individual jurisdictions to provide oversight of the technical qualifications in a proliferating number of complex advanced specialty, and evolving sub-specialty, practice areas.

The rate of change in the complexity of engineering practice has increased for decades, resulting in required qualifications in many engineering practice areas that are both deeper and broader, and more interdisciplinary. That rate of change is not expected to slow, but rather to keep increasing. Like the medical profession, this will require in time appropriate recognition in engineering of advanced qualifications and skillsets beyond the basic level of licensure. The AAEES recognition of BCEE has endured the test of time and provides an example and framework of how this might be accomplished in other practice areas within the engineering profession.

AAEES supports NCEES and the engineering licensing boards in individual jurisdictions in maintaining and enhancing appropriate and rigorous qualification requirements for licensure as a professional engineer, for facilitating the practice of engineering in multiple jurisdictions through expedited comity and uniform continuing professional development requirements and for the continuation of licensure systems that regulate licensure as a professional engineer, with advanced qualifications recognized post-licensure through independent and rigorous processes.

#### **American Institute of Chemical Engineers**

The NCEES Principles and Practice of Engineering (PE) Chemical exam development committee continued writing, reviewing, and approving items for the PE Chemical exam throughout 2018. In addition, it completed a professional activities and knowledge study (PAKS) and respecified the item bank. A cut-score workshop was scheduled for February, and the new specifications will be used for the 2019 computer-based testing (CBT). This workshop will determine the cut score to be used for passing the PE exam. Through 2017, the PE Chemical Engineering exam performance was excellent on a statistical basis. Results from the first year of CBT in 2018 have just been received in January, and it has been noted that the passing rate increased from a pre-CBT rate in

the low 70 percent range to 80 percent in 2018 and that the number of takers declined from an average of about 573 to 504. Although still statistically acceptable, the committee will be looking at a number of items that had large increases in P+ (correct percent). It is possible that this is a result of the searchable nature of the Supplied Reference Handbook. Work also continues on revision and streamlining of the handbook, which now has nearly 600 pages. The number of CBT takers will likely rebound as was the case on the FE exam. Membership of the committee remains at slightly over 45 volunteers but with the reduced workload brought on by CBT most volunteers will now attend just one meeting a year or less.

The Fundamentals of Engineering (FE) exam team also continued its work, and the Chemical Engineering Module continued to perform very well. The entire FE Committee also completed a PAKS in 2018 and had its new specifications approved in January by the NCEES Committee on Examinations for Professional Engineers (EPE). A cut-score workshop is scheduled for August 2019. The new specifications will come into play approximately July 1, 2020. The FE exam development committee has also experienced the same workload reduction as the PE committees. The number of FE exam takers has risen significantly.

AIChE continues to view service on these committees as equivalent to service to AIChE and to the profession. AIChE also continues to send representatives to EPE meetings and to the NCEES annual meeting.

AIChE continues to oppose any implementation of a master's-or-equivalent (master's or equivalent) requirement as a prerequisite for initial PE licensure and strongly believes that a bachelor's degree in engineering from an accredited program along with demonstration of experience in the field along with passage of the FE and PE Exams adequately assures the protection of the public. AIChE also continues to participate in the consortium of organizations known as Licensing that Works, which closely monitors developments relating to licensing requirements.

The AIChE Licensing and Professional Development Committee continues to follow licensure and to raise the awareness of chemical engineering students on the importance and benefits of licensure. A presentation to several hundred juniors and seniors has become a fixture of the annual student conference. Issues relating to licensing, ethics and other professional development issues are routinely programmed at national meetings.

AIChE is actively continuing to implement projects designed to serve the interests of its more than 38,000 professional and young professional members and over 60,000 total members across 110 countries. Nearly 9,000 are also members of a technical division or forum and 8,500+ are involved in local sections in 44 countries. AIChE also plans to continue to publish articles of special interest to P.E.s or prospective P.E.s in its monthly magazine, *Chemical Engineering Progress*. The AIChE Academy is continuing to develop a PE exam preparation refresher course which may encourage more chemical engineers to take the exam.

AIChE continues to expand its technical content through international conferences, focusing on new technologies like CRISPR, epigenetics, and microbiome among others. In addition, the Institute's annual meeting and Spring Meeting/Global Congress on Process Safety continue to innovate, collectively attracting more than 7,900 attendees worldwide who submit more than 6,500 papers.

AIChE's educational programs continue to grow, with its Academy offering more than 580 education products (courses, webinars, online proceedings, and more) online and in person. Working closely with the Institute's foundation and its Center for Chemical Process Safety (CCPS), AIChE has enriched undergraduate safety education by offering six new Safety in Chemical Engineering Education (SACHE) modules and multiple faculty workshops and student boot camps.

In addition to safety education, the AIChE Foundation's Doing a World of Good Campaign continues to engage thousands of chemical engineers to advance the profession and address societal needs. In 2018, diversity and inclusion initiatives matured. AIChE's Women's Initiative Committee (WIC) celebrated its 20th anniversary with a full-day of annual meeting programming and the 2018 Gala raised approximately \$570,000 to support efforts that expand women's leadership programs, strengthen pre-college STEM education for girls, and improve the retention of women engineers at all stages in their careers. In addition, the foundation supported new programming and receptions for the LGBTQ+ and Allies Initiative and Chemical Engineers with Disabilities Initiative at the 2018 annual meeting.

The RAPID Manufacturing Institute for Process Intensification continues its growth, with 75 member companies and 31 funded projects. Furthering growth in this area, in early 2019 AIChE will launch the Journal of Advanced Manufacturing and Processing, which focuses on cutting-edge, new manufacturing techniques and technologies.

### **American Nuclear Society**

The ANS Professional Engineering Examination Committee (PEEC) has been responsible for encouraging professional licensure of nuclear engineers and maintaining consistent and reasonable standards for the content of the Principles and Practice of Engineering (PE) examination in Nuclear Engineering since 1973. To ensure adequate turnover and effective leadership, the chair of the PEEC is designed as a three-year commitment. Dr. John Bennion is the current chair; the vice-chair is Joshua Vajda, who will assume the chair in mid-June 2019.

### **Encouraging Professional Licensure**

ANS actively encourages professional licensure of nuclear engineers through a number of avenues. In the past, the primary method of communicating with its members on a regular basis was *ANS News*. However, in recent years, new e-services such as broadcast email, online collaboration tools, and the ANS Café blog have offered new approaches for PEEC to promote licensure. PEEC members also prepare related articles to journals such as *Nuclear Plant Journal* to promote professional licensure. PEEC maintains a dedicated webpage ([www.ans.org/pe](http://www.ans.org/pe)) on the ANS website that identifies the advantages of professional engineer (P.E.) licensure and describes the pathway to P.E. licensure. Links to recent articles by nuclear engineering P.E.s are also provided on the website.

The ANS board of directors maintains a supporting position on professional licensure and the NCEES organization:

- ANS provides financial support for one PEEC member to travel to the ANS Student Conference each year. The PEEC representative typically hosts a lunch-and-learn session on licensure, participates in the career fair, and often acts as a judge for student research presentations.
- ANS provides financial support for one PEEC member to attend the annual NCEES Participating Organizations Liaison Council (POLC) meeting.
- ANS established the Nuclear Reference Library at NCEES headquarter by donating 17 text books published by ANS and will provide other reference materials as they become available. In addition, NCEES provides a modest budget to acquire other references that have been recommended by the exam committee.
- PEEC organizes periodic technical sessions at ANS national meetings to promote P.E. licensure. A PEEC-sponsored combined paper/panel session with the title of “Professional Licensure in the Nuclear Sector Matters: It’s NOT the Job You Do It’s How You Do the Job” was held in 2018 ANS Winter Meeting (November 11-15, 2018) at Orlando, Florida.

At the request of the PEEC chair, ANS has made changes to both the membership renewal and conference registration processes to identify P.E.s within the ANS and at national meetings. ANS adopted a PEEC suggestion to acknowledge accomplishment and promote visibility of licensure within ANS by adding a Professional Engineer ribbon that is attached to the name badges of licensed conference attendees. The program has been a great way to illustrate to students and young professionals the number of licensed professionals within ANS.

An ANS staff liaison provides the interface between the working elements at the ANS offices and the PEEC. ANS Director of Publications and Standards Rick Michal assisted the PEEC with the development of a dedicated webpage ([www.ans.org/pe](http://www.ans.org/pe)) specifically for the promotion of nuclear licensure. With his support and direction, ANS helped design and distribute new P.E.-related marketing and promotional materials at the semiannual ANS meetings, the annual ANS Student Conference, and through participation of PEEC members in the North American Young Generation in Nuclear (NA-YGN) conference. The ANS staff liaison also assisted with the publication of the Supplied Reference Handbook (for the nuclear engineering PE exam and was instrumental in transitioning our face-to-face PE examination preparation workshop into a comprehensive online review course. The online exam preparation modules will be available in 2019.

### **Computer-Based Exam**

The nuclear engineering Supplied Reference Handbook, which is the exclusive reference material developed for use during the computer-based testing (CBT) exam, was completed and made available to the public on NCEES webpage in April 2018. The nuclear engineering PE exam then became the first Group II exam to transition to CBT when the exam was offered on Friday, October 19, 2018. Thirty candidates for licensure took this exam,

with a pass rate of 57 percent, which is a little lower than previous paper exams but not surprising given the drastic change in exam format. No problems were reported by any test sites, and both NCEES and the Nuclear exam development committee were pleased with the exam results. NCEES has received some feedback on the nuclear Supplied Reference Handbook since its initial publication, and PEEC is in the process of revising the Supplied Reference Handbook for the next exam administration.

### **Examination Development**

Beginning in fiscal year 2018, NCEES assumed all exam development responsibilities for the PE Nuclear exam. PEEC members attended two meetings at NCEES headquarters on February 22–24 and August 3–4, 2018, to complete the final review of the Supplied Reference Handbook. The existing exam bank of active items, as well as new items in the pretest pool, were reviewed against the handbook to ensure that the handbook contained sufficient material to support all active and pretest items and to eliminate items from the exam bank that had become “trivial” look-up problems as a result of the search capability of the handbook. Approximately 10 percent of the exam bank had to be removed as a result of this review. Additional items were developed, including alternative item types (AITs) that now appear on the CBT PE exams, as well as new items to fill gaps in specification areas considered to be critical needs for future exams. A bad pair analysis was also conducted on the exam bank, and the first nuclear CBT exam was finalized.

### **Professional Activities and Knowledge Study (PAKS)**

A PAKS panel met in Orlando, Florida, in November 2018 to develop the PAKS survey instrument for updating the nuclear PE exam specification. The resulting pilot survey was sent to PEEC members for review and comment in late November 2018. The formal PAKS survey went live in January 2019 and will remain active through mid-April 2019. At least 200 responses are needed to validate the survey. ANS is actively promoting this survey by targeting licensed ANS members with periodic email blasts to encourage them to take the survey. As an incentive to take the survey, ANS is providing a certificate for 1 hour of continuing professional competency credit to everyone who completes the survey. This certificate can be used toward fulfilling continuing education requirements for license renewal. The PAKS survey results will be used to develop new exam specifications for the PE Nuclear exam, which will be presented to the NCEES Committee on Examinations for Professional Engineers (EPE) for approval in October 2019. Once approved, the new exam specifications will take effect after the 2020 exam administration.

ANS thanks NCEES for its support and interest, especially in the matter of ensuring examination quality. We appreciate the NCEES-sponsored opportunities the last several years for Group II exam committee meetings at NCEES. These meetings have offered invaluable access to the exam bank to correct apparent documentation deficiencies and allowed us to successfully complete the transition to CBT on schedule.

### **American Society of Agricultural and Biological Engineers**

#### **ASABE Membership Profile**

ASABE currently has 7,088 members, including 1,879 undergraduate and graduate students. Approximately 33 percent of nonstudent members hold P.E. licensure in one or more states.

#### **Venues for Licensure Discussion**

- ASABE EOPD-414 Winter Item Writing Workshop, February 11–12, 2019, Clemson, South Carolina
- ASABE Annual International Meeting, July 7–11, 2019, Boston, Massachusetts

#### **Global Initiative**

ASABE continues to make strides in its Global Initiative launched in 2014 by holding a second international conference focusing on global water security. In partnership with the Indian Society of Agricultural Engineers, ASABE held an international conference on Global Water Security for Agriculture and Natural Resources, 3–6 October 2018, in Hyderabad, India. Prominent delegates—including farmers, researchers, practitioners, entrepreneurs, and policy makers—from 16 countries came together on a common platform to discuss current and future water security problems, share research, and discuss creative solutions that can be applicable at various scales in different regions.

#### **Standards and Codes**

The ASABE Standards program continues to thrive, thanks to the efforts of dedicated committee members and with the longstanding support of industry partners. The 2018 ASABE Standards CD includes 269 standards with an additional 58 standards projects in progress.

ASABE also coordinates U.S. input on 15 distinct ISO committees. The fifteenth was added in 2018: ISO/TC 34/SC 17, Management systems for food safety. This ISO subcommittee is responsible for the 22000 series of standards and strengthens ties with food engineers and scientists who work in this sector. In total, the 15 ISO committees assigned have jurisdiction over nearly 400 published international standards.

### **Publications and Website**

The ASABE board of trustees approved the position of editor-in-chief for the ASABE journals. A journal-publishing consultant evaluated the status of ASABE journals as part of examining the potential for partnering with a for-profit publisher. That evaluation made it clear that the first steps to be taken were to improve the editorial process. The related publications committee was restructured to incorporate the new editor-in-chief. The board also formed an Editorial Board Oversight Committee (EOC), whose first assignment was to conduct the search for the editor and make a recommendation to the board. The editor reports to EOC, which reports to the board. The successful candidate began as the editor-in-chief in December 2018.

Journal editors continue to meet quarterly to discuss how to improve the peer-review process and reduce the time required for an article to be accepted. Average peer-review time for first decision has significantly decreased from 93 days in August 2016 to 59 days in April 2018, exceeding the best practices goal of 63 days.

ASABE journals now publish accepted versions of manuscripts online as “in press.” This early publication is included in ASABE search engine and allows others to find and cite its content prior to publication of the journal issue. This process is especially helpful in providing exposure for accepted manuscripts in collections that are waiting on other manuscripts for publication. It is expected to increase the opportunity for citation within the impact factor time window.

A special issue of *Resource*, published November/December 2017, focused on aspects of safety and health/ergonomics for users of equipment and facilities, within the industries served by the society and beyond, with focus on new initiatives in this arena. Another special issue of *Resource* magazine (<https://cdn.coverstand.com/23718/569108/3f099ccd416b63c36f5eb42f09392d4b46704138.pdf>) is to be published March/April 2019 and will feature women in ASABE. A wealth of stories and historical perspectives of 19 women as they progress in their careers in ways unique to their situations and their state of the discipline of agricultural and biological engineering will be captured.

The complete redesign of ASABE’s website was completed. The undertaking resulted from an earlier research investment by the Board of Trustees to understand the needs and expectations of website visitors. The overall project included an updated membership database system. Both of these changes enhance the user experience and functionality of the ASABE web presence.

Increased activities within ASABE technical committees would be impossible without the dedication of hundreds of volunteers using electronic communication tools to coordinate all of these many projects. Input from active volunteers helped lead to a recent upgrade to the ASABE Forums platform. The upgrade includes features requested by the key Forums users and is designed to improve workflow for both the volunteers and staff. It is impressive to witness what can be accomplished without face-to-face meetings using tools like the ASABE Forums, video conferencing, and the new website.

### **Member Value**

To understand perceptions of current members, former members and non-members who had past interactions with ASABE, the board of trustees retained McKinley Advisors to conduct research, and subsequently received, a report on ASABE’s value proposition. The ultimate goal of the research was to assess the perceptions, needs, and challenges of key stakeholders in order to inform ASABE’s value proposition and the development of effective recruitment and retention strategies.

The research scope included telephone interviews with members, former members, and never members, and an electronic survey that was developed and distributed to more than 13,000 ASABE contacts, including the aforementioned groups. This resulted in a report summarizing the key findings from the survey and member interviews.

It also presented recommendations and value proposition statements to guide interaction and engagement with key ASABE audiences. With this information in hand, the leadership created a committee to determine how to

best evaluate the McKinley findings, and what the next steps should be to provide the most value to members, all while supporting ASABE strategic goals.

### **Key Society Activities**

The inaugural Davidson Prizes for innovations in areas of agricultural, food, and biological systems engineering were presented in cooperation with the Association of Equipment Manufacturers. Three advanced designs were selected as the best of the AE50 Awards.

ASABE partnered with IEEE on a SmartAg International Symposium to address the opportunities and challenges associated with engineering a more robust and safe food-supply chain. More than 100 attendees participated in the SmartAg symposium, co-hosted by ASABE and IEEE on the campus of Michigan State University in December 2017. The symposium sparked ongoing collaborative efforts toward activities that will advance technology in agriculture. These efforts are ongoing, and a visioning and planning session was held in association with the ASABE Annual International Meeting in Detroit, Michigan.

Building on the strategic planning process initiated under Past Presidents Wolfe and Herron, President-Elect Maury Salz led the board of trustees in a prioritization process to determine specific actions to be initiated. These actions are now underway with the appropriate ASABE committees and councils.

