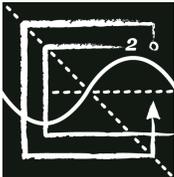


# MINUTES OF THE PARTICIPATING ORGANIZATIONS LIAISON COUNCIL

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March 2017



**NCEES**



**Participating Organizations Liaison Council**  
*Daniel Turner, Ph.D., P.E., P.L.S., Chair*

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The annual meeting of the Participating Organizations Liaison Council (POLC) was held Saturday, March 4, 2017, at the Hyatt Regency in Phoenix, Arizona. NCEES President Daniel Turner, Ph.D., P.E., P.L.S., presided.

The following were present from NCEES:

- Daniel Turner, Ph.D., P.E., P.L.S., NCEES President
- Patrick Tami, P.L.S., NCEES President-Elect
- Jerry Carter, NCEES Chief Executive Officer
- Davy McDowell, P.E., Chief Operating Officer
- Sherrie Saunders, CAP-OM, CEO Executive Assistant

Societies were represented as follows:

- Joseph Cramer, Ph.D., P.E.—American Institute of Chemical Engineers (AIChE)
- Zhegang Ma, Ph.D., P.E.—American Nuclear Society (ANS)
- Curtis Weller, Ph.D., P.E.—American Society of Agricultural and Biological Engineers (ASABE)
- Monte Phillips, Ph.D., P.E.—American Society of Civil Engineers (ASCE)
- Kent Lall, Ph.D., P.E.—American Society for Engineering Education (ASEE)
- Richard Hayter, Ph.D., P.E.—American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
- Robert Luna, P.E.—American Society of Mechanical Engineers (ASME)
- David Soukup, P.E.—ASME
- Frank Taylor, P.S.—American Society for Photogrammetry and Remote Sensing (ASPRS)
- Larry Curtis—Council of Engineering and Scientific Specialty Boards (CESB)
- Howard Brunner, P.L.S.—California Land Surveyors Association (CLSA)
- Michael Behnke, P.E.—Institute of Electrical and Electronics Engineers—USA (IEEE-USA)
- Gerald Wilbanks, P.E.—International Society of Automation (ISA)
- James Hollandsworth, P.E., P.S.—Michigan Society of Professional Surveyors (MSPS)
- Alan Kirkpatrick, P.E.—National Council of Structural Engineering Associations (NCSEA)
- Mark Golden—National Society of Professional Engineers (NSPE)
- Kodi Jean Verhalen, P.E.—NSPE
- William Coleman, P.L.S.—National Society of Professional Surveyors (NSPS)
- Chris Jelenewicz, P.E.—Society of Fire Protection Engineers (SFPE)
- David Chapman, P.E.—Society of Naval Architects and Marine Engineers (SNAME)
- Gregg Brandow, Ph.D., P.E., S.E.—Structural Engineering Institute of ASCE (SEI)
- Randall Bernhardt, S.E.—SEI
- Chester Van Tyne, Ph.D., P.E.—The Minerals, Metals and Materials Society (TMS)

Four societies could not attend. They are as follows:

- AAEES—American Academy of Environmental Engineers and Scientists
- ACEC—American Council of Engineering Companies
- AEI—Architectural Engineering Institute of ASCE
- IISE—Institute of Industrial and Systems Engineers

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

POLC member organizations submitted the following reports.

#### **American Council of Engineering Companies (ACEC)**

The NCEES Principles and Practice of Engineering (PE) chemical exam development committee continues to write, review, edit, and approve new questions for inclusion on future exams. The PE Chemical exam is the first Group I committee transitioning to computer-based testing (CBT)—in January 2018. The final pencil-and-paper exam will be in April 2017. The test results with CBT based on psychometric measures are expected to be commensurate with the pencil-and-paper format. A task force of the PE Chemical exam committee prepared a draft reference handbook. The 600-page draft is available for review and comment by AIChE members and other interested engineers when accessed through the NCEES website (or through the AIChE PE webpage). The supplied-reference handbook contains all of the necessary information for candidates to take the CBT exam. A final PDF version will replace the draft version in July 2017.

After the transition to CBT is complete, the committee will shift focus to developing a new professional activities and knowledge study (PAKS). This requires input from many chemical engineers, and the AIChE membership will again be solicited. The number of new items on pencil-and-paper exams was increased to increase the equate-level exam items in each specification area to support CBT. The committee continues to grow its volunteer base, and several first-time volunteers were present at each of the most recent meetings.

During 2016, the Fundamentals of Engineering (FE) chemical engineering team continued to prepare questions for the FE exam. In addition to preparing the traditional four-option multiple-choice questions for the test bank, the team also submitted several alternative item types. An alternative item type is any test item that is not a four-option multiple-choice question and includes drag-and-drop, multiple-correct, and various select-the-correct-area type questions. The full team meets twice a year, usually in January and August, for a two-day meeting. NCEES continues to support a skeleton crew, including the chair and two other members attending off-cycle meetings usually held in April and May. This system has been effective in keeping everyone on the committee informed about changes and has been sufficient in creating new material while keeping overhead sufficiently low. The trend for the number of chemical engineering FE examinees continues to increase from the low numbers encountered during the initial implementation of the CBT exam. The team strongly encourages the continued implementation of programs encouraging chemical engineers to obtain engineering licensure, and AIChE continues to promote this to its student members.

The PE Chemical committee is well represented on the Career and Educational Operating Council of AIChE, and service on both the FE and PE Chemical committees is considered to be service to AIChE. In addition, AIChE closely follows the work of the NCEES Committee on Examinations for Professional Engineers (EPE) and sends at least one AIChE representative to each EPE meeting. AIChE also has a representative attend the NCEES annual meeting.

AIChE continues to oppose including in the NCEES *Model Law* a requirement for a master's-or-equivalent to be a prerequisite for initial P.E. licensure. AIChE and 10 other professional societies remain active in a group named Licensing that Works. The group believes that the master's-or-equivalent requirement is unnecessary to protect the public's health, safety, and welfare and is actively opposing the implementation of this requirement by any licensing jurisdiction. Within the last year this initiative was successfully opposed in Vermont, but efforts are underway to adopt it in New Jersey. Although NCEES removed the requirement from the *Model Law* in 2014, it has subsequently adopted a position statement that additional education should be required to take the PE exam. AIChE and the Licensing that Works group still strongly believe that individuals currently meeting licensing requirements possess the technical breadth, flexibility, and intellectual skills to adequately protect the public and be in responsible charge of engineering. This is in agreement with the general consensus of the working group that prepared AIChE's recently adopted Body of Knowledge to the effect that graduating B.S.-degreed chemical engineers were well qualified technically for initial assignments but that various forms of continuing education throughout a career were a necessity and dependent upon specific career paths. The Licensing that Works consortium will continue to closely monitor developments related to the requirements to take the PE exam.

In a related activity, the body-of-knowledge (BOK) document for chemical engineers which was recently adopted by AIChE is currently being used as a guide for development or restructuring of the education programs offered through the AIChE Academy, its continuing professional education entity. The intent is still to align the course offerings with the needs of chemical engineers throughout their careers. A special technical session was held at

AIChE's 2016 annual meeting to better familiarize the membership with the BOK and how it can best be used. The document is available online at [www.aiche.org/resources/publications/bodyknowledge](http://www.aiche.org/resources/publications/bodyknowledge).

AIChE created the Licensing and Professional Development Committee (LPDC) under CEOC in 2014. One major goal is to find effective ways to inform college seniors about licensure and encourage them to take the FE exam while in school or shortly after graduation. This is part of a larger effort to expand services for its member P.E.s. Currently, AIChE offers annual programming on the FE exam at the AIChE annual student meeting, which is attended by about 1,500 undergraduate chemical engineering students. Similar presentations were made at student regional conferences and these presentations should be continued. LPDC also includes the Credentialing and Licensure Subcommittee charged with promoting greater awareness of the licensing process within AIChE, advocating for the value of taking the FE exam and working to see that licensure is incorporated into the EAC/ABET criteria for chemical engineering programs. Another function will be to enhance the AIChE licensure webpage to promote licensure and serve licensed members.