The E-06 Foundation Liaison committee, established last year to ensure that fundraising efforts remain well aligned with society needs and objectives, was pleased to make its first funding commitment from the KEYS fund to provide matching funds to help defray travel costs for undergrads who attend the ASABE Annual International Meeting. With E-06 in place, the Foundation and society encourage members to provide input on activities and initiatives that should be considered for funding.

### **Continuing Education**

ASABE trained more than 2,000 participants in conferences and webinars in 2018. ASABE training complies with International Association for Continuing Education and Training (IACET) standards. Through IACET, ASABE can offer CEUs that qualify under ANSI/IACET standards. ASABE continues to offer a number of free services for takers of the Principles and Practices of Engineering (PE) Agricultural and Biological Engineering exam and continues to provide economic incentives to both first-time and repeat test takers.

Some training occurs through continuing professional development sessions preceding ASABE Annual International Meetings and some in partnership with PDHengineer.com ([asabe.pdhengineer.com](http://asabe.pdhengineer.com)), which offers online courses and webinars designed specifically to help professional engineers expand their knowledge base and meet the continuing education mandates of all state engineering boards.

### **Examinations**

The majority of students and graduates from ABET-accredited Agricultural and Biological Engineering programs sit for the Other Disciplines (OD) module of the NCEES FE examination. Two society members participate on the OD exam development committee. FE OD exams had a 79 percent pass rate for the July–December 2018 administrations. Historically, the FE OD exam has had pass rates ranging from 77 percent to 85 percent for first-time takers. There were 49 individuals self-reporting to be from an Agricultural Engineering program and 94 individuals self-reporting to be from a Biological (non-Biomedical) program for the time period shown above. Pass rates for first-time takers was 82 percent and 84 percent, respectively.

The ASABE EOPD-414 Engineering Licensure committee is responsible for maintaining and enhancing the professionalism of the members of ASABE by providing services related to the PE Agricultural and Biological Engineering exam. The committee has built the last two pencil-and-paper PE exams. It is also actively capturing relevant material from references on its suggested reference list as it assembles a draft Supplied Reference Handbook and is continuing to build up the bank of active exam items. A first version of the handbook is to be available for the spring 2020 PE Agricultural and Biological Engineering exam. The first computer-based offering of the PE Agricultural and Biological Engineering Exam is slated for fall 2021. A practice exam (<https://www.asabe.org/membership/career-resourcespe-licensure/pei.aspx>) is available.

### **Committee Assignments**

The chair of the ASABE Professional Engineering Institute is Carolyn Jones, while Naomi Bernstein chairs the ASABE EOPD-414 Professional Licensure committee and Van Kelley chairs the ASABE EOPD-204 ABET

accreditation committee. ASABE past-president Mary Leigh Wolfe, professor and former head of the Department of Biological Systems Engineering at Virginia Tech, is the ABET president.

### **K-12 STEM Programs**

ASABE reaches out to students and educators throughout the year through staff- and member-led activities. The society produces a variety of printed and digital career-related materials that include flyers, brochures, and special issues of *Resource* magazine that focus on career options in agricultural and biological engineering and technology. ASABE members are encouraged to use these materials in local Engineers Week and other STEM-related events.

In addition, ASABE supports DiscoverE and the National FFA Organization. Through DiscoverE, ASABE participates in Discover Engineering Family Day and the Future City Competition, and supports other programs, including National Engineers Week, Introduce a Girl to Engineering Day, and the Global Marathon. At the annual FFA Expo, ASABE recruits judges for engineering-related competitions. The society also hosts an impressive exhibit that engages ASABE student and professional members with FFA members and their educators and advisors. The exhibit always includes displays, materials, and hands-on activities that illustrate the varied and impactful work carried out by agricultural and biological engineers throughout the world.

### **Licensure Promotion and Encouragement**

The Professional Engineering Institute of ASABE (PEI), a not-for-profit professional and technical institution within ASABE, strives to foster the ideals of the professional engineer and to help the public understand the diverse and unique knowledge base of agricultural and biological engineers (153 PEI members). PEI annually recognizes a licensed engineer who has made outstanding contributions to the engineering profession, the public welfare, and/or humankind with the PEI Professional Engineer of the Year Award. Sessions are held at ASABE Annual International Meetings on topics such as incentivizing and facilitating undergraduates to take the FE exam and a guide to professional licensure. PEI, the Dale Wm. Zimmerman PE Fund of the ASABE Foundation, and the ASABE board of trustees have partnered to provide two incentives for first-time candidates

- Reimbursing PE Agricultural and Biological Engineering exam registration fees up to \$300
- Giving \$150 to takers to be used in any way they see fit

### **American Society of Civil Engineers**

Supporting professional licensure is integral to the American Society of Civil Engineers' (ASCE's) mission to advance civil engineering and protect the public health, safety, and welfare. Some of ASCE's programs to further that mission are described below.

#### **Promoting P.E. licensure**

ASCE strongly supports professional licensure and actively encourages all civil engineers to become licensed. ASCE has numerous programs to support licensure to provide for the public's health, safety, and welfare. Some of these include the following:

#### Educational Webinar

ASCE's webinar to educate students and engineers early in their careers on the importance of licensure and the steps to achieve licensure continues to be available on demand to members through ASCE's web site.

#### Policy Statements

ASCE has many policy statements that address various aspects of licensure and help it to promote licensure. All of ASCE's policy statements can be viewed on our web site at [www.asce.org/public\\_policy\\_statements](http://www.asce.org/public_policy_statements).

#### ASCE's Committee on Licensure

The committee promotes the licensure of civil engineers, collaborates with others involved in professional licensure, and it monitors, supports, and encourages licensure activities.

#### Published Resources

Copies of publications may be requested from [professional@asce.org](mailto:professional@asce.org). They include:

- "Guidance on Licensing and Ethical Responsibilities for Civil Engineers" provides guidance on the licensing process, the importance of licensure, and technical and ethical responsibilities of licensed civil engineers. [www.asce.org/uploadedFiles/Education\\_and\\_Careers/Licensure/Content\\_Pieces/licensing-ethics-brochure.pdf](http://www.asce.org/uploadedFiles/Education_and_Careers/Licensure/Content_Pieces/licensing-ethics-brochure.pdf)

- “Engineers Guide to Pre-Licensure Experience” intended to be a resource for both Engineer Interns and their employers and mentors. The guidelines note that, while not required by licensing boards, the capabilities described are important for career development.  
[www.asce.org/uploadedFiles/Education\\_and\\_Careers/Licensure/Content\\_Pieces/Engineers\\_percent20Guide-flierFINAL.pdf](http://www.asce.org/uploadedFiles/Education_and_Careers/Licensure/Content_Pieces/Engineers_percent20Guide-flierFINAL.pdf)

#### Accreditation

Through its membership in ABET Inc., ASCE supports accreditation of engineering degree programs, a vital component of licensure requirements in many jurisdictions. ASCE is the lead society for all civil engineering, architectural engineering, construction engineering, civil engineering technology, architectural engineering technology, and construction engineering technology programs accredited through ABET. This means that ASCE develops and proposes program criteria for programs in those areas, as well as recruits and coordinates volunteer program evaluators to visit and evaluate each program on a regular schedule.

#### Recognition

ASCE’s Walter LeFevre Award is made annually to a program at an academic institution that offers an ABET accredited civil or related undergraduate engineering program. Recipients are recognized for their actions in promoting licensure, ethics, and professionalism, and ASCE membership is not a consideration for this award. In addition, many of ASCE’s awards require the individuals who are recipients to be licensed.

[www.asce.org/awards](http://www.asce.org/awards)

#### Dream Big Content

After launching *Dream Big: Engineering Our World* onto giant screens across the world in 2017, ASCE shifted its focus in 2018 toward providing DVDs of the film, accompanied by educational toolkits, to every U.S. public school. Meanwhile, ASCE members continued to organize Dream Big events in their communities, including one by the Los Angeles Younger Member Forum which hosted more than 200 Girl Scouts for a red-carpet screening of the film. June 2018 saw the streaming debut of the movie on Netflix.

The film includes specific reference to professional engineers, and a companion web video and lesson plan describe the role of professional licensure in protecting public health, safety and welfare. The educators’ guide also includes information about licensure as part of the section on becoming an engineer. See more and download the educator guide at [www.dreambigfilm.com/education](http://www.dreambigfilm.com/education).

#### **Vision for the future of the civil engineering profession**

##### Civil Engineering Body of Knowledge

Publication of the 3rd edition of ASCE’s *Civil Engineering Body of Knowledge for the 21st Century* (CEBOK) is targeted for May 2019. The CEBOK defines the knowledge, skills and attitudes necessary for entry into the professional practice of civil engineering. It is comprised of outcomes accomplished through formal education, experience, and self-development. The CEBOK establishes standards for education and experience that address the educational reform discussed in *The Vision for Civil Engineering in 2025* and *Achieving the Vision for Civil Engineering in 2025*. It reinforces the need for enhanced educational requirements for the professional practice of civil engineering.

A free electronic copy of the 2nd edition of the Civil Engineering Body of Knowledge for the 21st Century (BOK2) is available at [www.asce.org/civil\\_engineering\\_body\\_of\\_knowledge](http://www.asce.org/civil_engineering_body_of_knowledge). The BOK2 has been discussed at many of the major gatherings of ASCE members since its publication and has served as a useful reference to others developing their own bodies of knowledge, such as NSPE. Many civil engineering university programs within the United States have used elements of the BOK2 to design and implement their undergraduate curricula.

##### Engineer Tomorrow

ASCE’s Engineer Tomorrow initiative seeks to advance the civil engineering profession and protect the public welfare by actively supporting the need for additional education and relevant experience for future entry into practice at the professional level as a civil engineer.

Currently, the educational requirements for professional civil engineers requires an accredited bachelor’s degree in engineering. This is not sufficient to prepare civil engineers for the ever-growing number of technical, environmental, and social factors to address infrastructure challenges. Engineer Tomorrow promotes post-graduate education, mentored experience, and self-development as essential elements in fulfilling the CEBOK. We must start building the civil engineer of tomorrow, today. [www.asce.org/engineer-tomorrow](http://www.asce.org/engineer-tomorrow)

### Civil Engineering Technologist Body of Knowledge

ASCE has engaged in an effort to explore the opportunities and challenges of technologists within the civil engineering field for the past 10 years. ASCE recognizes the Civil Engineering Professional, the Civil Engineering Technologist, and the Civil Engineering Technician as important members of the civil engineering project team, and defines each of those in its Policy Statement 535, available at [www.asce.org/issues-and-advocacy/public-policy/policy-statement-535---defining-the-civil-engineering-team](http://www.asce.org/issues-and-advocacy/public-policy/policy-statement-535---defining-the-civil-engineering-team).

While there is a well-developed civil engineering body of knowledge that defines the knowledge, skills, and attitudes needed for professional civil engineering practice, there is no equivalent description of the body of knowledge that a Civil Engineering Technologist should have to be considered competent in that role. There are formal international agreements that provide information about engineering technologists, but that information was developed for accreditation—not as a foundation for a body of knowledge. In addition, the international agreements have not been found to align well with United States practice and are not sufficiently specific to inform at a body of knowledge level.

ASCE developed the *Civil Engineering Technologist Body of Knowledge* (CET-BoK) to describe functional areas where a civil engineering technologist might work and the skills required to perform in those areas at a professional level. The CET-BoK is expected to be published and available in late summer 2019.

### **Specialty Certification for Civil Engineers**

#### Civil Engineering Certification, Inc.

CEC is a separately incorporated and wholly owned subsidiary of ASCE, was established in August 2004 to support professional certification academies for civil engineering specialties. The American Academy of Water Resources Engineers (AAWRE), the Academy of Geo-Professionals (AGP), and the Academy of Coastal, Ocean, Ports and Navigation Engineers (ACOPNE) were created and are led by CEC.

Diplomate credentials are awarded by these academies to professional engineers who demonstrate fulfillment of the specialized bodies of knowledge in their respective areas of civil engineering. Requirements include licensure as a professional engineer, a post-graduate degree, eight years' experience beyond the first P.E. license, and a commitment to professional development and ethics.

Information on the specialty certifications and their requirements can be found at [www.asce.org/professional\\_certifications](http://www.asce.org/professional_certifications).

#### ASCE Sustainable Infrastructure Certificate Program

The program provides knowledge, tools, and techniques needed to design, build, and manage sustainable projects and to take a leadership role in making our infrastructure sustainable.

All courses in the certificate program are offered online and can be accessed 24 hours a day, 7 days a week, providing flexibility to take the courses at times that are most convenient. Completion of four core courses and at least one elective course is required to earn the Sustainable Infrastructure Certificate. Information on the program is at [www.asce.org/sustainable-infrastructure-certificate-program](http://www.asce.org/sustainable-infrastructure-certificate-program).

#### ASCE Construction Engineering Certificate Program

The program provides knowledge, skills, and techniques needed to take a leadership role in construction project management. It includes asynchronous online video lectures as well as synchronous online interactive sessions with an instructor. Completion of four core courses and two elective courses is required to earn 6.0 CEU's and the Construction Engineering Certificate. Information on the program is included at [www.asce.org/continuing-education/construction-engineering-certificate-program](http://www.asce.org/continuing-education/construction-engineering-certificate-program).

### **Other ASCE Initiatives**

#### Communications and State Legislative Activities

ASCE state government relations staff monitors legislative and regulatory trends in the states and watch for new developments in recent efforts to erode all occupational and professional licensure. ASCE headquarters staff works with local ASCE groups and members to oppose new state legislative proposals that could weaken the contribution of P.E. licensing to the health, safety, and welfare of the public.

### Infrastructure Advocacy

Thirteen state and local infrastructure report cards were released in 2018, each with a set of grades and information on regional infrastructure needs and opportunities. These report cards are already yielding results. For example, in California the 2018 Report Card for California's Surface Transportation Infrastructure helped convince voters to reject a ballot measure repealing the state's gas tax increase.

[www.infrastructurereportcard.org](http://www.infrastructurereportcard.org)

At a May 2018 hearing of the Senate Committee on Environment and Public Works, ASCE President Kristina Swallow testified to urge passage of the Water Resources Development Act, which was approved and enacted in October. ASCE leaders had also advocated support for that act during ASCE's annual fly-in when attendees visit their members of Congress. Their advocacy of the Federal Aviation Administration reauthorization also led to a legislative win when that was signed into law in 2018. [www.asce.org/advocacy](http://www.asce.org/advocacy)

### ASCE Grand Challenge to Civil Engineers and the Industry

ASCE has taken on the challenge to find ways to significantly enhance the performance and value of infrastructure projects over their life cycles by 2025 and to foster the optimization of infrastructure investments for society in its Grand Challenge initiative.

ASCE's Industry Leaders Council (ILC) continues to lead the effort to advance this initiative to help influence major policy changes and infrastructure funding levels, encourage civil engineers to focus on innovation, rethink life cycle costs, build in resilience, adopt performance-based standards, and drive transformational change. Details are at [www.ascegrandchallenge.com](http://www.ascegrandchallenge.com).

March 4, 2019 is the deadline to submit entries for ASCE's fourth Innovation Contest. Developed as part of the ASCE Grand Challenge, it is an avenue to bring together the best ideas, projects, and theories and has already developed a track record of reaching a worldwide audience and attracting industry attention. New for 2019, the Innovation Contest will award the most entrepreneurial submission.

### New Student Competitions

ASCE's National Concrete Canoe Competition continues to draw top performing teams from 19 regional student conferences and for the second year will also include qualified wildcard teams from other well-rounded ASCE student chapters across the country. The competition provides engineering students an opportunity to gain hands-on technical experience and develop teamwork, management, and leadership skills.

In 2019, new competitions will debut at student conferences. These include a Sustainable Solutions Competition providing a fun and creative challenge with both academic and community service components. The Blue Sky Competitions Contest will identify visionary ideas that address long-term engineering challenges. It will also allow ASCE to explore ideas for future student competitions. ASCE's Utility Engineering and Surveying Institute contributes a third new student conference competition—the UESI Surveying Competition, in which students can demonstrate their ability to apply the techniques of land surveying. Finally, a student version of the Innovation Contest is being piloted at two student conference, with the goal of expanding interest in this competition throughout the student population.

Information on ASCE student conferences and competitions can be found at [www.asce.org/student\\_conferences](http://www.asce.org/student_conferences).

### ASCE Participation with NCEES

ASCE maintains formal relationships with NCEES through several ASCE Member liaisons and ASCE Staff Contacts, listed in the Appendix.

### **ASCE Annual Convention**

ASCE's 2019 convention will be held October 9–12, 2019, in Miami, Florida.

## **American Society for Engineering Education**

ASEE is in the midst of a very special year, one that saw ASEE turn 125 in June 2018. This marks our quasicentennial .... a big word for a big year.

ASEE is celebrating this anniversary in a number of ways. At our annual conference in June:

- Monday plenary attendees were whisked back to 1893 as they entered the ballroom.
- To open the plenary session, a professional acting troupe explored ASEE's early years with an engaging, dramatic presentation, and ASEE's mascot Ed jumped out of a massive cake.
- We had a special 125th Anniversary Distinguished Lecture.

In addition, ASEE hosted a 125th Anniversary Gala at the Willard InterContinental Hotel in Washington in October.

While we always evaluate where we are going as a society, a landmark year like this gives us a reason to reflect on our place in history. Continuing a theme from the last several years, this year ASEE continued its efforts to be an inclusive organization, able to embrace all who want to be a part of our community. We'd like to highlight two efforts in particular.