In 2016, AIChE created a task force to identify initiatives to encourage licensure among existing members and to encourage licensed chemical engineers to become members. One focus is to give licensure more prestige. The initial efforts of this task force have now been handed off to the LPDC (and the permanent subcommittee of LPDC referenced above). AIChE is actively continuing to implement projects designed to serve the interests of its more than 30,000 professional and 52,000 total members worldwide and also plans to continue to publish articles of special interest to P.E.s or prospective P.E.s in its membership journal, *Chemical Engineering Progress*.

AIChE continues to expand the number of specialty conferences and virtual offerings (webinars, online proceedings, online blogs, etc.) that it offers both alone and in partnership with other professional societies and government entities such as AAPS, SPE, A&WMA, DECHEMA, FDA, and AES. It is also increasingly reaching out to the international chemical engineering community and expanding the global reach of AIChE by extending offerings throughout the world. The creation of new international local sections and significant increases in the number of international student chapters are part of this continuing global growth. With members now in over 105 countries, AIChE anticipates that international outreach will continue to accelerate in the future.

The AIChE Institute for Sustainability is launching a program that offers engineers and other qualified professionals a specialized credential in sustainability. The institute is well positioned to establish a baseline definition of what sustainability entails and will prepare a BOK in the field of sustainability. Additionally, in 2016 the AIChE Center for Process Safety began to offer a professional credential-certifying competency in chemical process safety. Through AIChE's "Doing a World of Good" campaign and in conjunction with the Center for Chemical Process Safety (CCPS), industry and academia have come together to launch a major global initiative to improve and accelerate process safety education at the university level. As a part of this, AIChE has updated and redesigned the Safety and Chemical Engineering Education (SACHE) certificate program with new interactive learning modules and a dynamic curriculum that makes incorporating process safety education easy, engaging, and free.

### **American Nuclear Society**

The American Nuclear Society (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 Nuclear PE examination since 1973. To ensure adequate turnover and effective leadership, the chair of PEEC is designed as a three-year commitment. Dr. John Bennion took over as chair of PEEC after Dr. Rebecca Steinman's term ended at the ANS annual meeting in June 2016.

### **Encouraging professional licensure**

ANS visibly 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 avenues for PEEC to promote licensure.

ANS's board of directors maintains a supporting position on professional licensure. ANS provides financial support for one PEEC member to travel to the ANS Student Conference each year. This person typically hosts a lunch-and-learn session on licensure, participates in the career fair, and sometimes acts as a judge for student research. This year, PEEC will again sponsor a session at the ANS Student Conference, which will be held at the University of Pittsburgh April 6–9, 2017. Additionally, ANS had invested in changes to both the membership

and conference registration process to allow us to collect data on P.E.s within ANS. ANS sponsored a PEEC effort to acknowledge accomplishment and promote visibility of licensure within ANS by adding a Professional Engineer ribbon to licensed conference attendees name badges. The pilot program was well received and continues to be a great way to illustrate to students and young professionals the number of licensed professionals within ANS.

An ANS staff liaison is appointed to provide communication between the working elements at ANS offices and the PEEC. The ANS liaison has assisted the committee in the development of a dedicated webpage ([www.ans.org/pe](http://www.ans.org/pe)) specifically for the promotion of nuclear licensure. Additionally, ANS has helped design and distribute new PE-related marketing materials during the semiannual ANS meetings and through participation of PEEC members in the North American Young Generation in Nuclear (NA-YGN) conference. The staff liaison is also assisting with the publication of the reference handbook for the nuclear PE exam and in transitioning our face-to-face PE examination preparation workshop into an online review course.

### **Computer-based testing**

The PE Nuclear exam will be the first Group II exam to transition to computer-based testing (CBT). The committee is on track for the first CBT exam to be held in October 2018. A dedicated subgroup of PEEC members has worked diligently to develop the single-reference Nuclear Handbook, which is currently more than 90 percent complete. NCEES has scheduled a working meeting on April 20–22, 2017, to finalize the handbook, which is intended to be supplied as an optional reference for the October 2017 Nuclear PE exam. The examinee feedback will determine the final edits to the single reference. The final handbook will be submitted to NCEES in January 2018 for public distribution in March 2018.

ANS thanks the NCEES for its support and interest, especially in the matter of ensuring examination quality. We appreciate the NCEES-sponsored opportunities in the last several years for Group II exam committee meetings at NCEES. These meetings have offered invaluable access to the bank to correct apparent documentation deficiencies and allowed us to make significant progress in the transition to CBT. We would also like to acknowledge Dr. Charles Sparrow for his long and outstanding service as the past POLC representative.

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

### **President's report**

“Partnerships” was a major focus of my presidential year. Partnerships include members working together within ASABE, as well as ASABE partnering with other organizations to achieve common goals and address common challenges. Over the past year, ASABE members and staff have worked together, and with outside partners, to pursue our mission and continue to benefit the people of the world. There is not enough room in this report to mention all of ASABE’s activities and accomplishments during the past year. The sample selected illustrates the broad range of society activities.

### Society outreach

We have been deeply engaged in outreach activities throughout the past year, carefully selecting events and partnerships that provide valuable opportunities to advance society goals. ASABE was a sponsor of the Smithsonian Institution’s Food History Gala in Washington, D.C. A few months later, ASABE leadership participated in a Congressional Visits Day organized by the Tri-Societies (agronomy, crop science, and soil science) that focused on funding for the USDA Agriculture and Food Research Initiative (AFRI) and featured a presentation by Sonny Ramaswamy, director of the USDA National Institute for Food and Agriculture.

We followed up by participating in the 16th National Conference and Global Forum on Science, Policy, and the Environment, “The Food-Energy-Water Nexus,” also in Washington, D.C., and the Water for Food Global Conference at the University of Nebraska, where we had the honor of attending the premiere of “The Thirsty Land,” a documentary film that ASABE helped sponsor.

We are very excited to be hosting an ASABE Global Initiative Conference in South Africa later this year, “Engineering and Technology Innovation for Global Food Security,” in partnership with Stellenbosch University.

We are gratified by the partners and sponsors providing support, and we look forward to a very productive and rewarding conference.

### Serving our members

But our gaze is not only outward. We are also keeping a sharp eye on member needs. A committee focusing on student outreach created momentum in 2015 to bring more attention to student activities at the ASABE Annual International Meeting (AIM) and thereby deepen engagement among our younger members. That momentum is continuing into 2016, with scheduling and program changes attuned to the needs and expectations of preprofessional attendees. Competitions and events are being rescheduled to minimize conflicts and facilitate attendance. The first-ever Association of Equipment Manufacturers (AEM) Student Awards and Recognition Breakfast will replace the AEM Student Luncheon and provide a dedicated venue for the recognition of most student scholarship, award, and competition winners.

A two-year collaboration with McKinley Advisors to increase membership and retention ended in July 2015. The second half of our work with McKinley focused on student recruitment, an AIM campaign to drive registration and new member recruitment (especially of students and young professionals), a proud member campaign, and a volunteer toolkit to aid in industry recruitment.

The efforts were successful. By the end of June 2015, membership among students and professionals had grown, reversing a seven-year trend, and the combined AIM attendance of students and young professionals increased by nearly 20 percent over 2014. In addition, records were broken in both May and June of 2015 for new full members, and we ended 2015 with total membership growth for the first time since 2008.