First, at our annual conference, we held six special interest group working sessions focusing on issues relevant to the community across a broad range of topics, with facilitators guiding discussions. Each of the sessions focused on a cohort with unique needs within ASEE: veterans; first-generation, low-income persons; nontenure track persons; the LGBTQ community; persons with disabilities; and graduate students. The outcomes of these sessions are posted on the ASEE website and are under consideration by ASEE's leadership for integration into the activities of the society.

Second, ASEE was the lead society on the CoNECD ("connected" conference) in the spring of 2018. A first-of-its-kind event (and scheduled to run for future years), CoNECD is the only conference with a vision of providing a forum for exploring current research and practices to enhance diversity and inclusion of all underrepresented populations in the engineering and computing professions. Nearly 300 came to the D.C. region for this event, where they shared papers, presentations, and passion.

ASEE launched a Leadership Roundtable this year, tapping an esteemed set of advisors to provide advice and guidance to society leadership. Comprising high-level representatives from each of four key sectors: academe, business, private foundations, and government, the ASEE Leadership Roundtable serves three essential purposes:

- Provide outside perspectives and viewpoints to the ASEE president and board of directors on emerging and current issues important to the society's long-term success.
- Advocate for the mission, vision, and goals of the society.
- Advise and advance the society's programmatic agenda.

We have much to celebrate from this year, beyond turning 125 years old.

## **American Society of Heating Refrigeration and Air-Conditioning Engineers**

In my numerous years as an ASHRAE member, I have had the privilege witnessing the dedication of active volunteers, whose tireless efforts influence the direction of technologies within our industry. When I travel as an ASHRAE course instructor, I am reminded of the longstanding reputation that ASHRAE holds in our industry and I take great pride in assisting a new generation of buildings professionals achieving our mission to advance the arts and sciences of heating, ventilating, air conditioning and refrigerating to serve humanity and promote a sustainable world.

It is my great pleasure to share with you some updates that speak to the outstanding work of our 56,500 members who make up our great society.

### **ASHRAE Receives Partnership Award from UNEP**

In November 2017, ASHRAE received the prestigious Partnership Award from the United Nations Environment Programme's (UN Environment) Ozone Secretariat. This award is presented for ASHRAE's extraordinary commitment and contribution to the progress and achievements of the Montreal Protocol on Substances that Deplete the Ozone Layer, which is celebrating its 30th anniversary. The Partnership Award recognizes the work

of civil society and other international organizations that have played a critical role in the development of the Kigali Amendment and/or implementation of the Montreal Protocol. ASHRAE's partnership with UN Environment has been highly transparent and visible since it began and has been recognized with appreciation by governments around the world as well as the HVACandR industry.

### **Development of UNEP Refrigerants Literacy Course**

Two ASHRAE members collaborated with the United Nations Environment Programme (UNEP) to specifically help developing countries better understand and implement best practices and protocols for refrigerants.

“Refrigerants Literacy” is a 4.5-hour web-based course for UNEP that includes four lessons designed to educate both HVACandR professionals and non-specialists such as policy makers, procurement offices, building owners and facility managers. The course was officially launched during the 39th meeting of the Open-ended Working Group in Bangkok, Thailand, and was developed for UNEP, which is making the course available through its National Ozone Action Units.

UNEP commissioned ASHRAE to develop the course based on ASHRAE's subject matter expertise and knowledge base. The course was designed to help UNEP's National Ozone Units (NOU) monitor the use of refrigerants, set national policies for refrigerant usage and control the emissions of ozone-depleting substances, among other tasks. One important takeaway from this course is the crucial need to move toward low-GWP, low ODP refrigerants to mitigate global climate change. This move to new refrigerants involves some new safety and flammability risks as some of the new refrigerants require very high system operating pressures, and some of the refrigerants are flammable.

### **Redesigned ashrae.org**

In February 2018, ASHRAE launched its completely redesigned and mobile-friendly website. The redesigned site features include

- Upgraded infrastructure
- Improved search functionality
- Modern look and feel
- Mobile/tablet version

### **ASHRAE 365 App**

In May 2018, ASHRAE launched a new app, providing year-round updates on all things ASHRAE. The app offers one-tap access to standards and guidelines, continuing education, industry jobs; fully integrated events section with information on ASHRAE conferences, CRCs, topical conferences, event calendars and virtual conferences; quick access to all of ASHRAE's social media platforms; and many other features.

### **ASHRAE Region XIV/European Office**

In July 2017, ASHRAE announced the formation of a new ASHRAE Region in Europe—Region XIV. With this new region came a new chapter in Ireland, which is vitally important for industry collaboration throughout Europe. Along with the new region, ASHRAE also announced two strategic partnership agreements with the signing of new Memorandums of Understanding (MOU) with high-profile European societies.

- A trilateral agreement with the Chartered Institute of Building Services Engineers (CIBSE), based in the UK
- The Federation of European Heating, Ventilation and Air-Conditioning associations (REHVA), a group of 26 European HVACR Societies with more than 100,000 members
- Both agreements will increase the knowledge transfer from the societies between North America and Europe and outline how the groups will work together more closely and with more defined parameters to continue furthering and promoting the advancements of HVACandR technologies

In July 2018, ASHRAE stationed staff in Brussels to explore and expand our business opportunities in Europe and the Middle East. ASHRAE's objective is to create a cohesive global service network, reinforce innovation, drive membership growth and improve efficiency. This single staff presence is intended to provide members with another means of transmitting insights, lessons and influence back to ASHRAE's headquarters and volunteer leadership to enrich the society's offerings that, in turn, will benefit all members. The European staff presence will

- Provide a personal contact and timely support for engagement opportunities that traditional chapters have come to expect.

- Strengthen relationships with national associations, industry groups and federations already serving the industry in Europe. This collaboration may provide the framework for multidisciplinary events, projects, and publications.
- Engage European members by supporting the vision outlined in ASHRAE’s Strategic Plan to invest in the Global Community through the development of an international collaboration, support ASHRAE members globally, foster community and market activities worldwide.
- Assist United Nations Environment Programme, whose offices are in Europe, by coordinating ASHRAE delivery of energy efficiency, refrigerant management, and building environment guidance to developing countries.

### **New Chapter Formed in South Africa**

In July 2018, ASHRAE chartered and inaugurated a new South Africa chapter in Johannesburg, South Africa.

### **ASHRAE HQ Update**

ASHRAE has purchased a building at 180 Technology Parkway, approximately 10 miles north of its current location in Atlanta, Georgia. The building will be renovated to serve as ASHRAE’s new headquarters. The 1970s-era building was selected from existing building stock with a goal of retrofitting it into a modern, high-performance building.

ASHRAE announced board approval of a \$15.7 million budget to begin a renovation of its new world headquarters building, with the intent of being designed for net-zero energy efficiency. Goals of the renovation project are to

- Upgrade an existing building to operate at a higher sustainability level—anticipating net-zero operation—which may be substantiated through available certification programs such as LEED, Green Globes, WELL Building or Living Building Challenge. For this effort, ASHRAE will work to reduce energy consumption to a level below 22 kbtu/sq.ft./year, with a limit of maximum daytime plug load to 0.5 W/sq.ft.
- Exceed ASHRAE standards where possible and economically justifiable, by including ASHRAE Standards 90.1-2016, 62.1-2016, 55-2017 and 189-2017.
- Be a model for reducing the carbon and environmental impacts of business operations in a cost-effective and replicable way.

ASHRAE will move from its current building by October 2020. For updates on ASHRAE’s new world headquarters building renovations project, visit [ashrae.org/newhq](http://ashrae.org/newhq).

### **2019 ASHRAE Winter Conference and AHR Expo**

The conference took place January 12–16 at the Omni Hotel Atlanta at CNN Center and the Georgia World Congress Center in Atlanta, Georgia, ASHRAE’s headquarter city. More than 2,700 individuals registered for this year’s Winter Conference. The AHR Expo drew more than 65,000 attendees, with 1,809 exhibitors total, 496 international exhibitors from 35 countries and 107 first time exhibitors.

The 2018–19 ASHRAE President Sheila J. Hayter provided society updates and initiatives related to the society theme, “Building Our New Energy Future,” and how ASHRAE is preparing buildings professionals for the challenges and opportunities of designing efficient and grid-responsive buildings within the changing energy sector.

We are developing a presidential webinar called “Efficient Buildings the Future and a More Intelligent Grid.” This webinar will be available in the spring.

### **Expanded Government Outreach Days**

“Days on the Hill” was rebranded to “Government Outreach Days” to make more relevant for different types of government visits and regions of the world. Expanded to federal outreach and local outreach. Meetings with Government Officials are growing.

- Society Year 2016–17: 8 meetings
- Society Year 2017–18: 16 meetings
- Society Year 2018–19: 24 meetings (projected)

## **ASHRAE Collaborating with Others**

### ASHRAE and the American Society of Plumbing Engineers (ASPE) MOU

In October 2018, ASHRAE and the American Society of Plumbing Engineers (ASPE) signed a new Memorandum of Understanding (MOU) formalizing the organizations' relationship.

The water-energy nexus in buildings is becoming more pronounced as we push buildings to perform using integrated building design tools and techniques.

### IOR (Institute of Refrigeration) eAffiliate program

ASHRAE's Executive Committee and the Institute of Refrigeration (IOR) have recently reached an agreement to share resources and work more closely together. As a benefit of this alignment, ASHRAE members can now join the IOR as an eAffiliate member with a special discounted partner membership fee.

### World Refrigeration Day Endorsement

World Refrigeration Day has been established to raise awareness of refrigeration, air conditioning and heat pumps and their role in modern society to a wider audience. Our endorsement of this day strengthens ASHRAE's profile in the refrigeration community.

### ASHRAE Global Cooling Prize Endorsement

ASHRAE has agreed to endorse the Global Cooling Prize. The Global Cooling Prize is rallying a global coalition of leaders to solve the critical climate threat that comes from the growing demand for residential air conditioning. This groundbreaking competition is designed to incentivize the development of a residential cooling solution that will have at least five times less climate impact than today's standard AC units. This technology could prevent up to 100 gigatons (GT) of CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) emissions by 2050 and put the world on a pathway to mitigate up to 0.5°C of global warming by 2100, all while enhancing living standards for people in developing countries. By harnessing the power of innovation, we can provide cooling solutions that enhance people's lives without contributing to runaway climate change.

### Launch of the Lower-GWP Refrigeration and Air Conditioning Innovation Award

ASHRAE and UN Environment recently launched the Lower-GWP Refrigeration and Air Conditioning Innovation Award. The award promotes innovative design, research and practice by recognizing people who have developed or implemented innovative technological concepts applied in developing countries to minimize global warming potential (GWP) through refrigeration and air-conditioning management. Entries are being accepted now through May 15, 2019. Visit [ashrae.org/lowerGWP](http://ashrae.org/lowerGWP) for more details.

### ASHRAE Student Members

More than 10 percent of ASHRAE members are students. Eight student chapters were approved at the 2018 Fall Members Council Meeting and 9 additional student branches were approved at the 2019 ASHRAE Winter Conference. In August 2018, ASHRAE announced funding of 34 society scholarships, totaling \$169,000 for the 2018-19 academic year.

This year in addition to our U.S. applicants, students from six different countries have made submissions, making this a truly global applicant pool for the 2019-2020 scholarships. The Solar Decathlon Race to Zero Challenge is another annual student competition ASHRAE is involved in. ASHRAE has been involved by providing judges and sponsoring social events during the competition.

In 2018, 40 teams from 34 universities competed to design zero energy ready homes that were so energy efficient that their annual energy use can easily be offset with renewable energy. Students participating in The Setty Family Foundation: 2019 Applied Engineering Challenge will design a self-sustaining community for the 5,000 residents of the island of Vieques, Puerto Rico, that includes onsite power generation, water and sewer treatment, and agriculture to make the community self-sustaining.

### **2019–24 ASHRAE Strategic Plan**

ASHRAE is setting ambitious goals in our upcoming strategic plan. The plan will be released in July 2019.

### **2018 International Green Construction Code® Powered by Standard 189.1-2017**

In November 2018, the 2018 International Green Construction Code® (2018 IgCC®) was released. The 2018 IgCC is a joint initiative of the U.S. Green Building Council (USGBC), International Code Council (ICC), ASHRAE and the Illuminating Engineering Society (IES). The 2018 IgCC aligns the technical requirements of

ANSI/ASHRAE/ICC/USGBC/IES 189.1-2017-Standard for the Design of High-Performance Green Buildings Except Low Rise Residential Buildings, with ICC's multi-stakeholder IgCC.

Goals of the updated code are to help governments streamline code development and adoption and improve building industry standardization by integrating the two previously separate guidance documents. As a result, the 2018 IgCC is now a unified code that emphasizes adoption, ease of use and enforcement for building projects.

#### **ASHRAE Stance on Master's Degree for P.E. Registration**

A master's degree has no advantage to engineers practicing in the HVAC design industry unless MBA is desired for advancement to management position. ASHRAE is resoundingly against this proposed change to the requirements for P.E. registration.

#### **Events Where ASHRAE Had a Major Presence**

- 2018 ASHRAE Winter Conference and AHR Expo: January 20–24, 2018—Chicago, Illinois
- 2018 ASHRAE Annual Conference: June 23–27, 2018—Houston, Texas
- 2018 Building Performance Analysis Conference and SimBuild: September 26–28, 2018—Chicago, Illinois
- AHR Expo Mexico: October 2–4, 2018—Mexico City, Mexico
- The Third International Conference on Efficient Building Design: October 4–5, 2018—Beirut, Lebanon
- Chillventa: October 16–18, 2018—Nurnberg, Germany
- Greenbuild: November 16–18, 2018—Chicago, Illinois
- 2019 ASHRAE Winter Conference and AHR Expo: January 12–16, 2019—Atlanta, Georgia

#### **American Society of Mechanical Engineers**

##### **ASME Membership Profile**

ASME currently has 110,000 members, including 30,000 student members. Approximately 33 percent of non-student members in the United States hold PE registration in one or more states. An additional 14 percent have passed the FE exam. An analysis of membership data shows that members with a P.E. license or who had passed the F.E. exam renew their ASME membership at a higher rate (94 percent) than non-P.E.s and F.E.s (80 percent). The average tenure of membership for those with a P.E. license or who have passed the F.E. is 12 years longer than the average ASME member.

#### **Conferences That Are Venues for Licensure Discussions**

- International Mechanical Engineering Education Leadership Summit, March 20-23, 2019 New Orleans, Louisiana
- ASME Annual Meeting, June 1–5, 2019, Orlando, Florida
- International Mechanical Engineering Congress and Exposition (IMECE), November 9–14, 2018, Salt Lake City, Utah
- ASME Student Conferences, known as “EFests,” March 15-17, 2019, Pomona, CA and April 5–7, E. Lansing, Michigan. Over 1,000 students attend each of the EFests, and we urge NCEES to consider exhibiting at these events.

#### **Vision 2030 Project Survey**

From the ASME Vision 2030 project survey involving over 2,500 experienced mechanical engineers and engineering managers in practice in the U.S.:

- 51 percent of the respondents were licensed professional engineers
- 79 percent did not agree that increasing the educational requirements from a bachelor's degree to a master's-or-equivalent requirement for professional engineer registration was needed. (57 percent did not agree and another 22 percent were unsure.)
- The study brought out a perception gap relative to where entry-level mechanical engineers meet, exceed, and fall short of meeting the needs of industry practice among surveyed industry managers, young engineers in industry and university mechanical engineering department heads for Vision 2030.

The following four high-level recommendations have officially become part of the ASME Engineering Education advocacy strategy:

- Richer practice-based engineering experience for students
  - Increase student exposure to practicing engineers and their experiences
  - Increase student design/build project experiences in all four years of their degree program
- New balance of faculty research/practice skills within a program
  - Increase the employment of full-time professor-of-practice positions for professors with significant industry experience.
  - Increase legacy faculty expertise in professional practice
- Greater innovation and creativity
  - Increasing active, discovery-based learning, teaming, open-ended problems and problem formulation
  - Collaboration and Innovation as a fundamental tenet of an engineering education
- Increased curricular flexibility
  - More technical electives and areas of concentration within master-of-engineering undergraduate programs
  - Explicit bridging pathways to professional master's degree studies

Actions during the year to support the ASME Vision 2030 include the following:

- NIST grant award: Details on the eight educational modules that have been developed are shown in the section below on codes and standards.
- Transforming Engineering Culture to Advance Inclusion and Diversity: The NSF-funded TECAID grant has disseminated a logic model and learning modules to the Mechanical Engineering Department Head community. Their website provides information about TECAID's background, people, and outcomes—and provides an online path to TECAID's dissemination products (re: research and practice). The website link is [www.wepan.org/mpage/TECAID](http://www.wepan.org/mpage/TECAID).

### **Licensing That Works Coalition**

As reported at POLC meetings annually since 2008, ASME and several other professional societies remain unconvinced that a master's degree or equivalent (master's or equivalent) as the minimum education requirement for a P.E. license is a remedy to any current or projected public safety concern or is in the best interests of either the public or the profession.