### Online resources and website improvements

In preparation for a move to computer-based testing for professional licensure—that is, for the PE exam—ASABE volunteers from the EOPD-414 Engineering Licensure committee created an electronic reference resource for the Agricultural and Biological Engineering PE exam. Seven sections have been posted online, and candidates have been invited to use this resource while preparing for the exam. Much of the material was extracted from ASABE textbooks and other publications. ASABE staff have assisted with document preparation and obtaining publishing permissions as needed. The work was supported by initiative funds, and additional funds have been awarded to continue work for this vital resource.

As demonstrated by the need for electronic PE exam resources, the demand for digital tools and communications continues to grow, and ASABE is keeping pace. The ASABE website remains the central focus of the society's digital efforts. A usability study was undertaken in 2015 with the help of The Understanding Group (TUG), who conducted a site review that examined elements impacting all of the website's users. Interviews of members and non-members were designed to identify key flows and tasks that would likely be performed by both groups. TUG's final report resulted in a number of short-term, prioritized quick experience. In fact, it is already proving useful in current follow-on work with TUG that involves a deeper study of the user experience. This work will result in the first major upgrade of the website since the current site launched in 2011.

### Digital marketing and publishing

The website is one component, and arguably the core, of ASABE's digital presence, but in its goal of serving all constituencies, the society continues to expand utilization of all digital tools—the Technical Library, event registration, social media, and more. One project that will see increased effort in 2016 is a digital marketing strategy that will be implemented in the coming months to better leverage ASABE's digitally available content. We're also keeping pace with digital publication trends. Instructions for manuscripts have been updated so that reference lists will more closely reflect American Psychological Association editorial style guidelines. Consistent application of these guidelines in ASABE journal articles will facilitate use of referencing software.

As a result of a 2013 government mandate, publications reporting research that was supported by U.S. federal funding must soon be made available at no charge to the public within one year of publication. Ordinarily, ASABE does not provide full access to publications except as a benefit of membership or site license, but we are fully complying with the mandate. Our manuscript submission system, ScholarOne, now allows identification of affected papers at the time of submission. Likewise, our manuscript processing software is advancing as well, so that we can make these documents available as required.

### ASABE standards activities

We are pleased to share the formal American National Standards Institute (ANSI) announcement of our standards program reaccreditation in January 2016. This closes the books on our most recent five-year ANSI audit and includes approval of our revised standardization procedures. The new procedures include a number of improvements suggested by ANSI or ASABE members and are expected to improve efficiency.

ASABE continues to seek collaboration with a variety of organizations. The Farm Equipment Manufacturers Association (FEMA), AgGateway, the Canadian Standards Association (CSA), and the American Feed Industry Association (AFIA) are just a few examples of our wide-reaching efforts toward collaboration. FEMA continues its strong standards support by directly contributing and buying ASABE standards for its members.

One of the most significant of ASABE's projects with AgGateway has been the inclusion of terms and definitions from ASABE standards into AgGateway's searchable data-base known as the AgGlossary. To date, more than 3,000 terms and definitions, from 19 ASABE standards and engineering practices, have been entered into the publicly available AgGlossary. This represents about 10 percent of all terms in the glossary to date.

A current priority of the Standards and Technical Council is to align ASABE agricultural equipment standards with those of CSA. Because CSA routinely endorses or adopts various ASABE and ISO standards, alignment provides opportunities to introduce newly published ASABE standards for consideration. There is great benefit to the North American agricultural equipment industry in having binational alignment regarding design standards.

ASABE's leadership as U.S. Technical Advisory Group (TAG) administrator for ISO Technical Committee 293, Feed Machinery, has resulted in strengthened ties to AFIA. As a result, ASABE staff and members have been invited to speak at AFIA events and have heavily promoted the development and maintenance of industry standards, attending trade shows to network and draw additional participants and interest to this important work.

Other involvement in ISO work will strengthen ASABE's ties to the fertilizer and biogas industries. U.S. TAG administration of ISO Technical Committee 134, Fertilizers and Soil Conditioners, was transferred from the Fertilizer Institute to ASABE, which provides ample opportunity to impact this important sector of the agricultural economy. Additionally, the ASABE board approved 2016 initiative funds to allow ASABE involvement in ISO Technical Committee 255, Biogas, an avenue for greater involvement with the renewable energy industry.

This has been a strong year for ASABE. I am thankful to have had the opportunity to be in the midst of the excitement. Members and staff moved ASABE forward and set the stage for continued success in the future. In the next year, I look forward to continuing to build partnerships and to supporting Maynard Herron during his term as president.

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

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

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

Over 65 percent of civil engineers in the United States are licensed professional engineers. ASCE strongly supports professional licensure and actively encourages all civil engineers to become licensed. ASCE has numerous programs that 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 website.

##### 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 website at [http://www.asce.org/public\\_policy\\_statements/](http://www.asce.org/public_policy_statements/).

##### ASCE's Committee on Licensure

This initiative promotes the licensure of civil engineers; collaborates with others involved in professional licensure; and monitors, supports, and encourages licensure activities.

### Published resources

ASCE has published a brochure, entitled “Guidance on Licensing and Ethical Responsibilities for Civil Engineers,” that provides guidance on the licensing process, the importance of licensure, and technical and ethical responsibilities of licensed civil engineers.

In 2016, guidelines to prelicensure experience were published. These are intended to be resources 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.

### Recognition

ASCE’s Walter LeFevre Award is made annually to a program at an academic institution that offers and EAC/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.

### Dream Big content

The Dream Big 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 at <http://www.dreambigfilm.com/education/>.

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

#### The vision for civil engineering in 2025

In June 2006, a diverse group of civil engineering and other leaders, including international participants, gathered to articulate an aspirational global vision for the future of civil engineering. An aspirational global vision was developed that sees future civil engineers as being entrusted by society to create a sustainable world and to enhance the global quality of life.

The full vision report was published in early 2007—and can be found at <http://www.asce.org/vision2025/>. It is intended that this report will guide policies, plans, processes, and progress within the civil engineering community and beyond including around the globe. A report addressing implementation of this bold vision, “Achieving the Vision for Civil Engineering in 2025—A Roadmap for the Profession,” was published in August 2009 and is also available at the same link. One of ASCE’s strategies to achieve the vision is enhancing educational requirements for licensure of civil engineers through implementation of Policy Statement 465, better known as the Raise the Bar initiative.

The full statement of Policy 465 is posted at <http://www.asce.org/issues-and-advocacy/public-policy/policy-statement-465—academic-prerequisites-for-licensure-and-professional-practice/>.

### Civil engineering body of knowledge

ASCE published its first *Civil Engineering Body of Knowledge for the 21st Century* (BOK1) in February 2004. Based upon substantial input from its practitioner and faculty members, the 2nd edition of the *Body of Knowledge* (BOK2) was completed, published, and formally released during a ceremony at the National Academy of Engineers (NAE) in February 2008. A free electronic copy of this BOK2 is available at [www.asce.org/CE-Body-of-Knowledge/](http://www.asce.org/CE-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 use elements of the BOK2 to design and implement their undergraduate curricula.

ASCE convened a task committee in October 2016 to review the BOK2 to determine if changes are warranted and, if so, to propose changes. The committee is expected to complete its charge by October 2018, with an interim report in October 2017. Updates on the committee’s progress can be found at [www.asce.org](http://www.asce.org).

The BOK2 defines the knowledge, skills, and attitudes necessary for entry into the professional practice of civil engineering. It is comprised of outcomes accomplished through both formal education and experience. The outcomes expected to be achieved through formal education include knowledge beyond that included in the typical bachelor’s degree in civil engineering. This reinforces the need for enhanced educational requirements for licensure, as advocated in ASCE’s Raise the Bar initiative.

ASCE considers the BOK to be a strategic direction for the profession. Some of the elements of the BOK have not yet been translated into accreditation criteria and licensing requirements. However, the BOK describes what individuals will increasingly be expected to know and be able to do to practice civil engineering at a professional level in an increasingly complex environment. Since input into the accreditation and licensing processes comes from a considerable number of stakeholders in addition to ASCE, it is unlikely that these processes will reflect all aspects of ASCE's BOK. ASCE is optimistic that the accreditation and licensing processes for civil engineering programs could change over time so that their requirements are more closely aligned with standards described in the BOK. As this occurs, a greater proportion of the BOK could be reflected explicitly in accreditation and licensure requirements.

#### Accreditation criteria

In April 2013, ASCE formed the Civil Engineering Program Criteria Task Committee to draft proposed changes to the Civil Engineering Program Criteria. This new civil engineering program criteria was approved on second reading by the ABET board of delegates in October 2015 and was effective beginning with the 2016–17 accreditation cycle. The first ABET accreditation visits using this new Civil Engineering Program Criteria occurred during fall 2016.

#### Curricula

The *Civil Engineering Body of Knowledge for the 21st Century* motivated civil engineering faculty to reexamine and analyze the formal academic programs at their universities. In the last decade, over 100 scholarly papers have been authored by civil engineering faculty related to the BOK and its influence on curricula. Many of these papers are available at <http://www.asee.org/search/proceedings>. Additionally, several key papers have been compiled into a published single compendium entitled *Raise the Bar: Strengthening the Civil Engineering Profession*. More information can be found at <http://www.asce.org/templates/publications-book-detail.aspx?id=6998>.

#### Civil engineering technologist body of knowledge

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. 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 in order to be considered competent in that role. ASCE's is currently developing the Civil Engineering Technologist Body of Knowledge (CET BOK), and its task committee leading that effort is soliciting industry feedback on their draft. Download the draft CET BOK and submit your comments at <http://www.asce.org/CE-Technologist-BOK/>.

ASCE is also evaluating information received through a 2016 industry survey and may consider developing a Civil Engineering Technologist credential after completing the CET BOK.

#### **Moving ahead in 2017—communications and state legislative activities**

ASCE state government relations staff monitors legislative and regulatory trends in the states. In particular, they watch for new developments in recent efforts to erode all occupational and professional licensure as put forward by an American Legislative Exchange Council (ALEC) model law titled "The Occupational Licensing Relief and Job Creation Act." ASCE headquarters staff work 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.

#### **Specialty certification for civil engineers**

Civil Engineering Certification Inc. (CEC), 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, Water Resources Engineer (D.WRE)

The D.WRE credential is awarded by the American Academy of Water Resources Engineers (AAWRE) to those water resources engineers who demonstrate fulfillment of the water resources engineering body of knowledge (WRE BOK). This specialized WRE BOK extends the desired outcomes to reflect higher, post-licensure levels of competency.

The D.WRE credential requires licensure as a professional engineer, a bachelor's degree plus master's/doctorate/30 credits, 10+ years of professional water resources engineering work experience (of which 6 years must be accumulated after first achieving P.E. licensure or foreign equivalent), and a commitment to professional development and ethics. Twenty professional development hours are required for recertification on an annual basis, after the initial year of certification. The post-undergraduate degree requirement may be waived if engineer has more than 25 years of water resources engineering experience.

Since the start of the D.WRE program, about 710 individuals have qualified for this certification. Visit [www.aawre.org](http://www.aawre.org) for more information.

#### Diplomate, Geotechnical Engineering (D.GE)

The Academy of Geo-Professionals (AGP) certification program is very similar to the AAWRE certification program in that a candidate, having met the designated program requirements, undergoes a formal credentials review by designated AGP professionals to become a Diplomate, Geotechnical Engineering (D.GE). Every two years, as part of the certification renewal process, each Diplomate is required to earn a minimum of 40 professional development hours in geoprofessional engineering, including four PDHs in ethics and two hours in sustainability. As of February 1, 2016, AGP had certified about 350 professional engineers. The AGP website can be found at [www.geoprofessionals.org](http://www.geoprofessionals.org).

#### Diplomate certifications under ACOPNE

- Diplomate, Coastal Engineering (D.CE)
- Diplomate, Ocean Engineering (D.OE)
- Diplomate, Port Engineering (D.PE)
- Diplomate, Navigation Engineering (D.NE)

The Academy of Coastal Ocean Port and Navigation Engineers (ACOPNE) was created to complement ASCE's Coasts, Oceans, Ports, and Rivers Institute (COPRI) and provides recognition to those individuals who have excelled in one or more of the subdisciplines embraced by COPRI. ACOPNE has defined subspecialty fields of expertise consistent with the subdisciplines contained in COPRI: coastal engineering, ocean engineering, port engineering, and navigation engineering. ACOPNE has granted about 260 certifications.

Diplomates in ACOPNE are required to be licensed as a professional engineer, possess a bachelor's degree and a master's degree or equivalent 30 hours post-graduate coursework, have 12 years of experience after receipt of first engineering degree, and commit to professional development and ethics. Twenty PDHs are required for recertification on an annual basis, after the initial year of certification. Visit [www.acopne.org](http://www.acopne.org) for more information.

#### **Other 2016 ASCE initiatives**

##### Promoting sustainable solutions

ASCE organized the January 2016 Sustainability Summit, which brought together global thought leaders in sustainable infrastructure, including owners, designers, operators, and financiers. The summit generated the ASCE Roadmap for Sustainable Infrastructure, which includes key priorities in the areas of capacity building, standards development, and advocacy.

ASCE also provided leadership, guidance, and support to the Chinese Academy of Engineers in hosting the October 2016 ASCE International Conference on Sustainable Infrastructure in Beijing, China. The conference facilitated exchange of information and knowledge among civil infrastructure professionals, practitioners, public infrastructure owners, policy makers, government engineers and planners, operations managers and leading applied academics.

Two continuing education courses on "Life Cycle Assessment" and "Water Resources" were added to the series of sustainability webinars available to members for purchase, and ASCE is developing a Sustainable Infrastructure Certificate Program.

A book containing the body of knowledge for sustainable civil engineering practice, *Engineering for Sustainable Communities*, is in development and expected to be published in 2017.

### ASCE's 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 strategic initiative, to help influence major policy changes and infrastructure funding levels, to encourage civil engineers to focus on innovation, rethink life cycle costs, build in resilience, adopt performance-based standards, and drive transformational change—from planning to design to delivery. To address the needs of this broad list, the ILC members have divided into four subcommittees.

The Workforce Subcommittee engages and inspires industry and academic partners to adopt the Grand Challenge. Focus includes working with universities to incorporate the Grand Challenge into the curriculum and developing web based programs, award PDH's and/or certificates of proficiency to those who complete the Grand Challenge program, and finally to monitor rate of incorporation of Grand Challenge courses into the academic curriculum.

The Communications Subcommittee stewards the message of the Grand Challenge throughout ASCE and expands outreach to external organizations and the media. This group also provides oversight for the development of two roundtable events to discuss performance based standards and life cycle analysis. These events are scheduled for April 8 in Denver, Colorado, and May 22 in Islin, New Jersey.

The Performance Based Standards/LCCA Subcommittee works with others to identify highest priority codes and standards to be migrated to Performance Standards and at the same time include life cycle cost, sustainability and resilience as a minimum.

The Innovation Subcommittee works with the Innovation Forum Committee on the long-term integration of the Innovation Contest into the industry's culture. For example, to help develop a market adoption model/construct to run parallel to the Innovation Contest, codify the process and establish a structure to enable routine annual execution of the Innovation Contest. The second ASCE Innovation Contest was launched last September and closed March 1, 2017. All winners will attend the Innovation Contest Celebration Event June 20-22, 2017 at ASCE headquarters.

Learn more at <https://ascegrandchallenge.com/>.

### Dream Big: Engineering Our World

In partnership with MacGillivray Freeman Films, and presented by the Bechtel Corporation, ASCE is proud to announce that *Dream Big: Engineering Our World* premiered in giant-screen theaters during Engineers Week, February 2017.