The ASME Board of Governors has issued a policy statement that describes the ASME position. That position has been formally endorsed by the following organizations:

- American Institute of Chemical Engineers (AIChE)
- American Society of Agricultural and Biological Engineers (ASABE)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- American Society of Plumbing Engineers (ASPE)
- Illuminating Engineering Society (IES)
- Institute of Industrial and Systems Engineers (IISE)
- International Society of Automation (ISA)
- Society for Mining, Metallurgy and Exploration Inc. (SME)
- Society of Naval Architects and Marine Engineers (SNAME)
- The Minerals, Metals and Materials Society (TMS).

In addition, the ASEE Engineering Deans Council's Executive Board endorsed the position statement, and IEEE-USA and the American Council of Engineering Companies have taken similar positions against master's or equivalent.

A coalition of these societies, called Licensing That Works, has been formed to support this position and has been active for more than 10 years. The Licensing That Works Coalition is prepared to address the master's-or-equivalent issue jurisdiction-by-jurisdiction if it comes before individual legislatures and/or licensing boards, as was done in February 2015 in Vermont and in February 2008 in Nebraska. In both cases, the Licensing That Works team prevailed.

The Licensing That Works Coalition mobilized a response in New Jersey when it learned of efforts to require a master's degree for all disciplines as the education requirement for licensure. Additional information can be found at the Licensing That Works website ([LicensingThatWorks.org](http://LicensingThatWorks.org)).

It is unlikely that the New Jersey State Board of Professional Engineers and Land Surveyors will endorse this legislation. Its records state, "At the current time the Board was of the general opinion it does not support the need to increase the education requirement for licensure as a professional engineer. The Board has not observed a significant volume of complaints filed against licensees based upon a lack of competency in their academic training. Thus, it does not appear that the consumers in the State of New Jersey are being harmed or damaged as a result of its current education law set forth in N.J.S.A. 45:8-35."

#### Licensure That Works Analysis of Apparent B.S. Credit Decline

In contrast to a depiction of B.S. credit hours linearly declining through 2025, an analysis of the change in credit hours between the 1950s and 2010s on the Licensing That Works site shows that the linear extrapolation of the decline in credit hours to the year 2025 shown in one organization's website is misleading. The Licensing That Works analysis shows that the technical content of the bachelor's degree now is about equal to or greater than the technical content of the bachelor's degree 60 years ago. Most of the decrease in credits is a result of the removal of physical education, ROTC, and basic math and science courses that are now taught in high schools. The extrapolation to 2025 is not supported because the average number of degree credit hours has been constant for several years.

There has been and will likely continue to be an exploding body of engineering knowledge. This has been and will continue to be addressed through curriculum changes and modernization of pedagogical technology through the efforts of the technical societies working cooperatively with EAC/ABET. The outcomes-based assessment of the content of engineering programs used to accredit engineering programs has resulted in better, more focused coursework

#### **NCEES Position Statement (PS) 35**

ASME opposes the content of PS 35 which outlines pathways for implementing master's or equivalent and, in particular, the 2017 change that adds an overly stringent and logically flawed alternative to the formal education requirements for master's or equivalent defined previously by the Model Regulations. Licensing That Works believes that PS 35 should be rescinded completely or amended to read as follows: "One of the goals of NCEES is to advance licensure standards for all professional engineers. Those standards describe the technical and professional competency needed to safeguard the health, safety, and welfare of the public. Those advanced standards are best addressed through the actions of relevant Technical Societies interacting with EAC/ABET to address and change educational outcomes for accrediting specific engineering programs. The NCEES recognizes that future demands for increasing technical and professional skills for those in a specialist area of the engineering profession may result in the need for additional education beyond the bachelor's degree."

#### **Codes and Standards**

In keeping with the results of the ASME Vision 2030 survey calling for richer practice-based engineering experience for students, eight teaching modules have been developed relating to the value and use of codes and standards. Four additional modules are being developed.

All eight modules were completed during the 2017-2018 academic year. Faculty members have been field testing the material that has been developed to enhance and revise it, as needed. After field testing, the modules will be made available to reach and assess impact on as many faculty and students as practical worldwide and to determine the next set of standards and courses for development.

We will share these modules with the FE and PE exam writers so they may consider developing questions in this area. While all the modules have been successfully piloted by the respective faculty developers, the challenge is to provide enough material for a faculty member at another engineering school, who may have limited knowledge of industry standards development, to readily access and easily apply the module in their own course with minimal help.

To address this situation, the ASME Standards Infusion Project Team agreed to have the following materials typically contained in each module:

- Instructor's guide with module learning objectives and outcomes, module format, suggested approach and preparation, class time required, student prerequisite material, and included materials

- ABET criteria for both ME and MET degree programs
- Lecture slides in MS PowerPoint format with notes
- Homework or exam problems with solutions
- ASME standards excerpts within ASME policy of lesser of 25 pages or 10 percent of standard
- Supplementary materials including other documents, drawings, or videos, as applicable

### **Continuing Education**

ASME Education Sector trained more than 5,000 participants in fiscal year 2018. ASME training complies with International Association for Continuing Education and Training (IACET) standards. Through IACET, ASME can offer CEUs that qualify under ANSI/IACET standards. There are over 200 different courses and over 125 eLearning courses.

### **Examinations**

The NCEES Mechanical Engineering FE exam development committee has consistently prepared exams with high psychometric measures. Historically, the FE exam has had pass rates ranging from 77 percent to 85 percent for first-time takers. A total of 10,789 individuals took the exam last year.

A total of 4,395 individuals took one of the three mechanical exams. The pass rates for the exams for first-time takers ranged from 71 percent to 80 percent and for repeat takers, 39 percent to 45 percent.

NCEES has directed that all PE exams be moved to computer-based testing (CBT) as soon as feasible. The PE Mechanical exam development committee is working toward this by continuing to build up our bank of active exam questions and by developing the PE Mechanical Supplied Reference Handbook. The transition to CBT is targeted for 2020.

We have been working with our standards and certification staff to allow more excerpts from ASME standards to be included in the reference documents for both the FE and PE exams.

We reached out to a group of early career engineers to urge them to sign up for the August 2019 cut-score workshops in Clemson.

For the April and October 2018 PE Exams, ASME set up a pilot virtual study group. There were two ASME volunteers who already had P.E. licenses who served as technical facilitators and Managing Director Dave Soukup served as the administrator. The hour-long sessions averaged four individuals for the five weeks it was offered. Five of the individuals let us know that they passed the exam. In addition to the webconferences, individuals could post problems they were having. If a problem could not be solved during the webconference, the solution could be posted later. We are also considering a pilot for the FE exam.

### **Committee Assignments**

ASME Past President Bob Sims and Dave Soukup of the ASME staff are ASME's representatives to the Engineering Change Lab.

### **K-12 STEM Programs**

ASME INSPIRE instructional modules are now used in 1,380 schools across the United States, reaching 107,000 middle and high school students. A scholarship is available to graduating high school students who have completed the INSPIRE modules.

ASME provides 12 \$5,000 scholarships to graduating high school students who were involved in the FIRST Robotics Program for their freshman year in any mechanical engineering undergraduate program. Nominations must come from an ASME Member or Student Member.

### **American Society for Photogrammetry and Remote Sensing**

#### **Photogrammetric Licensure Updates**

##### Texas

The proposed language is well written and includes licensure via comity and a grandfather period for experienced ASPRS-Certified Photogrammetrists. The state Surveying board is going to be combined with the Engineering board. This effort will now be under this combined board. NEW: The state now has the requirement

of an ASPRS Certified Mapping Scientist – Lidar for pre-qualification for firms wanting to qualify for Aerial Lidar projects. This used to be covered under a Certified Photogrammetrist.

### Georgia

The draft language has been completed and is in the review process. The path to licensure follows the NCEES model law and is similar to the processes of South Carolina and Virginia. One of the primary reasons behind this legislation is to combat unauthorized/illegal drone operators. The state does plan to move forward with this legislation. Dr. Tommy Jordan, the new ASPRS president, is following up on this effort.

The Professional Practice Division maintains a licensure status map on the ASPRS website.

### **Certifications**

ASPRS Certification program is fully accredited by the Council of Scientific and Engineering Specialty Boards (CESB). Both the CMS (Certified Mapping Scientist)-UAS certification and the CMS-Lidar certification are going to be submitted for accreditation to the CESB this year. Six of the current certifications are CESB accredited (Professional and Technologist Level): Certified Photogrammetrist, Certified Mapping Scientist-Remote Sensing, Certified Mapping Scientist-GIS/LIS.

Interest in the certification program continues to grow. The society processed more applications last year for Certified Photogrammetrists than in 2017 and as mentioned above, the UAS and Lidar certifications have grown to the point of meeting the number for accreditation.

### **General News**

#### Conferences

The annual conference was co-located this year with the ILMF conference last month in Denver. The conference was a tremendous success. The combined conference had over 1600 attendees, 104 exhibitors (exhibit hall was sold out) and over 200 presentations/posters as well as 14 workshops.

The 21st annual Pecora Remote Sensing Symposium and the 38th International Symposium on Remote Sensing of the Environment will be held in Baltimore Maryland this fall from October 6-11, 2019. Pecora was established by the USGS and NASA in 1970 as a forum to foster the exchange of scientific information and results derived from applications of Earth observing data and to discuss ideas, policies and strategies concerning land remote sensing.

ASPRS is an active participant of the Future of Surveying Forum through NCEES/NSPS. The last meeting was held in Red Wing, Minnesota this past September. The group has developed a marketing brand to help recruit youth into a career in Surveying. Please visit [beasurveyor.com](http://beasurveyor.com) for more information. The outreach is working in the Scouting community. The Surveying Merit Badge had an increase of 23.4 percent from 2017 to 2018.

#### New Board of Directors

Dr. Tommy Jordan is the new president, Jeff Lovin is the president-elect, and Jason Stoker is the newly elected vice president.

#### Threats to Licensure

The Professional Practice Division of ASPRS maintains a list via maps on the PPD section of the ASPRS website. These maps are in the process of being updated as of this past conference.

### **General Notes**

- ASPRS encourages licensure by promoting our certification program. Currently, five states—Florida, North Carolina, Oregon, South Carolina and Virginia—require photogrammetrists to be licensed as surveyors (practicing only in their field of expertise). In Florida, they are linked with Land Surveyors as “Professional Surveyor/Mapper.” The rest are listed as “Registered/Professional Photogrammetric Surveyor” or “Land Surveyor—Photogrammetrist” (VA).
- ASPRS maintains a database of certified professionals (active only), which is available on the website.
- At the past conference, ASPRS offered a workshop directly related to our certifications. These have also been available as online workshops.

- ASPRS offers Geobytes webinars for PDHs as well as accepting credits for industry webinars, conference attendance (ASPRS, State Surveying and Engineering conf., GIS conferences) as well as credits for active roles in the society, such as a Division Director.
- The Professional Practice Division (PPD) of ASPRS deals specifically with licensure. Within the PPD, there is the Photogrammetric Licensure Plan Committee comprised of several past directors and certification/evaluation committee members that advise/review and monitor each process.
- ASPRS actively promotes the NCEES *Model Law* as a basis for licensure.

### **Council of Engineering and Scientific Specialty Boards**

#### **CESB status**

CESB membership includes 17 member boards and two associate member organizations. These boards operate a total of 57 accredited programs.

#### **Accreditation activities**

The primary mission of CESB is to accredit certification programs operated by organizations serving the engineering profession and allied specialties. Accreditation assures the public and employers that certification programs are administered consistent with recognized credentialing practices. Accreditation of certification programs by CESB is a separate action from membership and is available to only member boards.

CESB accredits certification programs in four categories: licensed engineers, graduate engineers, scientific specialties related to engineering, and engineering technicians. Accreditation is granted for periods of two to five years maximum. The 57 accredited certification programs, according to their categories, consist of:

- Licensed engineers 9
- Graduate engineers 1
- Engineering-related specialties 25
- Engineering technicians 22

Certification programs and the accreditation thereof are totally separate from the licensure of professional engineers. Certification of professional engineers under a program accredited by the CESB is attestation to specialty qualifications of the engineers in addition to professional licensure or registration. However, all CESB accredited certification programs for licensed engineers require professional licensure.

CESB remains the only organization offering certification program accreditation specifically tailored to the unique needs of engineering and engineering-related certification programs. Additionally, its operating philosophy—include and improve—continues to increase the quality of the certification programs of its member boards and certification in the profession.

The CESB has a policy requiring extensive annual reporting on all accredited programs. These reports are reviewed by the Accreditations Committee and help ensure that all programs remain in compliance with CESB's accreditation guidelines during the period that accreditation applies.

#### **Member services**

CESB has established a member-only email discussion list to enhance communication among members and provide for a method of exchanging ideas and information. Periodic email newsletters update CESB members on organization activities and updates from the credentialing industry.

A symposium for member boards will be held on March 19 before the official annual meeting, featuring several matters related to the function and future of CESB, as well as an activity on “due process” best practices for certification programs.

CESB has a Certification Program Administrators Committee, organized and modeled on the NCEES Member Board Administrators Committee. The committee is intended to provide a forum for discussion, information and best practice sharing among program administrators. The committee meets the day before the annual meeting of the CESB board of directors. This year the theme of the exchange will be certification trends and using benchmarks for program evaluation.

## **Future members**

Accreditation is voluntary. Therefore, not every organization is willing to subject its certification activities to independent evaluation. However, those that do find the process improves the quality of its operations and the value of its certification program(s). Once accreditation is achieved, it provides a valuable mark of distinction that separates accredited programs from their competitors in the marketplace.

## **California Land Surveyors Association**

This is my first NCEES POLC meeting. I have worked in land surveying and civil engineering since 1985, obtained a California Land Surveyor license in 1996, and passed the NCEES Fundamentals of Engineering (FE) exam in 2008. I am a Senior Transportation Surveyor with the California Department of Transportation (Caltrans) supervising a Right of Way Engineering (boundaries, maps, and deeds) branch in the San Diego office. I continue to serve CLSA as liaison to the California Board for Professional Engineers, Land Surveyors, and Geologists (BPELSG) as I have for several years and serve as the State CLSA Secretary. Information on CLSA, can be found at the following link: [californiasurveyors.org](http://californiasurveyors.org)

## **CLSA Items of Interest and Concern related to NCEES:**

- Low numbers of people pursuing FS and PS/PLS examination
- Outreach to youth (from non-traditional sources) supporting land surveying as a profession
- Support of land surveying education programs
- Participation and presentations by NCEES representatives at CLSA annual conferences
- Publication of updated Fundamentals of Surveying (FS) exam specifications
- Public Land Survey System (PLSS) exam module development (licensure component in PLSS states)

## **CLSA Activities of Interest Since Last POLC meeting**

- CLSA continues to recruit membership in the state association.
- CLSA continues to participate in the NSPS Trig\*Star outreach program.
- CLSA chapters host PLS exam prep/review classes throughout the state.
- CLSA participated with NSPS staff at a booth at the American School Counselors Association (ASCA) conference in Los Angeles, California, July 14–17, 2018. This event led CLSA to attend the state event.
- CLSA staffed a booth at the California School Counselors Association (CASC) conference in Riverside, California, October 18–22, 2018.

## **CLSA Thoughts on and Responses to Threats to Licensure**

CLSA is concerned about unlicensed practice. Members are encouraged to report unlicensed practice, though few actually do so.

CLSA is concerned about deregulation of land surveying in part or in whole. Additional outreach is suggested to raise awareness of land surveying registration as a necessary to public safety.

## **Institute of Electrical and Electronics Engineers–USA**

IEEE-USA, an organizational unit of the Institute of Electrical and Electronics Engineers Inc. (IEEE) created in 1973, advances the public good and promotes the careers and public policy interests of the nearly 200,000 engineering, computing and allied professionals who are U.S. members of the IEEE. IEEE-USA continued its strong support for NCEES in 2018 by providing item writers and subject matter experts for the Fundamentals of Engineering (FE) and Principles and Practices of Engineering (PE) examination programs and volunteer leaders for related NCEES policy committees. Key events and developments of special interest to IEEE's U.S. members include the following:

## **NCEES Annual Meeting**

IEEE-USA President Sandra L. Robinson was unable to attend the 2018 NCEES annual meeting.

## **Participating Organizations Liaison Council (POLC)**

One member of the IEEE-USA Licensure and Registration Committee (LRC) continues to attend the annual POLC meetings. Nikhil Bodhankar, P.E., L.C., LEED AP will represent IEEE-USA at the March 2019 POLC meeting.

### **Examinations for Professional Engineers (EPE) Committee**

- ECE Exam Committee Chair: Steve Barrett
- SWE Exam Committee Chair: David Vickers
- EPE Committee IEEE-USA Representative: Thad Welch

The October 2018 EPE meeting was attended by Glenn Parker (LRC Chair) and January 2019 EPE meetings were attended by IEEE-USA LRC members Glenn Parker and Thad Welch.

### **PE Electrical and Computer Engineering (ECE) Exam**

The ECE exam committee met three times in 2018 to review and update the three ECE PE exam modules.

- Computer Engineering
- Electronics, Controls, and Communications
- Power

The bank of test questions was also updated.

Anchor exams with new exam specifications (approved January 2017 by the NCEES EPE Committee) for all three modules were administered in April 2018. Cut-score workshops for all three modules completed on May 18–19, 2018 in Clemson, South Carolina.

The PE ECE exams are working towards migration to computer-based testing (CBT). Projected launch dates are January 2021 for the Power module, which will be administered in Linear On-the-Fly Testing (LOFT) format, and April 2021 for the Computer and Electronics/Controls/Communications modules, which will be Linear Fixed Form (LFF) format. Reference material for the Power module has already been supplied to the NCEES publications department, and corresponding material for the other two modules will be submitted in 2019, with anticipated publication sometime in 2019. Publishing of the supplied reference manuals in advance of CBT launch will allow the committee to begin receiving examinee feedback for at least the last two paper-and-pencil exam cycles before this document becomes the sole reference that an examinee will have access to under computer-based administration.

### **PE Software Engineering Exam**

The final PE Software Engineering exam will be administered in April 2019.

### **Position on Educational Requirements for Licensure**

IEEE-USA continues to oppose NCEES Position Statement 35, which promotes a future requirement that engineers complete additional engineering coursework beyond that of an accredited baccalaureate-degree educational program to become eligible for licensure. Our position is that ABET/EAC, with significant input from IEEE-USA, will continue to adapt its educational program accreditation criteria to meet the evolving needs for an electrical and computer engineering career path.

### **Education and Outreach Initiatives**

The IEEE-USA Licensure and Registration Committee continues to write and publish articles informing IEEE members and other interested professionals on current issues concerning licensure on an approximately quarterly basis in the online publication [insight.ieeeusa.org/category/careers/licensure-registration](http://insight.ieeeusa.org/category/careers/licensure-registration). As examples, recent articles have addressed topics including use of the title engineer with respect to *Jarlstrom v. Oregon Board*, licensure across state and national borders, and use of the FE exam as an outcomes assessment tool for university engineering programs. The following articles were posted in 2018:

- Occupational Licensure Facing Increased Scrutiny from Federal Government and Courts, 12th Nov. 2018
- NCEES Announces Computer-Based Testing Transition Timetable, 10th May 2018
- New PE Electrical and Computer Exam Specification, 14th Feb 2018

### **Joint Letter to FCC on “Professional Engineer”**

IEEE-USA strongly supported a joint letter to the FCC (Federal Communications Commission) along with National Society of Professional Engineers, Association of Communication Engineers, American Council of Engineering Companies, American Society of Civil Engineers, American Society of Mechanical Engineers, and American Institute of Chemical Engineers, regarding the role of licensed professional engineers in areas regulated by the FCC.

## **IEEE-USA Position Statement—Engineering Licensure**

On 3rd October 2018, IEEE-USA board of directors renewed the position statement on Engineering Licensure. The updated position statement can be found using the following link:  
[ieeusa.org/wp-content/uploads/2018/10/EngineeringLicensure1018.pdf](http://ieeusa.org/wp-content/uploads/2018/10/EngineeringLicensure1018.pdf)

## **Institute of Industrial and Systems Engineers**

IISE is the world's largest professional society dedicated solely to the support of the industrial and systems engineering profession and individuals involved with improving quality and productivity. Founded in 1948, IISE is an international, nonprofit association that provides leadership for the application, education, training, research, and development of industrial engineering. IEs figure out a better way to do things and work in a wide array of professional areas, including management, manufacturing, logistics, health systems, retail, service and ergonomics. They influence policy and implementation issues regarding topics such as sustainability, innovation and Six Sigma. And, like the profession, IEs are rooted in the sciences of engineering, the analysis of systems, and the management of people.

The Institute has roughly 13,000 members comprising students, practicing professionals, academics as well as retired members. Institute members come from over 71 countries throughout the world.

## **New Committee Leadership**

The PE Industrial and Systems exam development committee is chaired Joe Michels, Ph.D., P.E., C.P.L. Dr. Michels has served on the committee for 10 years and was the previous vice co-chair. The vice chair of the committee is Dr. Mimi Pabon, Ph.D., P.E., a committee member who has 19 years of committee service. Dr. Michels is a former university dean and professor who is now in private supply chain management practice. Dr. Pabon is the Dean of Graduate School at the Polytechnic University of Puerto Rico.

## **Committee Meetings**

The PE examination development committee has met twice in 2018, both times at NCEES headquarters in Clemson, South Carolina. The committee continued to work diligently on the development of a computer-based PE reference manual for the PE Industrial and Systems examination. After three years of development, V1.0 has been published for examination candidates to review for the April 2019 examination. As with other committees, this task is currently ongoing. The committee received laudatory comments from the NCEES publications staff on the quality and caliber of the initial reference manual V1.0. The committee's intent is to continue to refine, enrich and enhance the manual in the upcoming year.

## **Computer-Based Testing (CBT) Transition**

The PE Industrial and Systems examination is currently slated for computer-based administration in the 2020 timeframe. The current PE Industrial and Systems exam is administered in the April timeframe. With the transition to CBT, the administration of the examination will transition to the October timeframe.

The April 2019 administration of the PE Industrial and Systems exam will be the last time that the current examination will be administered in the pencil/paper format. NCEES desired to have a rich statistical base to analyze for the initial CBT examination. As such, there will be an 18-month lag, (April 2019–October 2020) between subsequent administrations of the PE Industrial and Systems examination. This information has been disseminated to prospective candidates during the past year, using the IISE webinar, *IISE* magazine and at associated and various conferences attended by PE Industrial and Systems exam committee members.

## **PAKS Study**

A PAKS study was conducted during the 2017-2018 timeframe. A PAKS review meeting was held at NCEES headquarters in Clemson in June 2018 to review the results of the study. The study received over 240 valid responses, allowing for statistical significance of the survey results. The study response timeframe was left open for several months to attain adequate survey responses.

## **New Examination Specification**

A new PE Industrial and Systems examination specification resulted from the PAKS study. With the field of industrial and systems engineering changing rapidly, the existing and current examination specification was modified to address new changes in the discipline. However, no major changes were required because of the PAKS survey results.

### **Examination Committee Participation In Licensing Advocacy**

The IE/PE examination committee held a worldwide webinar, hosted by IISE and attended by approximately 98 individuals in January 2019 to address the value and benefits of professional engineering licensure. The increased interest in ISE engineers becoming licensed is strong. The webinar had participants who were practicing industrial engineers and current students from throughout the United States, Canada and Asia. One of the reasons we believe that this increase in interest in licensure is the fact that many millennial age individuals are very concerned about licenses and certificates as contrasted with degrees.

A four-day intensive PE Industrial and Systems exam review course was conducted by professional staff at IISE headquarters in February 2019. This course is part of the extensive training suite that IISE provides to engineers worldwide. This course can also be taken in an online digital format.

ISE committee members conducted and participated in a panel discussion on professional engineering licensure at the IISE annual conference held in May 2019. Five P.E.s were on a panel, attended by over 36 conference attendees.

The December 2018 edition of the *ISE* magazine had a two-page section addressing the benefits of becoming a licensed industrial engineer. This series was the result of several ISE committee members strong motivation and desire to advocate for professional engineering licensure. The articles had full color pictures of practicing engineers as well as some comments from students at Clemson university who had successfully completed the Fundamentals of Engineering examination.

NCEES public affairs, in conjunction with the licensing committee developed a 7-minute video on the merits and rationale for professional engineering licensure. This video is on YouTube. IISE student chapters have used the video to educate, enrich, enhance, and motivate current ISE students to pursue professional engineering licensure.

The IISE board of directors and the PE Industrial and Systems exam development committee have reviewed and discussed the master's-or-equivalent proposal that is in the NCEES *Model Law* and does not support this measure. IISE feels that the addition of 30 upper division/graduate credits, as a requirement for sitting for the PE exam, will not provide any greater safeguard for public safety, health, or welfare. The practical work experience gained by an engineer during the first four years of involvement in the industrial and systems field is more necessary than additional educational hours for successful completion of the exam and to assure competent practice for the professional engineer candidate in the industrial and systems engineering field of practice.

Examination committee members are active in advocacy of professional engineering licensure. Committee members serve on NSPE national committees and as Future Cities National finals judges, MITRE scout engineers, DISCOVER E day participants, MATHCOUNTS volunteers, as well as holding office in the Puget Sound Chapter of IISE.

Dr. Joe Michels, P.E., C.P.L., the IISE and the PE Industrial and Systems exam development committee chair, is working with NSPE's Project Lead the Way addressing the various issues arising by some jurisdictions on increasing the number of credit hours a candidate must have attained in becoming a licensed professional engineer. IISE is one of several professional engineering societies making financial contributions to NSPE to fight increased academic credit requirements to become a licensed professional engineer.

### **International Society of Automation**

ISA is the primary technical association for professionals involved with the automation, instrumentation and control fields of work. With over 30,000 members in over 80 countries of the world, ISA has five primary core interests of certification, training, standards, publishing and technical conferences. ISA was established in 1945 as the Instrument Society of America and changed the official name at its annual meeting in October of 2008.

ISA promotes and encourages professional engineer registration and license, by participating in the activities of NCEES and supporting the PE Control Systems examination process. The volunteer leadership and professional staff provide funding, people, and efforts to enhance the value and need for the licensure of engineers working in process control and automation. To this end, ISA is active with the Committee on Examinations for Professional Engineers (EPE), Participating Organizations Liaison Council (POLC), state licensure boards, and other professional societies. Also, ISA is a major supporter of National Engineers Week, both on a national level and at

the local section level. This includes recognitions of outstanding engineers, local displays at schools, and assisting with other promotions.

One of the primary areas of interest is the maintenance and improvement of the PE Control Systems exam. The ISA PE Control Systems Exam Committee conducts an annual meeting of practicing engineers to develop new exam items and review the testing procedure and results. The content of each exam is audited for quality purposes and has shown steady improvement over the past four years. The number of engineers taking the PE Control Systems exam has increased each year and continues to gain in popularity among automation professionals. The control systems professional engineer exam is the most popular of the Group II exams offered by NCEES based on the 2018 statistics, with 285 test takers and a 78 percent pass rate.

The most recent PAKS survey was performed in 2016 under the direction and guidance of the EPE Committee of NCEES. ISA provided the funds, personnel, and resources for the survey, which was conducted electronically in May and June of 2016. The results were used to establish a new exam specification for the test content and this specification was approved by the EPE Committee at the 2017 fall meeting in Atlanta. This specification is used to inform prospective examinees of the exam content and is now posted on the NCEES website. The new exam specification will be incorporated into the ISA training materials and will be effective for the first time with the October 2019 exam administration.

The PE Control Systems exam committee conducted an item writing session in Clemson, South Carolina, on March 1–2, 2019, in preparation for the October 2019 administration. The plan calls for similar meetings with new members being enlisted to update the exam and maintain the quality of the final results. Also, the Control Systems exam committee continues to work toward computer-based testing for the control systems professional engineer exam, with a current target date of 2022.

The Professional Development Department (PDD) of ISA has developed and operates a certification effort for those in the automation field. This is the Certified Automation Professional (CAP), which has been accepted as the means to display the qualifications for someone in this area of work. The testing is available at any time during the year using computer-based testing techniques. ISA develops the exams, establishes the qualifications, evaluates the applications, provides training sessions, and awards the certificates. Also, a certification is offered to practicing technicians in the automation field and it is called the Certified Control System Technician (CCST). This is a computer-based test that is administered at various test centers located throughout the country.

ISA offers a broad range of continuing education courses to those in the automation and controls field. These classes are offered at the ISA headquarters in Research Triangle Park, North Carolina, and in regional locations around the country. These training classes are complemented with a wealth of published books, reference materials and technical information exchanges. In addition, there has been an increase in the distance learning classes offered by the society, and this is expected to continue to increase in the future. The training and educational activity is conducted by a segment of ISA known as the ISA Training Institute.

The PE Control Systems exam is supported with various training and educational endeavors by ISA. A study guide has been developed, published, and is being updated to the 6th edition to provide information and practice problems for those preparing for the exam. This study guide will be updated to reflect the new 2018 specification for the exam and will be effective in 2019 as the new sixth edition. The Publications Department of ISA has several books that are designed to provide assistance to prospective registrants. In addition, the three-day PE Control Systems exam review course was offered five times in 2018, with sites in North Carolina, Texas (two), Pennsylvania, and California.

Also, an instructor assisted online training class was developed in 2014 that consists of 20 one-hour prerecorded sessions, which may be viewed by the participant at any time convenient to their schedule. Each offering is over a twelve-week period and includes five teleconference sessions with the instructor and the participants. This is a major step in the distance learning initiative and the course was offered two times in 2018 with good reviews and excellent participation.

The training and education plans for 2019 essentially remain the same as 2018, with five offerings of the three-day instructor led review class (North Carolina, Texas, California, Wisconsin, and Pennsylvania). The online, instructor assisted course is being offered two times in 2019, starting in April and June. This is a 12-week course with five call-in sessions for problem solving and discussions among the participants.

The ISA Executive Board has reviewed and discussed the master's or equivalent proposal that has now been removed from the NCEES *Model Law* and does not support this type of measure. ISA feels that the current educational requirement, combined with the continuing education requirement of professional development hours each year, will provide the necessary safeguard for public safety, health, and welfare. The practical work experience, gained by an engineer during the first four years of involvement in the control systems field, is more necessary than additional educational hours for successful completion of the exam and to assure competent practice for the professional engineer candidate in the control systems engineering field of practice. For that reason, ISA does not favor or encourage individuals to take the professional engineer exam until the four years of experience has been obtained.

### **Michigan Society of Professional Surveyors**

This year we celebrate our 78th annual meeting of the Michigan Society of Professional Surveyors. This is the second year that this event is at the Grand Traverse Resort in Traverse City. Attending is a great way to earn your required CEUs as well as catch up with old friends and make new ones. This is also a great opportunity for our sustaining members/vendors to showcase their products and services in our exhibitor area. There will be social functions on Wednesday and Thursday evenings as usual.

The following list highlights the efforts and accomplishments of our society throughout 2018. This is not a complete summary, and I would encourage all members to take time to review all of the year end reports for a more complete picture of our activities.

### **Association Management Resources (AMR)**

I was happy to announce to all of our members that we signed a three-year contract with AMR. This is for the management of our society and for event planning. This was a collaboration of the executive officers, directors, chapter representatives, and committee chairs. Their dedication to the Survey Profession and this society is very evident. It was a pleasure to work with Executive Director Michelle Batora and Executive Assistant Tammy Zuker.

### **Current Membership**

Batora and Zuker have been working hard to increase our membership. We are able to compare our current membership roster with the LARA list of all Professional Surveyors in Michigan. Our membership makes up 62 percent of all Michigan licensed surveyors that live in Michigan. They are also contacting last year's members that haven't renewed yet. You can review the membership counts within the Membership Committee Report.

### **Legislative Committee Updates**

I assigned a 25-member ad-hoc committee to generate a report regarding the recent changes to PA 132. The completed report was emailed to all members and posted on the MSPS website.

Now that the report is complete and approved by the board, we will enter the second phase and decide if, how, when, why, and what can be done about changing the language or leaving it alone.

We are also working on some potential revisions to Article 20 of the Occupational Code. There are some deficiencies in the Code that need to be addressed. Brett Dodge, Michelle Batora, and I have already met with LARA to offer our help and input regarding the potential changes. The meeting went very well, and I look forward to working with them to ensure the best possible outcome for both sides.

At the request of the state, our Legislative Committee successfully compiled a list of proposed rule changes to the remonumentation program based on member responses and submitted them to LARA.

### **Young Surveyor Council**

Brett Hollandsworth and Mark Jakubik are co-chairs of this committee and are tasked with the following:

- Develop strategies to provide outreach to the younger surveyors within MSPS.
- Work with NSPS to assist in young surveyor outreach.
- Actively engage the Young Surveyors Council in the Trig-Star program..
- Participate in and attend NSPS Events as directed and approved by the MSPS board.
- Provide monthly updates on strategies and activities to MSPS board.
- Provide representation at MSPS board meetings.
- Investigate development and implementation of a mentoring program.

- Organize a Young Members event at the annual meeting, coordinate advertising with the annual meeting Committee.
- Reach out to the other Young Surveyors Council from neighboring states and look for opportunities to meet.

### **Education and Outreach Trig-Star**

This year, I participated in our Trig-Star Program for the first time. It was a great experience and opportunity to introduce the surveying profession to students. The 2018 Trig-Star season resulted in 11 MSPS members contacting 312 high school students. I encourage all of our members to contact Mike Bartolo if they are interested in getting involved.

### **Teaching with Spatial Technology (TwiST)**

Karol Grove successfully put on a TwiST program at Ferris State University and Michigan Tech University that was attended by a number of teachers. TwiST is designed to teach educators (high school math and science teachers) how to incorporate GPS and GIS in the classroom. This program allows the teachers to earn 25 state continuing education clock hours (SCECH's) for virtually no cost.

In addition to covering their hotel costs and a couple of meals, they leave with

- A Garmin GPS handheld receiver and PC cable for downloading data
- ESRI GIS software to utilize in the classroom
- Hand compass
- 2GB thumb drive loaded with actual lesson plans
- Other hard copy training materials
- Knowledge of how to use the lesson plans and tools listed above
- A glimpse into our world as professional surveyors

I ask that members help us in getting the word out about this unique opportunity. Please contact Karol Grove or the Central Office for more information.

### **Reenactment Group**

The MSPS Foundation has a Surveying Reenactment Group that displays antique surveying instruments and equipment to educate and promote surveying to the public by providing hands-on opportunities to understand the past. In 2018, they participated in five events across the state and interacted with hundreds, if not thousands of members of the general public.