Narrated by Academy Award® winner Jeff Bridges, this first of its kind film for IMAX® and giant screen theatres transforms how we think about engineering. From the Great Wall of China and the world's tallest buildings, to underwater robots, solar cars and smart, sustainable cities, Dream Big celebrates the human ingenuity behind engineering marvels big and small, and reveals the heart that drives engineers to create better lives for people around the world.

The Dream Big project is more than just a movie. It encompasses resources and programs designed for students, teachers, engineers and science centers, including 50+ hands-on activities, girl-centered events, lesson plans, design challenge exhibits, videos and more. Information on the movie, associated programs and resources, and a listing of participating theaters can be found at <http://www.dreambigfilm.com/>.

### ASCE participation with NCEES

ASCE maintains formal relationships with NCEES through several ASCE member liaisons and ASCE staff contacts.

### ASCE annual convention

ASCE's 2017 convention will be held in New Orleans on October 8–11, 2017.

## **American Society of Heating, Refrigerating and Air-Conditioning Engineers**

### **President's report**

I've had the pleasure of being actively involved with our society for 30 years. During that time, I've seen first-hand the tremendous people, passion and performance that represent ASHRAE. And, during my travels around the world over the last couple years, I have seen just how well-respected our society really is. For example, at a meeting recently in the Far East I was told that ASHRAE is the "great god" of our industry; and during a visit to Europe I was told that the ASHRAE Handbook was the acknowledged "bible" that is referenced by all other publications. Obviously, ASHRAE is recognized as the leader of the built environment industry, and we have achieved that position because of the hard work of all of you.

So let me share with you a few updates that speak to the great work that our 54,000 members have accomplished in the last few months.

### IAQA acquisition

- Staffing plan is close to being complete
- Gives ASHRAE a larger footprint in the IAQ space
- Parallel conferences at the 2016 Winter Conference in Orlando for first time
- Joint IAQA/ASHRAE membership is coming
  - Members Council has sent a recommendation to the Finance Committee regarding special dues for members of a subsidiary wholly owned by ASHRAE who want to become ASHRAE members with the intent of a reciprocal arrangement for ASHRAE members who want to become members of the subsidiary. The Finance Committee will vote on the proposal here in Atlanta; IAQA's board of directors plans to vote on a similar proposal during its Board meeting this week.
- 189.1/IgCC integration—Previously announced, but new integrated committee has been formed and is working on the integrated standard. Agreement was formalized just this week.
  - The technical content will be done by the SSPC 189.1 committee using the ANSI approved ASHRAE process. The administrative and enforcement provisions will be developed by the ICC using the consensus code development process.
  - We've added additional members from the partners (AIA, USGBC, IES, ICC) and other materially interested parties.
  - The intent is to have one regulatory tool.
  - The document will continue to be on continuous maintenance and republished every three years.
  - The first version of the combined 189.1/IgCC will be in 2018.

### Formation of new development committee

- Builds on success of the RP campaign and the ASHRAE Foundation over the years. Creation of the Development Committee allows us to better coordinate our existing efforts and greatly ramp up to create and seize new opportunities to better support ASHRAE's mission.
- And speaking of fundraising, we're excited to announce the creation of two new major scholarships. Bullock Scholarship; President's Scholarship
- A one-year \$5,000 Region IV James R. Bullock Scholarship approved. Application deadline is December 1, 2015, and will be available for the 2016–17 academic year.
- Also, coming soon is a possible ASHRAE President's Scholarship. The Scholarship Trustees are working on specifics related to criteria and funding. The trustees will discuss this on Tuesday.

### Formation of new audit committee—required by new New York not-for-profit legislation

### Ad hoc committees

- BPA shift to focus on tools/training for building operators
  - Charge: develop a strategy to create training and tools that will enable building operations staff to meet or exceed a building's design performance potential
  - Vision is to include representatives from allied organizations
  - Final committee report expected at 2016 annual conference
- CRC/centralized training
  - Consider effect of centralized training on attendance at Chapters Regional Conferences (CRCs)

- Recommend whether centralized training for research promotion, membership promotion, and student activities committees should be eliminated or returned to CRCs
- To make final recommendations at 2015 annual conference
- Residential
  - Discussion on future direction of role in residential arena at here in Atlanta by board of directors
  - Board addressing whether to make residential a standing committee—would be responsible for identifying major residential trends impacting the practice of HVAC&R, and making recommendations on those trends
- Volunteer time
  - Charge: identify potential improvements to operations and procedures to improve performance while increasing effective use of volunteer time
  - Identified three focus areas
    - Volunteering locally
    - Focusing participation to respect volunteer time
    - Encouraging attendance/participation at winter and annual conferences
  - To provide final report in Atlanta
  - Developing economies
  - Began work in 2013-14 and continued through this year to building on recommendations in initial report
  - Five subcommittees formed: cold and food chain; outreach and education; government interaction and resource; construction industry needs; and transition
  - Series of recommendations to be brought forth in Atlanta

#### Outreach

- Expansion of ASHRAE
- Charted over the past year
  - Korea, Japan, Chile chapters; United Kingdom midlands section
- Being voted on here
  - Bangladesh chapter; Ireland section; Faisalabad (Pakistan) section
- 17 new student branches approved at 2015 winter conference: 7 from outside the United States and Canada
- 17 additional branches being brought for here for approval; 11 from outside the United States and Canada

#### Events where ASHRAE had a major presence in the United States and around the world

- Dedication of Sistine Chapel
- Two presentations about food and energy at WorldExpo in Milan
- ACREX India 2015 in Bangalore
- 2014 Building Operation and Management Association (BOMA) Every Building Conference and Expo, Orlando
- 2014 International Facility Management Association (IFMA) World Workplace, New Orleans
- Chillventa 2014, Nuremburg, Germany
- 2014 AHR Expo Mexico, Mexico City
- U.S. Green Building Council GreenBuild, New Orleans
- American Institute of Architects (AIA) 2015 Convention, Atlanta
- China Refrigeration EXPO in Shanghai

#### DC leadership meetings recaps

- Visits include 15 associations and government agencies, including the U.S. Army—Assistant Secretary of the Army for Installations, Energy and Environment and the White House Council on Environmental Quality—Office of the Federal Environmental Executive
- Allows us to offer ASHRAE's assistance in helping build existing programs and get involved in creation of new ones

### ANSI accreditation of certification program

On Thursday, we received word that the ASHRAE High-Performance Building Design Professional (HBDP) certification program had earned accreditation by American National Standards Institute (ANSI). This is part of the internationally recognized ANSI/ISO/IEC 17024:2012 standard for accreditation of personnel certification bodies. Gaining third-party accreditation under a rigorous, international standard only validates the quality of the ASHRAE program. It also helps guarantee enhanced recognition in the global marketplace of individual consumers and governmental bodies. Gaining ANSI accreditation of the HBDP program aligns with the ASHRAE strategic plan and sets the stage for accreditation of other ASHRAE certification programs, including those in key, energy related jobs. This accreditation bolsters ASHRAE's work in the built environment industry.

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

#### **ASME membership profile**

- ASME currently has 130,000 members, including 32,000 student members.
- Approximately 29 percent of nonstudent members hold PE registration in one or more states.