In addition to the above activities, we also took part in and/or met with the Michigan Counselors Association, Michigan Construction Career Days, Detroit Gold Cup Boat Races, Boy Scouts of America, The Michigan Career Education Conference, Wilson Talent Center and met with the licensed Real Estate Community.

### **New Survey Program**

The board is aware of a new surveying program that Northwestern Michigan College will be offering in the Spring of 2019. We have been in contact with them to offer any help. Details can be found in this link:

[www.traverseticker.com/news/nmc-marine-center-looks-to-future-by-air-sea-land](http://www.traverseticker.com/news/nmc-marine-center-looks-to-future-by-air-sea-land)

### **2019 MSPS Strategic Planning Retreat**

In January, approximately 20 members attended a two-day Strategic Planning Board Retreat and included officers, directors, and other members. We had a Strategic Planning Consultant this year to help us come up with a transformational, future-oriented plan for the next three years, along with measurable goals to keep us on track. This is a vital part of any professional society.

We also send board members to a "How to Be a Better Board Member" seminar for training purposes.

One of the best ways to stay current with everything MSPS, is to like and follow us on our Facebook page.

Lastly, I would like to extend my sincerest gratitude to the board members, committee chairs and all of the other members who have given their time to help advance our society and Profession. The incoming board is a great one, and I look forward to a successful 2019. It has been a pleasure serving you this past year as your president. I look forward to seeing everyone at the upcoming annual meeting.

### **National Academy of Forensic Engineer**

NAFE was formed to identify and bring together professional engineers having qualifications and expertise as practicing forensic engineers to further their continuing education and promote high standards of professional ethics and excellence of practice. It seeks to improve the practice, elevate the standards, and advance the cause of forensic engineering. Full membership in the Academy is limited to Registered Professional Engineers who are also members of the National Society of Professional Engineers (NSPE). They must also be members in an acceptable grade of a recognized major technical engineering society. NAFE also offers Affiliate grades of membership to those who do not yet qualify for Member grade. NAFE is formally affiliated with NSPE, but is an independent organization incorporated in the State of Virginia.

NAFE and its members are committed to

- Serving the public by advancing the ethical and professional practice of forensic engineering
- Serving the jurisprudential system by certifying individuals having achieved expertise in forensic engineering
- Serving Academy members and furthering the development of forensic engineers through education and the publication of peer-reviewed technical literature

Among the programs and activities of NAFE include the following:

- Twice each year, NAFE members meet in different locations around the US for two full days of Forensic Engineering seminars. Fourteen hours of technical and professional continuing education credits are available, along with the opportunity to network with others in the field of forensic engineering.
- The 2019 NAFE Summer Conference will be held at the Westin Denver Downtown Hotel, Denver, Colorado, on July 26–28, 2019.
- The 2020 NAFE Winter Conference will be held at the San Diego Marriott La Jolla, San Diego, California, on January 10–12, 2020.
- The 2020 NAFE Summer Conference will be held at the Providence Hilton, Providence, Rhode Island, July 31–August 1, 2020.
- NAFE is accredited by the Council of Engineering and Scientific Specialty Boards (CESB). NAFE’s Diplomate Forensic Engineer (DFE) certification program has been reaccredited by the CESB until the end of 2021.
- Since its establishment in 1982, NAFE has published the NAFE Journal, a compilation of papers presented by NAFE members of technical as well as professional issues relating forensic engineering practice. The NAFE Journal is available online by visiting [www.nafe.org](http://www.nafe.org).
- Most NAFE members are licensed as professional engineers in multiple jurisdictions in addition to their state of residence or employment. On occasion, some NAFE members are offered opportunities to conduct forensic investigations and testify in courts in jurisdictions in which they may not be currently licensed. Because of the unique role forensic engineers play within the nation’s judicial system, NAFE advocates for enhanced comity/reciprocity flexibility for forensic engineers performing these functions.
- In July 2018, the NAFE Board approved the following NAFE Position Statement:
  - It is the position of the National Academy of Forensic Engineers (NAFE) that (1) the practice of forensic engineering constitutes the “practice of engineering” under state laws and regulations, and that (2) professional engineers performing forensic engineering services should fully comply with state engineering licensing laws and board rules and regulations.
- For more information about NAFE membership, conferences, publications or other information, please visit [www.nafe.org](http://www.nafe.org).

### **National Council of Structural Engineering Associations**

#### **Mission**

NCSEA advances the practice of structural engineering by representing and strengthening its member organizations.

#### **Vision**

The National Council of Structural Engineers Associations will be recognized as the leading advocate for the practice of structural engineering. NCSEA is the parent organization and coordinating council for 44 state structural engineering associations. The activities of these member organizations are coordinated and represented by NCSEA in activities such as building code development and simplification, continuing education,

licensure, participation in the structural engineering emergency response program, and promotion of the structural engineering profession to students as well as the public-at-large.

NCSEA continues to actively

- Provide practicing engineers access to the development and revision process for codes and standards
- Advocate positive changes in the build code development process
- Convey accurate information to the general public relative to structural engineering-related events
- Educate elected official about the importance of structural engineers in order to gain their support of legislation for SE Licensure, Good Samaritan Acts, mandatory peer review and QBS
- Educate the media to encourage them to seek structural engineers for commentary on issues that pertain to structural engineering.
- Educate other design professionals about the role, value, and importance of structural engineers
- Develop publications to assist engineers with difficult or poorly understood areas of practice
- Advocate for structural engineering degree programs
- Provide meaningful, practical and convenient continuing education opportunities at reasonable prices
- Provide national support for pursuing structural engineer licensure on a state-by-state basis
- Pursue improvement in the level of competence and standard of practice of the structural engineering profession throughout the United States
- Work toward establishing a national Structural Engineering Emergency Response (SEER) network
- Publish *STRUCTURE*, the leading monthly publication for, by and about structural engineers and their practice
- Participate in ASCE's Professional Activities Committee to develop common goals for structural engineers.
- Participate in the development of revisions to the International Building Code (IBC), International Residential Code (IRC) and International Existing Building Code (IEBC)
- Provide online review/refresher courses, specifically designed for the NCEES Structural Engineering (SE) examination, twice a year.

### **NCSEA Licensure Committee**

The committee remains committed to tracking the latest licensure activities, setting meaningful goals, and empowering states to adopt consistent licensure laws that improve mobility. Currently there are 23 states with some form of structural licensure distinction and 13 that have an active SE licensure effort. The committee has set goals to understand the unique set of conditions and stakeholders in each state and to help others recognize the collective importance of holding structural engineers to a higher standard of practice.

In October of 2018, the committee met during the NCSEA Summit in Chicago where each represented state gave a comprehensive report on their progress. The annual meeting provided an excellent forum for the exchange of ideas which fostered many meaningful discussions about current licensure activities. Among the issues discussed was a common definition for "Significant Structures." These structures are generally viewed as those which pose a significant risk to the public due to their size, importance or complexity. NCSEA has been collaborating with ASCE's Structural Engineering Institute (SEI) to develop standards for Significant Structures based on risk categories recognized by the International Building Code and ASCE's published design criteria.

Other issues discussed at the summit included:

- Committee successes in 2018
- Positive trends in Structural Licensure
- Cooperative efforts with ASCE to recognize Structural Licensure

Momentum from the summit helped shape our priorities for 2019. Our first goal is to continue helping states who are pursuing Structural Licensure. The committee has deep knowledge in issues that relate to structural licensure and endeavors to share the objectives of structural licensure with all stakeholders, including outside organizations. Next, we are continuing to monitor on-going opposition to licensure and legislative efforts that aim to weaken existing licensure regulations. Cooperation with ASCE, NSPE and the recently formed Joint Committee of Design Professionals is viewed as extremely important and the committee remains fully committed to remaining engaged in these issues. Finally, we encourage state organizations to become more active with local politicians. Improving our position in public forums requires effective communication with

those outside of the engineering industry, and frequently this effort involves positive interaction with state lawmakers.

The next summit will be in Anaheim, California. The committee continues to work on meaningful articles that provide insightful points for anyone who wants to become a persuasive voice in their community. We will visit Member Organizations that are not pursuing S.E. licensure to discuss efforts moving forward and hope to pick up some new members along the way.

### **Structural Engineering Certification Board (SECB)**

SECB is an independent, national board certification program for structural engineers, originally established by NCSEA, but now operating as an autonomous body. SECB was established because

- Structural engineering is indeed a recognizable profession,
- Competent practice of structural engineering is essential to protection of the public, and
- Generic engineering licensing laws adopted by some states that do not recognize structural engineering as a unique discipline fail to protect the public to fullest extent possible.

Although the SECB licensing requirements reflect the NCEES Model Law Structural Engineer criteria, they also establish more rigorous goals for primary structural engineering education, continued structural practice, and continuing professional development. They are intended eventually to serve as the basis for national uniformity in the qualifications required for SE Licensure.

### **National Society of Professional Engineers**

Being a licensed professional engineer, regardless of your area of practice, means more than just holding a certificate and possessing technical competence. It is a commitment to hold the public health, safety, and welfare above all other considerations. NSPE's more than 80-year history has focused on this core principle, which professional engineers in all disciplines and practice areas hold in common.

Consistent with its mission, as a multitiered (national, state, local) federation representing licensed professional engineers in all disciplines, NSPE is currently proactively addressing a wide range of issues.

In order to expand the base of the licensed engineering community, NSPE is constantly seeking to strengthen long-standing relationships, building on a history of collaboration with NCEES, ABET, and the technical societies to strengthen relationships and increase productivity of advocacy efforts.

Key areas of NSPE focus are summarized below.

### **Efforts to Strengthen the PE License**

Professional engineers in responsible charge of design/build projects provide a layer of protection to the public, using their unique technical expertise to flag potential issues and offer solutions. This is the conclusion that the National Transportation Safety Board came to, after consulting with NSPE during its investigation of the Merrick Valley, Massachusetts, gas pipeline explosion. NTSB issued urgent recommendations including calling for Massachusetts to end licensing exemptions for engineers working in responsible charge at public utilities. It also recommended that NiSource, the parent company of Columbia Gas, revise its engineering plan and constructability review process across all its subsidiaries to ensure that a PE signs and seals all applicable construction documents.

NSPE continues its commitment to strengthen the P.E. license, increase its value and status, and expand the base of the licensed community. With those goals in mind, NSPE has been actively working to find solutions to the challenge of license mobility, both domestically and internationally. NSPE recently received a copy of a letter that was sent from the Armed Forces to the National Governors Association, outlining concerns regarding license mobility for military families. In addition, several states have drafted legislation aimed at streamlining processes for already-licensed individuals who move from one state to another. NSPE is closely monitoring these bills and offering guidance where applicable.

On the international front, NSPE recently submitted a letter to the U.S. Trade Representative detailing Canadian licensing rules that unfairly restrict US P.E.s from practicing in Canadian provinces. The letter prompted a response from Engineers Canada, the organization that sets model regulations and best practices for the country and has led to numerous productive conversations between Engineers Canada and NSPE regarding international

license mobility. Talks are ongoing and both sides remain committed to finding mutually-acceptable solutions. This is just one of many collaborative efforts on the part of NSPE to protect and strengthen the P.E. license.

### **Efforts to Protect the P.E. License**

Attacks against professional licensure continue at both the federal and state levels, taking many forms. These include: legislation requiring review of all forms of licensure, with unreasonable evidentiary burdens to preserve the license from repeal; “consumer choice” legislation allowing unlicensed practice as long as the consumer is informed; “right to earn a living” legislation, allowing any individual to challenge any licensure regulation and recover litigation costs; and other approaches.

NSPE has been vigorously tracking and opposing any efforts to undermine or potentially eliminate the P.E. license occurring at the federal level. For example, NSPE raised objections to the Environmental Protection Agency’s proposed elimination of a requirement that closed vent emissions system modifications be reviewed and sealed by a professional engineer. This would eliminate any resulting protections of public health, safety, and welfare that are present when the PE is involved in the process. In another instance, NSPE submitted testimony in June 2018, along with the American Council of Engineering Companies, to the House Subcommittee on Higher Education and Workforce Development as it investigated the prevalence of occupational licensing, its effects on economic growth and upward mobility, and actions to address those and other issues within states and across state boundaries. The joint NSPE-ACEC letter warned Congress that “if the effort weakens the stringent standards that apply to professional engineers who design solutions to many of society’s most pressing challenges, the balance will be disrupted, and the public interest will be compromised.” NSPE will vigorously advocate for professional engineer licensure at the federal level, as well as promote awareness and recognition of the value of the P.E. license.

NSPE also continues working closely with its state societies to address new or recurring efforts to undermine the value of the P.E. license. One new form of attack NSPE has encountered is a model bill referred to as “Consumer Choice.” The language allows any person to practice any occupation he or she wishes, regardless of whether that person is licensed. It requires anyone unlicensed to disclose that fact; however, bills that have been introduced in various state legislatures allow for different types of disclosures, not all of which require consumer consent.

In summer 2018, NSPE proactively responded to and defeated a Louisiana bill titled the Occupational Licensing Review Act (H.B. 748), which included a provision that prohibited the use of most professional certifications or accreditations within the state. It also contained a provision that presumed that market competition is sufficient to protect consumers. The bill required the governor’s office to review the state’s current licensing regulations and recommend either repealing them or converting them to “less restrictive regulations.” Seeing the harm that could be done to the licensure system and the broader public health, safety, and welfare, NSPE joined forces with other professional associations to amend the legislation and remove this provision.

NSPE also succeeded in Nevada by joining forces with the state society to protect the Nevada Board of Professional Engineers and Land Surveyors from significant statutory changes or consolidation. The state’s Sunset Subcommittee of the Legislative Commission was tasked with reviewing state boards and determining whether any should be terminated, modified, or consolidated with another board. In a joint letter, NSPE and the Nevada Society of Professional Engineers stated, “the Nevada Board of Professional Engineers and Land Surveyors is the mainstay of engineering licensure in the state and is critical to the protection of the public health, safety, and welfare,” and recommended the commission change neither the structure nor the status of the board.

Protecting the P.E. license is of the utmost importance, and NSPE is actively opposing these and similar threats to the P.E. license, especially those provisions that impact public health, safety, and welfare.

### **Responding to New Threats**

While protecting and strengthening the P.E. license is NSPE’s primary legislative focus, the organization keeps a watchful eye for non-licensure-related threats as well. As previously mentioned, NSPE has sought to strengthen qualifications-based selection and ensure inclusion of professional engineers in the development of emerging technologies and pushed back against EPA regulations that lessen the role of PEs.

More recently, however, a company called TransparentBusiness has gotten NSPE’s attention. The company develops tracking software that, when installed on a PC, captures every keystroke, and takes screenshots every three minutes. Not coincidentally, the company has also developed model legislation requiring tracking software

to be installed on computers used by government contractors. Though the legislation is being promoted as a way to reduce overbilling and fraud, it appears to be a brazen attempt by TransparentBusiness to increase its market share via legislation. NSPE has flagged bills in more than 25 states already and is in communication with state leaders and lawmakers about privacy concerns and the potential financial impacts to state governments and taxpayers.

Lastly, NSPE signed onto a friend-of-the-court brief in a case involving Express Oil Change, LLC (hereinafter, EOC, doing business in Mississippi as Tire Engineers), a company that believes its rights were violated by a Mississippi law prohibiting the use of the title “engineer” by individuals and businesses that aren’t licensed to practice engineering.

In February 2018, a federal district court upheld the state actions against EOC, rejecting the free speech and trademark rights claims in the case. Although the company’s website states, “Tire Engineers has tire engineers who are qualified to service customers’ tires,” the district court concluded that the business name Tire Engineers was likely to deceive and mislead consumers to believe that services were provided by a recognized group of qualified engineers working to design tires in the transportation industry.

The NSPE brief argued that the use of the term “tire engineer” to describe auto service mechanics is inherently misleading to the public and that “tire engineer” has a well-established meaning: a professional engineer with specialized knowledge and experience working with tires. For example, the brief says, “Tire Engineers states the reason is ‘to distinguish its automotive services from those offered by competitors.’ But the only distinguishing characteristic that Tire Engineers’ name suggests is that, unlike its competitors, Tire Engineers employs actual professional tire engineers. This suggestion is false.”

NSPE believes that state licensing laws for design professionals are predicated upon and justified to protect the public health, safety, and welfare. The public is best served by the licensure of all qualified individuals within the engineering profession.

On December 4, 2018, the United States Court of Appeals for the 5th Circuit in New Orleans, Louisiana, heard oral arguments in *Express Oil Change, LLC, et al v. Mississippi Board of Licensure for Professional Engineers*. The federal appeals court will now take the matter under consideration. A decision is expected in early Spring 2019.

### **Protecting Public Health and Safety in Emerging Technologies**

NSPE has been working on multiple fronts to promote and protect public safety in the development and implementation of emerging technologies. The society has taken action to give professional engineers a leading voice in ensuring that the same attention to safety and reliability that went into the nation’s built transportation infrastructure is incorporated into the implementation of emerging technologies.

NSPE is collaborating with Congress, the Department of Transportation (NHTSA), state DMVs, state societies, and national organizations to take a comprehensive and informed approach to testing, development, and deployment of emerging technologies, incorporating the key role of the licensed professional engineer on both the state and federal levels.