#### **Conferences that are venues for licensure discussions**

- International Mechanical Engineering Education Leadership Summit, April 17–20, 2017, Washington, D.C.
- ASME annual meeting, June 9–14, 2017, Newport Beach, California
- International Mechanical Engineering Congress and Exposition (IMECE), November 3-9, 2017, Tampa, Florida

#### **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 United States:

- 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 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 ME undergraduate programs
  - Explicit bridging pathways to Professional Master's degree studies

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

- Successfully revised ABET MET program criteria to explicitly require use of industry codes and standards and have embarked on a NIST grant award project to infuse standards content into strategically selected courses in all four years of BSME and BSMET degree programs.
- Successfully revised ABET ME Program Criteria to allow for somewhat more curriculum flexibility

- In the arena of cultivating effective collaboration (an essential ingredient to innovation) among increasingly diverse student populations, we are in the second year of a major National Science Foundation grant with the Women in Engineering Pro-Active Network (WEPAN), ASME, Purdue University, and the University of Washington for faculty development workshops and virtual learning communities that would help create more inclusive (for all students) teaching/mentoring approaches in ME courses and design labs.

### **Licensing That Works coalition**

As reported at POLC meetings annually since 2008, ASME and a number of other professional societies remain unconvinced that a master's degree 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 Engineers (IIE)
- 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 to the membership societies listed above, the executive board of the ASEE Engineering Deans Council has endorsed the position statement. IEEE-USA and the American Council of Engineering Companies have also taken their own positions against master's or equivalent.

A coalition of these societies, called Licensing That Works, has been formed to support this position. The 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 of these cases, the Licensing That Works team prevailed. The team is currently focused on legislation in New Jersey that will 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."

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 was posted recently to the site. It shows that the linear extrapolation of the decline in credit hours to the year 2025 shown in one organization's website is incorrect and that the decrease in the number of credit hours has levelled off. It also shows that that the technical content of the bachelor's degree now is equal to or greater than the technical content of the bachelor's degree 60 years ago.

There has been and will 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. The outcomes based assessment of the content of engineering programs used to accredit engineering programs has resulted in better, more focused coursework. 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.

Because technological change is continuous over the typical 40 years of a professional engineering career, the additional courses taken at the beginning of a career have a rapidly decreasing usefulness compared to the continuing education required to maintain licensure. This conclusion was also reached in several articles in a recent special report in *The Economist* relating to lifelong learning. For example, "...working lives are so lengthy and so fast changing that simply cramming more schooling in at the start is not enough. People must also be able to acquire new skills throughout their careers."

No boost in professional status resulted in the implementation of the 150-hour requirement for Certified Public Accountants. States that implemented this saw a significant decrease in the number of accounting students and CPAs

After the *Model Law* raising the educational requirements for obtaining a surveying license passed, the number of individuals taking the FS and PS dropped significantly.

### **Codes and standards**

Work progresses on the joint Standards and Certification/Education initiative titled Standards Infusion. The overall goal of the effort is to produce eight instructional modules by August 31, 2017. Four modules have been completed or in development, with four more to be developed. The status of the modules completed or in development is as follows:

- Introduction to Codes and Standards (Freshman level)—Some revisions being made to existing ASME assessment-based course content. It will be piloted as a homework assignment at Rose-Hulman Institute of Technology.
- Boiler and Pressure Vessel Code (Sophomore level)—Being piloted at the University of Pittsburgh. Separate BPV problem being developed as a homework assignment. Possibility of BPV also being piloted via Massive Open Online Course (MOOC) by Dr. Wayne Whiteman of Georgia Tech.
- Code on Operation and Maintenance of Nuclear Power Plants (Junior level)—Pilot program at Washington University in St. Louis. Material delivered to students in early November.
- Y14.5—Geometric Dimensioning and Tolerancing (Senior level)—Pilot program at University of Hartford.

Other participating educators are looking to conduct pilot programs this or next semester.

### **Continuing education**

ASME trained more than 10,000 participants in fiscal year 2016. 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.

### **Examinations**

The NCEES FE Mechanical Engineering exam development committee has consistently prepared exams with high psychometric measures. FE Mechanical exams had an 80 percent pass rate for the January/February/March and April/May/June 2016 administrations. Historically, the FE exam has had pass rates ranging from 77 percent to 85 percent for first-time takers. The 3,813 individuals who took the exam represent 27 percent of the total who took an FE exam, which represents an increase over the 26 percent of the total who took an FE exam in 2013–14.

For the PE Mechanical exam, the volume of examinees and pass rates for first-time examinees continue to be consistent with recent years. For the three most recent years (2014–16) the first-time pass rate average is slightly above 74 percent. Over that same period, the number of examinees has averaged approximately 1,935 per administration. The fall 2016 exam administration saw a slightly less than 10 percent increase in mechanical examinees compared to average exam administrations; many other PE exams experienced this as well—a likely cause is the implementation of a decoupling rule in Texas that permits individuals to take the exam before gaining four years of experience. The exam committee completed the professional activities, knowledge, and skills (PAKS) process and obtained approval from the Committee on Examinations for Professional Engineers (EPE) for new specifications for the three PE Mechanical exams. Similar to what has happened with the FE exams and with the PE Electrical and Computer exams, the new specification eliminates the breadth-and-depth format and introduces three independent exams in HVAC and Refrigeration, Machine Design and Materials (renamed from the former "Mechanical Systems and Materials"), and Thermal and Fluid Systems. The new specification was posted to the NCEES website after the October 2016 exam administration, and the first exams

in the new specification will be administered in April 2017. Preparation for the required Cut Score Study following the April 2017 administration is well under way.

NCEES has directed that all PE exams be moved to computer-based delivery as soon as feasible. The PE Mechanical Exam Committee is working toward this by continuing to build up our bank of active exam questions, by developing a reference handbook, which will be the sole reference allowed in a computer-delivered exam, and other activities. The first draft of the PE Mechanical Supplied-Reference Handbook (SRH) is now complete and has been submitted to the NCEES Exam Publications Department. This will allow for the SRH to be available as an option for examinees somewhat in advance of becoming mandatory with the changeover to computer-based testing. Based on several factors, the PE Mechanical exam development committee is projected to be approximately the third Group I PE exam to make the move.

### **Committee assignments**

The new chair of the PE ME Committee is Raymond Prestridge. ASME Past President Amos Holt and Managing Director Dave Soukup of the ASME staff are ASME's representatives to the AAES Professional Licensure Working Group.

### **K through 12 STEM programs**

ASME INSPIRE instructional modules are now used in 550 schools across 39 states reaching 21,000 middle and high school students. The existing pre-college community site is being leveraged to promote attributes of the INSPIRE program, its progress, and dialogues regarding implementation and avenues for volunteer engagement (a subdomain of go.asme.org/precollege has been established for ease of access).

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

#### **Photogrammetric licensure updates**

- Texas: ASPRS is working with the Texas Society of Professional Land Surveyors (TSPS) on the licensure of photogrammetrists as photogrammetric surveyors. Language has been developed by members of TSPS and has been reviewed by ASPRS (PPD officers and other senior members of the certification committee). The TSPS board met on January 28 and reviewed this proposed change. ASPRS provided answers to some follow-up questions, and it appears the board is interested in moving this forward. However, the deadline for submission of new bills to the Texas legislature is March 10 and therefore, according to TSPS, there is no chance this will be on the agenda for this session. That means TSPS/ASPRS will have two years to work on this effort. The Texas legislature meets every two years for 180 days. The proposed language is well written and includes licensure via comity and a grandfather period for experienced ASPRS-Certified Photogrammetrists.
- Washington: This process is on hold at this time.
- A licensure status map is maintained on the ASPRS website.

### **Certifications**

ASPRS is in the process of developing an Unmanned Autonomous Systems (UAS) certification. It will offer both the Certified Mapping Scientist and the Certified Technologist levels. This will cover the technology and science aspects of UAS, not necessarily the operations. It will not replace nor supersede any required FAA certifications regarding flight operations.

### **General news**

- Conference: The annual conference is being held in Baltimore this year. ASPRS is making a concentrated effort to reach out to local schools and STEM programs in the area to introduce photogrammetry and remote sensing to high school students.
- Bylaws: ASPRS has rewritten the Bylaws of the society. This was done to streamline operations and reduce expenses. The society is still governed by the board of officers with representation from both the Technical Divisions and Regional Councils in the form of seats on the board.
- Executive director changes: The board accepted the resignation of the executive director in September 2016. Jesse Winch is serving as the acting executive director.

## **California Land Surveyors Association**

The following activities of the California Land Surveyors Association (CLSA) of interest to the NCEES POLC are as follows:

### **Leadership**

Our 2017 board of directors officers are Ian Wilson, President; Ron Nelms, President Elect; Annette Lockhart, Secretary; Keith Spencer, Treasurer; and Roger Hanlin, Immediate Past President.

### **Membership**

Membership currently resides at 1,694 members.

### **Conference**

The 2017 CLSA annual conference will be held on March 24–28 at the Wyndham Anaheim Garden Hotel.

### **Scholarships**

CLSA's 501(c)(3) education foundation issued \$49,750 in scholarships to land surveying students. To date, the CLSA has provided approximately \$800,000 in scholarships.

### **Continuing education**

CLSA has developed a webinar series to address the need for continuing education. Webinars are hosted by CLSA as a member benefit to CLSA members at no cost. Nonmembers pay a nominal fee to participate.

### **Trig Star**

CLSA and its chapters provide the opportunity to students to compete in the Trig Star program and receive monetary awards for their accomplishments while learning about how mathematics is used in conjunction with land surveying activities.

### **CLSA 50th anniversary**

The year 2016 marked CLSA's 50th anniversary. The anniversary issue of the *California Surveyor* included the history of CLSA. A 50th year California-only state conference was held in Santa Rosa, California, in 2016 where CLSA began in 1966 to honor this achievement.

### **Land Surveyor's Week**

CLSA will be celebrating Land Surveyor's Week in March 2017. Proclamations will be given to the president of CLSA at the state capitol in Sacramento honoring National Surveyor's Week. Numerous county and city governments in California will also issue proclamations in appreciation of Surveyor's Week.

### **Professional development program**

CLSA has developed a voluntary professional development program a complimentary member benefit. To qualify for the program, a member must obtain 30 hours of professional development in a two-year period. Qualifying hours include, but are not limited to, attending chapter meetings, seminars, workshops, teaching a class, writing an article, and serving as an officer, committee chair or board member. With all the opportunities at both the chapter and state level, gaining 30 hours in two years is easily achievable.

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

During the past 12 months CESB operations were stable. The following are the key highlights.

### **CESB status**

CESB membership includes 16 member boards. Some of these boards are expanding the certification programs they operate to respond to market needs. These boards operate 50 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 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 45 accredited certification programs, according to their categories, consist of the following:

- Licensed engineers 9
- Graduate engineers 1
- Engineering-related specialties 20
- Engineering technicians 20

The fastest growing category is professional engineers.

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.

In 2014, the CESB board of directors enacted a new policy requiring more 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**

Operating certification programs is complicated. Each year CESB hosts symposiums and workshops to assist member boards. The next symposium on March 22, 2017, will focus on converting all office operations to electronic based systems to improve efficiency and ease of operations by staff and accredited individuals.

CESB has a Certification Program Administrators Committee, organized in 2013 and modeled on the NCEES' Committee on Member Board Administrators. It has proven to be very helpful to all certification program administrators. The committee meets the day before the annual meeting of the CESB board of directors.

### **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. Second, once accreditation is achieved, it provides a valuable mark of distinction that separates accredited programs from their competitors in the marketplace.

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

IEEE-USA continued its strong support for NCEES by providing item writers and subject-matter experts for the FE and PE examination programs and volunteer leaders for related NCEES policy committees in 2016. Key events and developments of special interest to IEEE's U.S. members include the following:

### **NCEES annual meeting**

IEEE-USA President Peter Eckstein was unable to attend the NCEES annual meeting.

### **Participating Organizations Liaison Council**

One member of the Licensing and Registration Committee continues to attend the POLC meetings. Michael Behnke will represent IEEE-USA at the March 2017 POLC meeting.

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

The October 2016 EPE meeting was attended by Steve Barrett (ECE exam committee chair), David Vickers (SWE exam committee vice chair), and Glenn Parker (representing IEEE-USA).

The January 2017 EPE meeting was attended by Steve Barrett (ECE exam committee chair), David Vickers (as new SWE exam committee chair), and Glenn Parker (representing IEEE-USA).

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

The ECE exam committee met twice in 2016 to review and update the Power, Electrical and Electronics, and Computer modules of the PE ECE exam. The bank of test questions was also updated. There are currently five

completed ECE exams, with two ready for administration and three under review. IEEE-USA L&R committee member Steve Barrett serves as ECE exam development committee chair.

In 2016, with the assistance of NCEES staff in identifying potential survey takers, the PE ECE exam professional activities and knowledges survey (PAKS) for the Computer module was completed. PAKS for the Power and the Electrical and Electronics modules were completed in 2015, but at that time we were still deficient on the necessary 200 minimum surveys from currently licensed computer engineers. New exam specifications for all modules were approved by EPE in January, and the anchor exam under the new specs will be in April 2018.

The PE ECE exams are working toward migrating to computer-based testing (CBT), with a projected launch date of April 2021. Development of an PE ECE supplied-reference manual for use in CBT has begun, and a first draft is expected to be available in June of this year for internal committee use. An external version is scheduled to be released no later than early 2020 so that examinee feedback can be obtained for at least the last two pencil-and-paper exams before this document becomes the sole reference that an examinee will have access to under CBT.

### **PE Software Engineering exam**

The PE Software Engineering exam committee continues to meet once per year for cut score determination and exam review. There have now been four annual exam offerings, but the number of examinees remains lower than expected. There were 15 first-time takers in 2016. IEEE-USA L&R committee member David Vickers is the new PE Software Engineering exam development committee chair, effective in January of this year.

The PE Software Engineering exam is scheduled to convert to CBT in 2019. A first draft of the Software Engineering supplied-reference manual has already been completed.

### **Updated position statements related to engineering licensure**

In 2016, IEEE-USA updated or reaffirmed three positions statements related to engineering licensure:

- Continued professional competence of IEEE's U.S. members: IEEE-USA offers continuing education programs and materials, recommends that employers of engineers actively support and assist their employees in maintaining technical and professional proficiency and encourages its members to embrace life-long learning by seeking challenging job assignments and actively participating in formal and informal education and training courses, home study and distance learning, mentoring programs, seminars and technical meetings. Our position is that state licensing boards should endeavor to adopt uniform continuing education requirements as prerequisites for engineering licensure renewal throughout the United States and its territories.
- Educational requirements for engineering licensure: IEEE-USA does not support NCEES Position Statement 35, which promotes a future requirement that engineers who have successfully completed accredited baccalaureate-degree educational programs take 30 additional hours of engineering education to become licensed. 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 engineering career path.
- Use of the title "Engineer": Recognizing that the public interprets the term "Engineer" more broadly than is represented by the protected titles (i.e., "professional engineer," "licensed engineer," "registered engineer"), it is our position that individuals who have graduated with an engineering degree from an EAC/ABET accredited program of engineering education should not be prohibited from using the title "engineer."

### **Education and outreach initiatives**

The IEEE-USA Licensing and Registration Committee continues to write and publish articles informing IEEE members and other interested professionals on current issues concerning licensure on an approximately bimonthly basis in the online publication IEEE-USA Insight. Readership metrics indicate that articles on licensure and NCEES-administered exams continue to be among the most widely read topics in that publication.

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

The Institute of Industrial and Systems Engineers 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. ISEs 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 over 15,000 members comprising students, practicing professionals, academics as well as retired members. Institute members come from over 36 countries throughout the world.

The PE examination development committee is chaired by Mike Graul, Ph.D., P.E., with co-chair Joe Michels, Ph.D., P.E., C.P.L.