As the push for automated vehicles continues in industry and government, NSPE is once again urging the US Department of Transportation to give greater attention to public safety, in addition to what NSPE recommended to the DOT in its *Autonomous Vehicles: A Public Regulatory Policy Guide* in March 2018. NSPE also urged the 115th Congress to delay action on the AV START Act (S.1885), lobbying for revisions that provided more stringent safeguards, sufficient accountability, and necessary security measures in deployment of highly automated vehicles.

Additionally, NSPE has successfully advocated for the inclusion of an important provision in the Federal Aviation Administration Reauthorization Act of 2018 to strengthen qualifications-based selection (QBS) requirements for airports. NSPE teamed up with other engineering and construction associations to send a letter to Rep. Bill Schuster (R-PA), the chairman of the House Committee on Transportation and Infrastructure in the 115th Congress, urging the incorporation of the amendment offered by Rep. Bruce Westerman, P.E. (R-AR), and Rep. Daniel Lipinski (D-IL) that would clarify existing rules to ensure that airports follow a uniform QBS process for airport projects that use Airport Improvement Program funds. QBS is vital to the public health, safety, and welfare and ensures the best engineering outcomes.

NSPE has been and will continue to be a leading advocate on the need to place the public health, safety, and welfare first, advocating for licensed professional engineers to play key roles in the development, testing, and safety certification of emerging technologies.

### **Collaborations**

The concern regarding threats to professional licensure extends beyond NSPE, not only to other engineering associations, but also to other professional organizations. Because speaking with a unified voice increases our influence at both the state and federal levels, NSPE has joined several coalitions that share our interest in protecting public health and safety.

Earlier this year, NSPE became a member of the Professional Certification Coalition, which comprises more than 100 member organizations. Founded by the Institute for Credentialing Excellence and the American Society of Association Executives and supported by a legal team from Pillsbury Winthrop Shaw Pittman LLP, the coalition actively engages with state legislatures and outside organizations that seek to undermine certification and licensure. Additionally, NSPE is a member of the Design Professionals Coalition, which is populated by organizations representing design professionals such as architects, landscape architects, and professional engineers. The coalition meets monthly to discuss current threats and propose effective responses.

Finally, NSPE recently joined the Alliance to Advance Professional Standards, a new coalition aimed at proactively countering negative messaging about professional licensure. It will hold its first meeting in early March, during which the first stage of a strategic plan will be formulated, enabling design professions to push out a positive narrative about the benefits of professional licensing.

NSPE also consistently collaborates with state societies, helping to promote and defend licensure. Recently, NSPE partnered with the Ohio society in an effort to defeat a state bill that allows the state to use the “least restrictive” regulation to protect public health and safety. NSPE submitted a letter to the Ohio Senate president, the committee chairman, and the bill’s Senate sponsor detailing the benefits of engineering licensure. NSPE will continue working with state societies and others to protect the P.E. license.

### **National Society of Professional Surveyors**

#### **Licensing Issues**

Challenges to licensing continue to grow. NSPS participated in 2018 in the opposition to a proposal by the Governor of South Dakota to establish an agreement among a group of states that would have allowed licensed professionals in those states to practice in other states for up to a year without obtaining a license there. The proposed agreement was defeated.

A number of other actions have taken place recently:

- In Arkansas information (including survey plats) was sold to a vendor, and it is our understanding that actions have taken place in other jurisdictions. As this matter is being addressed in Arkansas, NSPS was asked “what is the shelf-life of a survey plat?,” as if it is a commodity that can be reused over time without establishing whether the information on the plat is still valid.
- In Mississippi, two bills have been introduced in the Legislature attempting to revise the definition of the practice of surveying by adding the following language: “The practice of surveying does not include work products that represent only generalized location of a feature, object or boundary upon which the public would not reasonably rely as the precise location of that feature, object or boundary, or the transcription of previously created data into any presentation format by manual or electronic means, and the maintenance thereof, provide that the data is clearly not intended to indicate the authoritative location of property boundaries, the precise definition of the shape or contour of the earth, or the precise location of fixed works of humans.”
- In West Virginia, a bill was recently introduced that would allow anyone to perform professional services (including Surveying) without a license as long as the provider presents a “non-licensed disclosure” statement to make clients aware that the provider is not a licensed professional. No report on status at this point.
- In New Mexico an initiative has been brought forth to rescind the requirement of four-year degree in surveying in order achieve licensure.
- In Louisiana, a court decision utilized an ancient cartographic map, instead of relying on BLM surveys/practices in its decision in a recent case related to oil rights in a lake. NSPS has submitted an

Amicus Brief in this case. In Virginia, a recent ruling allows adjoining jurisdictions to establish their boundaries utilizing a GIS map instead of surveying the boundaries.

- The licensing board in Kentucky has decided to drop the requirement to pass a state-specific exam in order to be licensed as a surveyor in the state. Discussion among surveying societies across the country are concerned about the impact of this action.

Specialty Licensing—NSPS continues to monitor and participate in discussions on both the state and national levels regarding whether state licensing laws and procurement laws, as currently written, are appropriate for addressing the use of technological advancements for land data collection, processing, interpreting, and dissemination. This issues comes up repeatedly in legislation that is impacted by the use of geospatial data concerning whether there should be specialty categories in licensure (if licenses should be required at all) instead of the long-established overarching definitions. The topic is under discussion on many levels, including within NCEES where a group is discussing the concept of licensing divisions (categories).

### **Promotions**

New or updated brochures that are available under the PR/Brochures tab on the NSPS website include

- Should You Hire a Land Surveyor?
- Professional Surveying
- Certified Survey Technician

An updated version of the Be A Surveyor ([www.beasurveyor.com](http://www.beasurveyor.com)) website can also be found under the Resources tab on the NSPS website. NSPS has agreed with the North Carolina Society of Surveyors Foundation to manage the site henceforth.

NSPS is the American distributor for the Get Kids into Survey posters created by Elaine Ball (UK). Four posters have been completed and are available. They include Smart Cities, Forestry, Civil Engineering, and Mining. Posters can be ordered through [www.getkidsintosurvey.com](http://www.getkidsintosurvey.com). Contact Trish Milburn ([trisha.milburn@nsp.us.com](mailto:trisha.milburn@nsp.us.com)) in the NSPS office with questions. This project has continued to grow with Surveyors across the country utilizing them, and a new Crime Scene poster will be coming soon.

In 2020, NSPS will attend the American School Counselors Association annual conference in Boston and encourages the respective state societies to participate in the conferences of ASCA's state affiliates.

NSPS has also begun discussions with Alison Watson (also in England) regarding a joint effort in the United State for a surveying-related program known as Class of Your Own (COYO). A U.S. pilot program was recently completed at Hamilton Heights School in Indiana.

### **Outreach/Collaboration**

After months of planning and coordination, NSPS hosted the Sino-American International Surveying competition November 13–16. The event featured a field exercise and a written question/answer exercise. Reports on the competition were provided in NSPS News and Views and on the NSPS Radio Hour. NSPS thanks Surveyors from across the U.S. who volunteered to participate.

National Geospatial Advisory Committee—This entity, sponsored by the Department of the Interior, is another important opportunity for the voice of the professional surveying community to be heard. Gary Thompson, an NSPS past president, previously admirably served two terms on the NGAC as a NSPS nominee. After a required absence, Gary is now eligible for reappointment. Preparations are underway for a NSPS nomination for Gary's appointment.

NSPS continues discussions with UNAVCO regarding common interests and collaboration. UNAVCO is a non-profit university-governed consortium which facilitates geoscience research and education using geodesy. UNAVCO was created in 1984 in response to the challenge of applying GPS to the geosciences. At that time it was called the University NAVSTAR Consortium (UNAVCO).

NSPS has agreed to an Association Partnership Agreement with the Association of Unmanned Vehicle Systems International (AUVSI) to engage in mutually beneficial promotional exchanges and engage in mutually agreed upon lobbying efforts.

NSPS has entered into an agreement with the Association of Professional Pipeline Surveyors (APPS) regarding how the two organizations might work together to contribute to, and promote, the fledgling Pipeline Surveying Certification program recently established by APPS.

NSPS has entered into affiliation with the Pan American Association of Surveying and Topographic Professionals (APPT).

NSPS continues its quarterly meetings with the National Geodetic Survey (NGS) for discussions on collaboration and information on common interests; such as the 2022 datum change and how state legislation will need to be revised in some states to indicate compliance with the 2022 datum.

### **Society of Fire Protection Engineers**

The Society of Fire Protection Engineers (SFPE) would like to thank the dedicated staff at NCEES for all its hard work in supporting the PE Fire Protection exam and the fire protection engineering profession. Over the last year, SFPE completed the following activities that promoted licensure and the profession of fire protection engineering:

#### **Industry Core Competencies**

SFPE is dedicated to defining a fire protection engineer on a global level, as indicated in last year's report too. At the end of 2018, SFPE published the *Recommended Minimum Technical Core Competencies for the Practice of Fire Protection Engineering*. The endeavor was no simple task. However, it clearly parallels the specification used for the examination for fire protection engineering within NCEES. The committees turn next to the implementation plan which will be comprised of education and resources so that licensing, credentialing, and certifications tied to fire protection engineering can have a similar content base.

Most people can agree on general concepts that need to be learned such as fire dynamics, human behavior in fire, egress and life safety, fire suppression, and risk management to name a handful. Yet large portions of the world have no regulation on someone indicating that they are a fire protection engineer (or similar title).

This document can guide agencies that are looking at implementing licensing criteria as to the minimum information a fire protection engineer would need to qualify. It may also be a guide to an engineer who has interdisciplinary practices and would like to round out their knowledge base to practice as a fire protection engineer.

#### **Cut Score Session for the 2018 Exam**

SFPE and its volunteers worked closely with NCEES to update the PE Fire Protection exam specifications for the 2018 exam. At the end of November 2018, the cut score session was hosted in order to score the exam under the new specification. The accolades following the meeting were great as the volunteers did a wonderful job on site.

#### **Advocacy Efforts**

Ensuring that people practicing fire protection engineering are actually qualified in the field is a task that involves many partner organizations and much vigilance. Advocacy and alliance efforts are regularly part of this effort. In order to focus on areas beyond the United States where licensing is common, SFPE has started conversations and partnerships with many organizations. CFPA and IFSS in Europe are just a couple of the groups where alliances are being strengthened to assist in creating a competency baseline, which in turn will lead to improved fire protection engineering in the field. In addition, this outreach will help local authorities to understand what is needed in order to be a fire protection engineering so that qualified people are the ones performing the work.

#### **PE Fire Protection Exam**

SFPE continues to promote the PE Fire Protection exam. In 2018, the society sponsored a web-based preparation course for the exam. Approximately 100 students participated in this course. The course review materials were updated to coordinate with the most current SFPE Handbook that is a primary reference for the exam too. Additionally, in 2018, seven SFPE chapters sponsored PE exam item-writing sessions across the nation. One of these sessions was held just prior to the SFPE annual conference, giving the effort an international presence.

### **Higher Education Participation**

SFPE continues to remain active with higher education for fire protection engineering. They serve as part of the Industry Advisory Boards for Oklahoma State University and Eastern Kentucky University fire protection engineering technology programs. In addition, SFPE continues to work with ABET, and this year participated with the reaccreditation of the Oklahoma State University fire protection engineering technology program. The committee also completed updates to the BS and MS model curricula for fire protection engineering as well as created a model for a B.S. in fire protection engineering technology. The efforts of the higher education group truly want to produce competent fire protection engineers and often encourage the next generation to pursue their license in the field.

### **Structural Engineering Institute of ASCE**

SEI is very concerned about the threats to licensure couched in efforts to deregulate occupations and improve the economy. The licensure of engineers including structural engineers is not an effort to regulate employment in the field so as to improve salaries for a few. The structural engineering license was originally created to protect the life, health and safety of the public. The requirements of education, experience and examination for licensure were formulated to prevent inadequately trained individuals from providing designs for the built environment as safe, when, in fact, they did not meet the standards of safety used by the engineering profession.

SEI is participating with NCSEA, CASE, and SECB through the Structural Engineering Licensure Coalition (SELC) in preparing a report on the future of structural engineering licensure wherein the threats are investigated and addressed. This report will investigate the adequacy and need for S.E. licensure as compared to other modes of credentialing; compare engineering licensure to other professions like doctors and accountants; investigate the methods of credentialing used in other parts of the world; and address trends in education, globalization, employment, etc. SEI has been working with the same group to develop a definition of “Significant Structures,” which is out for approval by the constituent members.

SEI is also participating with other professions in attending monthly meetings of the Joint Design Professions Coalition to address threats to licensure. Other organizations include NCARB, AIA, NSPE, ASLA and ASCE. Some of these organizations have a good grasp on the threats in many jurisdictions. A strategy on addressing these threats is being formulated.

SEI Professional Activities Committee currently has several policy statements in progress, several of which will address licensing issues related to structural engineering.

### **Society for Mining, Metallurgy, and Exploration**

The SME Professional Engineers Exam Committee prepares problems for the Mining and Mineral Processing (M/MP) engineering exam for licensure as a Professional Engineer (PE).

### **Historical PE Mining and Mineral Processing Examination Statistics**

Figure 1 shows the number of PE Mining and Mineral Processing examinees for years 1990 to 2018. For years 2014 through 2018, total examinee count equaled 95, 71, 62, 76 and 82, respectively.

The 2018 count of 82 examinees reflects the continuing mining industry recovery. The 29-year average count of test takers equals 76. The five-year goal is to build to 100 examinees. The overall passing percentage (including first time examinees and repeat test takers) for the PE Mining and Mineral Processing exam for the years 2014 to 2018 is 83 percent, 68 percent, 58 percent, 58 percent and 55 percent respectively. The 2018 overall pass rate of 55 percent compares to the 29-year average of 57 percent.

In the United States, 24 engineering disciplines have PE exams. The PE Software exam is being discontinued due to an insufficient number of examinees. For the last exam cycle, 15,339 examinees took PE exams. There were 8,356 total examinees who passed (first time and repeat) for an overall pass rate of 54 percent.

The PE Mining and Mineral Processing exam performs at the median of examination results.

### **PE Mining and Mineral Processing Exam Preparation**

The exam consists of 80 multiple-choice questions and is offered once each year in October. The committee assembles the exam each year and sends problems and solutions to NCEES. NCEES formats the exam and transmits it to the individual jurisdictions for administration. The next M/MP PE Exam will take place October 26, 2019.

As of January 1, 2019, two exams have been partially or completely assembled, 2019 and 2020. The October 2019 exam has been pilot-tested and is in the final stage before printing in the summer of 2019. The October 2020 exam will be pilot-tested by PE Exam Committee members at the NCEES-funded March 15–16, 2019, PE exam development meeting at the NCEES headquarters in Clemson, South Carolina.

With the conversion to computer-based testing, the October 2021 M/MP exam will be assembled by computer using the computerized bank of questions in the fall/spring of 2020-2021. The October 2021 exam will be the first computer-based PE Mining and Mineral Processing exam, whereby a computer populates the exam from the bank of questions written by the PE committee.

In 2018, 61 problems were added to the bank bringing the total questions available to 715. The bank has grown from 341 in 2009, doubling in eight years due to the hard and efficient work of the 60-member PE Mining and Mineral Processing exam development committee. The committee has 48 problems in process to add to the bank in first half of 2019.

Two face-to-face PE Mining and Mineral Processing exam committee meetings occurred in Clemson: March 16–17, 2018, with 15 SME P.E.s attending, and August 17–18, 2018, with 14 SME P.E.s attending. Problems were written and reviewed, examinations were assembled, pilot-tested, and work applied to the single reference. The Clemson meeting schedule for 2019 is as follows:

- February 24, 2019, annual meeting and workshop, Denver
- March 15–16, 2019, exam development workshop, Clemson
- August 16–17, 2019, exam development workshop, Clemson

The main goal for the 2019 meetings will be to prepare the bank of questions for computerization. Committee members will identify and improve question quality and convert the existing multiple-choice questions to an alternative form. Currently, existing questions are all multiple choice. A computerized test will allow for alternative-form questions, such as drag and drop, hot spot on a chart, multiple answer to multiple choice, fill in the bank, and slider. The goal is to have the bank contain approximately 20 percent alternative-form questions.

### **PE Review Course**

The PE exam review course for 2018 was held in Denver in September 2018 under the direction of Dr. Raja Ramani. Forty-seven engineers completed the review course. Attendance for the last nine years.

Feedback from the participants continues to be excellent. The next review course is scheduled for late September 2019 in St. Louis, Missouri.

### **Mining Reference Handbook**

The Mining Reference Handbook is being revised. This effort is required by a decision of the state boards of licensing to have just one reference that can be brought into the PE testing center for the computer-based exam in October 2021. Heather Dougherty, P.E., and Dr. Andrew P. Schissler, P.E., are co-editors. Activities in 2018 included updating existing chapters, final edits on the new chapter on mining methods, and releasing draft chapters to technical reviewers. The objective is to have the second edition of the Mining Reference Handbook for sale at the 2020 SME Annual Conference and Expo. The draft chapters are 85 percent completed, and SME Publishing is beginning the compilation of the book for publication.

### **Professional Engineering Licensure Advocacy**

The PE Mining and Mineral Processing exam committee continued participation in the Licensing That Works (LTW) committee. This committee is composed of engineering societies representing more than half of all U.S. engineers. The LTW committee opposes an initiative to increase the educational credential for becoming a Professional Engineer from a bachelor's degree to master's degree or equivalent education (master's or equivalent). The American Society of Civil Engineers, the main proponent of master's or equivalent, continues to seek states willing to entertain master's or equivalent bills in their respective legislatures. LTW had continued success in 2018 to keep the master's or equivalent initiative from being implemented in several states. LTW has successfully opposed these state-level bills.

SME continues to work with P.E.s in California to possibly place a bill in the legislature for the state to license engineers in the Mining and Mineral Processing area of specialization. California is one of five states or territories that do not offer a Mining P.E. license.

SME submitted a letter to the Federal Communications Commission requesting that it properly use the term “Professional Engineer” denoting licensure in policy statements.

Liane George, P.E., is chair for 2019 to 2020, and William P. Balaz Jr., P.E. is vice chair for 2019 to 2020. The SME Committee stands at 60. Membership increases systematically through the SME Division nominating process or recommendation received from NCEES.

#### **The Minerals, Metals, and Materials Society**

In October 2018, the PE Metallurgical and Materials exam written to the new exam specifications (2015) performed well according to exam indicators. There were 56 exam takers.

TMS offered the fourth PE Metallurgical and Materials exam review course in August 2018 in downtown Pittsburgh, Pennsylvania. Fourteen people attended the course and five instructors collaborated to present the teachings in a three-and-a-half-day course. The course will be offered again in summer 2019 in Pittsburgh.

The PE Metallurgical and Materials exam development committee) continues to meet to write, review, and edit questions for future exams. The committee met twice in 2018 in conjunction with the TMS Annual Meeting and Materials Science and Technology 2018. Members also met at NCEES headquarters once for concentrated work on the supplied reference that will be implemented when the exam moves to a computer-based format. This reference will be an electronic reference resource for exam takers.

The TMS Professional Registration Committee continues its participation in the Licensing That Works Coalition of engineering societies that opposes increasing the educational requirements for Professional Engineering licensure beyond a four-year ABET-EAC accredited bachelor’s degree. The TMS Professional Registration Committee supports maintaining the current four-year degree requirement.

TMS continued its collaboration with four professional societies, Association for Iron and Steel (AIST), the American Ceramic Society (ACerS), ASM International, and NACE, the Corrosion Society, at the Materials Science and Technology 2018 Conference (MSandT’18) held in October in Columbus, Ohio.

The Accreditation Committee continues as the lead ABET member society in the accreditation of university metallurgical and materials engineering programs. The committee assigned program evaluators to 15 university programs in fall 2018.

#### **National Council of Examiners for Engineering and Surveying**

NCEES President James Purcell, P.E., gave the following highlights on current NCEES activities:

Thank you for these informative updates about your society activities. I’d now like to give you some highlights of current NCEES activities. As you’re aware, NCEES is made up of the licensing boards that regulate the engineering and surveying professions in the United States. Since its founding in 1920, NCEES has been committed to advancing licensure for engineers and surveyors in order to safeguard the health, safety, and welfare of the public.

Each of you has a copy of our 2018 annual report, which highlights our activities for the past year. You also have a copy of *Squared*, the official NCEES source for engineering and surveying licensure statistics. This issue features data from the 2017–18 fiscal year, including the number of U.S. licensees and the pass rates and volumes for NCEES exams.

#### **Computer-Based Testing (CBT) Update**

The move to computer-based testing for our licensing exams continues to be a major initiative for NCEES. The Fundamentals of Engineering (FE) and Fundamentals of Surveying (FS) exams moved to CBT in 2014, and the Principles and Practice of Surveying (PS) followed in 2016.

NCEES added two Principles and Practice of Engineering (PE) exams to the CBT lineup in 2018: the PE Chemical and PE Nuclear exams. Like the FE, FS, and PS, the PE Chemical exam is offered year-round at Pearson VUE test centers. The PE Nuclear exam is the first of our single-day exams. These are smaller-volume exams that are offered at Pearson VUE test centers one day each year. The first administration of the computer-based PE Nuclear exam was held in October 2018. Scheduling, administration, and scoring of this exam worked

as planned. Results were released with our other CBT results five days later, instead of 8 to 10 weeks for pencil-and-paper administrations.

This year, we are adding two more PE exams to CBT: the PE Petroleum and PE Environmental exams. The PE Environmental exam will be offered year-round, and the PE Petroleum exam will be offered as a single-day exam in October.

The conversion schedule for the remaining PE exams is posted on the NCEES website at [ncees.org/cbt](http://ncees.org/cbt).

### **Exam Updates**

In addition to focusing on the CBT transition, NCEES conducted professional activities and knowledge studies for several exams to keep them relevant to current professional practice. These studies, more commonly known as PAKS, are used to update exam specifications. NCEES updated specifications for the PE Fire Protection exam in October 2018 and for the PS exam in January 2019. We will introduce updated specs for the PE Control Systems exam in October. NCEES is currently completing PAKS for the FE and FS exams, which will eventually result in updated specifications for these exams.

NCEES will give the final administration of the PE Software exam in April 2019. The board of directors decided to discontinue the exam, which was introduced in 2013, due to low examinee volume. Low examinee volume can affect exam validity and reliability. It also affects cost. For example, standard-setting panels of subject-matter experts must be convened after every administration to set the passing score. Despite efforts to promote the exam, less than 100 people took it. Therefore, in accordance with our exam development policies, NCEES decided to discontinue the exam.

### **NCEES Committee/Task Forces Updates**

NCEES has 12 standing committees and two task forces that addressing a range of issues this year.

The Advisory Committee on Council Activities has been charged with reviewing the Bylaws language concerning the Participating Organizations Liaison Council. It will recommend any changes that could enhance the value to NCEES and POLC members and bring about more effective communication among the organizations.

The Committee on Education is considering if degrees from programs accredited by ABET's Engineering Technology Accreditation Commission should be included as a path to attaining Model Law Engineer status or to meeting the NCEES Engineering Education Standard. At the August annual meeting, the committee will recommend revisions to NCEES policies as appropriate. The MLE status indicates to state licensing boards that a P.E.'s education, experience, and exams meet NCEES Model Law requirements. In many states, this status expedites the comity licensure process. The NCEES Engineering Education Standard is used with our Credentials Evaluations service, which boards use to evaluate the education of licensure candidates with degrees that are not ABET accredited. These are typically degree programs outside the United States.

The Committee on Member Board Administrators is working with NCEES staff to develop a communications plan and long-term strategy to promote actions to increase licensure mobility and reduce barriers to licensure. As we approach our centennial celebration in 2020, NCEES remains committed to the fostering cooperation among member boards and facilitating mobility.

The full reports of NCEES committees and task forces will be published this summer in the Action Items and Conference Reports.

### **International Activity**

NCEES continues to see an increase in international activity. It now has agreements with 16 foreign entities to administer NCEES exams in nine countries. In December 2017, NCEES began offering the FS and PS exams in Saudi Arabia through an agreement with the Saudi Council of Engineers. This is our first international agreement for NCEES surveying exams.

NCEES is continuing its work with the International Engineering Alliance, an umbrella organization representing 28 countries. IEA coordinates seven international agreements for engineering education and mobility. NCEES represents the United States in two of these agreements: International Professional Engineers Agreement and Asia-Pacific Economic Cooperation Engineers Agreement.

NCEES Past President Patty Mamola, P.E., is serving her second term as deputy chair of APEC, and CEO Emeritus Jerry Carter is currently serving as deputy chair of IPEA. As officers of the two mobility agreements, they serve on the IEA Executive Committee. They are both looking to extend their leadership role with the International Engineering Alliance. Past President Mamola is running for chair of APEC, and CEO Emeritus Carter is running for reelection as deputy chair of IPEA. Members will vote at the IEA meeting in June.

NCEES will continue to support member boards as they evaluate international candidates as well as engineers and surveyors who are licensed in the United States and want to practice overseas. Making it easier to practice around the world promotes the exchange of ideas and accelerates advances within the professions.

### **Engineering/Surveying Education Awards**

NCEES outreach initiatives are an important part of the organization's efforts to promote licensure. Two of these outreach initiatives are our engineering and surveying education awards.

The Engineering Education Award recognizes engineering programs that encourage collaboration between college students and professional engineers. Since 2009, NCEES has awarded more than \$650,000 in prize money to engineering programs across the United States.

The University of North Carolina/North Carolina State University Joint Department of Biomedical Engineering won the \$25,000 grand prize for 2018, and seven other winners received \$10,000 awards. For the 2018 cycle, NCEES focused on increasing participation and encouraging a broader spectrum of engineering disciplines to enter. In addition to pursuing new marketing opportunities, NCEES introduced new award amounts, increased the number of winners, and introduced new award categories. The award program received 97 entries for the 2018 cycle, up from 21 entries in 2017.

NCEES has offered the Surveying Education Award since 2016. This award recognizes surveying and geomatics programs that best reflect the NCEES mission to advance licensure for surveyors in order to safeguard the health, safety, and welfare of the public. The University of Akron Surveying and Mapping program received the \$25,000 grand prize for 2018. Three additional programs received \$15,000 awards, and three received \$10,000 awards to assist with their efforts to promote licensure.

### **Task Forces**

This year, two NCEES task forces are addressing issues that are key to meeting our mission to advance licensure for engineers and surveyors.

#### Public Outreach Task Force

The Public Outreach Task Force is addressing issues related to promoting licensure. The group is developing plans for additional outreach to

- Universities to increase the number of FE and FS examinees,
- K-12 students to promote careers in engineering and surveying and to focus on the importance of licensure,
- Practitioners who have retired from exempt fields, such as government and industry, to promote the importance of licensure in the next chapter of their careers, and
- Underrepresented populations to promote licensure and careers in engineering and surveying.

Advancing licensure for engineers and surveyors is our mission, and effective communication is key to this effort. Through this task force, we want to develop ways to communicate better and provide NCEES member boards the tools to do so.

#### Surveying Exam Module Task Force

The second task force is working to ensure that NCEES surveying exams continue to meet the needs of the profession.

At the 2017 annual meeting, NCEES delegates voted to authorize the development of one or more depth modules to supplement the Principles and Practice of Surveying exam. The proposed modules relate to the U.S. Public Land Survey System and/or the Metes and Bounds survey system.

The Surveying Exam Module Task Force is in the second year of this long-range project. It is evaluating the need for restructuring surveying licensing exams and considering a multidivisional approach. The task force is

considering the impact on mobility and public protection. It is determining the exam volumes that would be needed to sustain psychometric viability and economic feasibility. The task force is also looking at the effect on state-specific surveying exams, including whether boards will still need them if the NCEES exam is split into modules.

### **Continuing Professional Competency (CPC) Registry**

NCEES is committed to improving licensure mobility. One of the organization's newest programs to support mobility is the Continuing Professional Competency Registry. NCEES launched this registry in 2016 to make it easier for people licensed in multiple states to keep track of and meet the various CPC requirements. This free web-based service provides a place for professional engineers and surveyors to track continuing education credits and store supporting documentation.

As of February 1, more than 10,000 account holders are tracking CPC credits in the registry and more than 133,000 CPC courses have been entered in the system.

### **NCEES Board's Leadership Visit Project**

Increasing effective participation of members and member boards to improve national engagement is an important strategic goal for NCEES.

To this end, NCEES launched a board visitation program in September 2016. The board of directors extended invitations to all member boards to have a member of NCEES leadership or senior staff attend a member board meeting at no cost to the board. The goal is to improve communication, increase awareness of the range of services and leadership opportunities within the organization, and address questions.

Since the program started, members of the board of directors, the chief executive officer, and the chief operating officer have visited 41 boards across the country. The program is continuing in 2019, with eight additional visits currently scheduled.

### **Threats to Public Protection**

Today, there is an increasing threat to the existence of licensure. With our mission to advance licensure for engineers and surveyors, this is a concern for NCEES and its member boards.

The primary purpose of licensure when it was enacted in the United States in the 19th and 20th centuries was to protect the public. U.S. licensing for surveying began in 1891 when California passed legislation to regulate surveyors. Engineering followed in 1907 when Wyoming began requiring licensure for both engineers and surveyors. In a number of states, licensure owes its existence to disaster. In 1937, Texas created its engineering licensure board after a school in New London exploded due to a natural gas leak attributed to faulty engineering. Almost 300 students and teachers died in the explosion. Similar incidents in California, Massachusetts, and a number of other states also spurred the call for licensure of engineers and surveyors.

Today, about 30 percent of U.S. workers are required to be licensed. A major problem with the public perception of occupational licensure is that the licensed professions vary greatly. While many people agree that licensing doctors or engineers protects the public, they may be less sure about the benefits of licensing florists or tour guides. The growing public concern that, in some cases, licensing protects the occupation—rather than the public—has resulted in a growing threat to all licensed occupations and professions, including engineering and surveying.

Threats to public protection take different forms. Some states are facing legislation known as a “Right to Engage in a Law Occupation Act,” which seeks to use the least restrictive means of regulating occupations. This could run the spectrum of licensure, certification, registration, or nothing. Other states face licensure threats related to

- Sunset reviews
- Increased oversight of licensing boards
- Attempts to consolidate, weaken, or eliminate licensing boards
- Executive orders
- Compacts

Communicating engineering and surveying licensure's role of public protection is key to combatting these threats. In short, we need to communicate that each occupation and profession should be judged on its own

merits—not all have the same impact on the public. Engineering and surveying licensure directly affect—and protects—public welfare.

A common perception of licensure is that creates barriers to entry that protect current practitioners, not the public. This does not just refer to initial licensure but also to comity licensure. Some common criticisms are that fees are too high, applications are too cumbersome, the approval process is too long, or the different requirements among states is too burdensome. These are areas that NCEES and its member boards are working together to evaluate and address.

But public perception is key. Educating people and politicians on the importance of licensure to public protection is something we all can do. Using studies by those outside our professions is particularly effective for making this case.

For example, the National Transportation Safety Board issued a safety recommendation report in November 2018 following a series of natural gas explosions and fires in Massachusetts. The report stressed the importance of using a professional engineer and recommended ending P.E. licensing exemptions for public utility work.

In another example, the Council of State Governments studied the longstanding argument that licensure impedes economic growth. The group studied states that license electricians and massage therapists versus ones that do not. It found no evidence that licensure had any effect on economic growth.

Research from the University of Chicago in 2017 showed that licensing requirements reduced the racial wage gap between white and black men by 43 percent and the gender wage gap between women and white men by 36 percent.

An advisory by leading risk management firm Victor O. Schinnerer and Company reached a conclusion that NCEES and its member boards would certainly agree with: That the licensing and regulation of design professionals are in the best interest of citizens. Its management advisory on the licensing of design professionals says, “The consequences of improper practice can be severe in effect and extensive in scope. Unlike injury or harm that can be easily remedied through a monetary payment, the aftermath of improper design often cannot be so easily remedied. Preventing negligent or willful acts by design professionals through an active registration board assists in precluding irreparable harm to clients, users, the state, and the environment.”

NCEES member boards are focused on making sure that their requirements and processes are not creating unnecessary barriers to the professions of engineering and surveying. Besides looking at individual laws and rules, it is vital that we educate the public, not just each other, on how licensure benefits society.

### **Exam Volunteers**

NCEES depends on our volunteers to fulfill our mission of advancing licensure for engineers and surveyors. Developing and maintaining our exams require the work of more than a thousand licensed professionals who volunteer their time and expertise. We need a cross-section of professionals in terms of geography, years of experience, and practice areas. One demographic that we could especially use more participation from is young professionals—those who have been licensed less than five years. I ask you to encourage the young professionals in your organization to help us with this important work. It’s a unique opportunity to strengthen their profession while meeting colleagues from a variety of professional backgrounds and earning professional development hours.

It’s really simple to volunteer. Just click on the [Volunteer](#) link at the bottom left of our homepage, [ncees.org](http://ncees.org). Exams are at the heart of our work at NCEES, and we need your members to keep our exam development program strong.

### **Questions/Discussion**

That concludes my update on the activities going on with NCEES. Are there any items that you would like to discuss?

### **Anticipated Directions for NCEES**

At this time, I call on NCEES President-Elect Dean Ringle, P.E., P.S., to address the group.

Thank you, President Purcell. There are two areas I believe need to be our focus during the upcoming year: Threats to Public Protection and the Promotion of the Engineering and Surveying Licensure Professions.

We have seen examples around the country where professional licensure is being attacked. For the professional engineer and professional surveyor, the real concern is not about attacking our professions but in the purpose of licensure in the first place—the protection of the public. The State Boards of registration for professional engineers and surveyors around our country were created to protect the health, safety and welfare of the general public. If our line of defense fails, the public can and will suffer. Our licensure must continue to properly protect the public.

We also must inspire the next generations to be professional engineers and professional surveyors. Our legacy will be the professionals following in our footsteps. We can look around and see the leadership around the POLC table is not very diverse, and yet our professions have come a long way toward diversity in gender and ethnicity. We must inspire the next generation to be the leaders within our professions and get them involved in representing us at these types of meetings. At the same time, we need to continually support efforts to promote professional engineering and surveying among the second and third generations after us.

At this time, I will turn the meeting back to President Purcell.

### **Adjournment**

With no new business to be brought before the group, President Purcell thanked all attendees for their participation. The next POLC meeting will be held March 13, 2020, in the Atlanta area.