The PE examination development committee met three times in 2016: in March at NCEES headquarters in Clemson, South Carolina; in May at the IISE annual conference, held in Los Angeles, California; and October in Atlanta, Georgia. Meeting dates for 2017 include February at NCEES in Clemson; May at the IISE annual conference in Pittsburgh, Pennsylvania; and October in Clemson.

The committee has worked diligently on the development of a computer-based reference manual for the PE Industrial and Systems examination. The committee's goal is to use the designed and developed reference manual for pretesting of the April 2017 and April 2018 PE Industrial and Systems exams to be reviewed in February 2017 at NCEES in Clemson. Necessary adjustments and additional material required to successfully complete the examination will be added during committee meetings in 2017. The goal is to have a complete PE Industrial and Systems reference manual available for use during the administration of the 2019 examination.

The PE Industrial and Systems examination is currently slated for computer-based administration in the 2019 timeframe. We continue to work hard and diligently toward insuring precision and accuracy of the reference manual.

The PE Industrial and Systems exam development committee held a worldwide webinar, attended by over 100 individuals in October 2016 to address the value and benefits of professional engineering licensure. Webinar attendees were industrial engineers and current students from throughout the United States, Canada, and Asia.

A four-day intensive IISE/PE review course for the PE examination was conducted by professional staff at IISE headquarters in February 2016 as well as planned for February 2017. 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. The Council of Industrial Engineering Academic Department Heads (CIEADH) met with Dr. Graul during the IISE annual meeting. Dr. Graul explained the benefits of professional engineering licensure to the academic department heads and solicited their support for further encouragement of graduating seniors to take and successfully pass the NCEES FE examination.

A new PAKS study for the PE Industrial and Systems examination is required in 2017. Initial planning work is currently begun to enrich and enhance the breadth and depth of industrial participants in this 2017 study. With the increased emphasis on systems as well as industrial engineering, we wish to ensure that the new examination specification is as comprehensive, encompassing, and complete as possible.

The ISE/PE development committee has reviewed and discussed the master's-or-equivalent proposal that is in the NCEES *Model Law* and does not support this measure. The committee 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.

Dr. Joe Michels, P.E., C.P.L., is the IISE and the IISE/PE development committee member working with NSPE's Project Lead the Way (LTW) 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 to International Society of Automation 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 EPE Committee, POLC, state licensure boards, and other professional societies. Also, ISA is a major supporter of National Engineers Week 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 development committee holds 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 2016 statistics, with 262 test takers.

The most recent PAKS survey was performed in 2010 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 2010. 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 2010 fall meeting in Atlanta. This specification is used to inform prospective examinees of the exam content and is now posted on the NCEES website.

A new PAKS is now under way and input is being solicited for the online activity. Plans call for the analysis of the data and the new specification to be presented to the EPE Committee for approval in October 2017. 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 development committee conducted an item-writing session in Houston in January 2017 in preparation for the October 2017 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 development committee continues to work toward computer-based testing for the PE Control Systems exam, with a current target date of 2022.

The Professional Development Department 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 and published, and is available in its fifth edition to provide information and practice problems for those preparing for the exam. This study guide was updated to reflect the new 2011 specification for the exam and is being updated in 2017 as the modified fifth edition with corrections. 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 four times in 2016, with sites in North Carolina, Texas (2), and Pennsylvania.

Also, a new instructor-assisted online training class was developed in 2014. It consists of 20 one-hour pre-recorded sessions that may be viewed by participants at any time convenient to their schedule. Each offering is over a 12-week period and includes five teleconference sessions with the instructor and the participants. This is a major step in the distance-learning initiative. The course was offered two times in 2016, with good reviews and excellent participation.

The training and education plans for 2017 remain the same as those for 2016, with four or five offerings of the three-day review class (North Carolina, Texas, California, Illinois, and Pennsylvania). The online instructor-assisted course is being offered two times in 2017, starting in April and June. Plans call for a two-week live web seminar class to be held in late September 2016, with six four-hour sessions to cover the breadth of the PE Control Systems exam specification.

The ISA executive board has reviewed and discussed the master's-or-equivalent proposal that was 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 PE exam until the four years of experience have been obtained.

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

This year, we celebrate our 76th annual meeting for MSPS. This celebration includes an annual review of how MSPS has continued to work on the vision to protect, promote, and educate on behalf of all surveyors in Michigan. This 2016 annual report includes a summary of work from each of the MSPS committees as well as the work done at the chapter level. Reading these reports will give you an idea of the passion, commitment, and support that our members have for the surveying profession and the vision of MSPS.

I have identified a few key accomplishments of 2016 that reflect how MSPS has continued to work on our vision and continues to provide value to your membership.

- Protect the surveying profession through active legislation and pursuit of unlicensed activity.
  - MSPS continues to actively participate in the Architects, Engineers, Surveyors Legislative Committee (AESLC), working with our lobbyist Kelly Cawthorne, ACEC-MI, MSPE, AIA-MI. Unfortunately, this year no legislation passed, but the committee did put significant efforts into certificate of merit, quality-based selection, and lien law legislation.
  - MSPS representatives are part of a working subcommittee called the Article 20 Task Force within AESLC to review the occupational code with respect to the path to licensure and unlicensed practice.
  - MSPS will be the host sponsor on behalf of AESLC for the 2017 Legislative Day in Lansing, where MSPS members will have the opportunity to talk to their legislators. Please consider taking this time to make a difference and support your profession on March 7.
  - As a result of the MSPS legislative survey that went out to all members, the survey feedback was reviewed. MSPS legislative priorities established for 2017 will reflect the needs of the membership. These priorities include the review of PA 132, aspects of professional licensure (license in escrow, unlicensed activity and educational requirements) and concerns around the State Remonumentation program.
  - Planning took place this past year to coordinate a Geospatial/Land Information System meeting with state leaders of MiCAMP and IMAGIN at this year's annual meeting. The goal of the meeting is to have initial discussions around the need for a coalition around geospatial data issues at a state level on both the acquisition of the data side and use of this data.

- Promote the value of the MSPS membership not only to our current membership but to young surveyors newly licensed in our profession. MSPS will continue to support and further development of the Young Surveyors Council.
  - The MSPS Young Surveyors Council was actively represented this past year at the board of director meetings by Brett Hollandsworth and Scott Roth. They continue to network with young surveyors throughout the state and other councils at the national level. An annual networking event has also been added to the annual meeting schedule.
  - One area of concern that was addressed at the board retreat this year was the need for outreach to the ownership and management of surveying companies. Our young surveyors are working hard for our companies and are newly licensed, so their time off may be limited. MSPS would ask that company owners and managers consider supporting these young professionals to become more active in MSPS and supporting the profession through additional outreach and educational activities.
  - As you may have read in the *Michigan Surveyor*, many of our professional members—including the Young Surveyors Council—took the time to support and exhibit at the Construction Career Days event held in Howell and the Michigan School Counselors Association (MSCA) event in Lansing. Both of these opportunities allowed MSPS to promote the surveying profession to our youth and those who counsel our youth around their future career decisions. In 2017, we hope to add the Michigan Career Conference event to our schedule where MSPS will be able to reach out to school administrators, teachers, and counselors. This will also be an opportunity to promote the TrigStar and TwiST programs.
  - MSPS continues to actively support NSPS through Michigan Director Craig Amey. Amey continues to be very active at the national level representing our state not only at NSPS events but also coordinating on surveying issues with NSPS directors from adjoining states.
  - MSPS is also proud to support one of our own members and a past president of MSPS, Jan Fokens, as he accepts the position of NSPS president in March.
- Educate by developing strong education program focused around elevating the professional standards and needs of our membership.
  - In an effort to elevate the educational program at the annual meeting, MSPS hired an event planner to handle the details of the meeting. This has allowed the host chapter and central office more time to focus on improving the topics and quality of the educational programs offered to our members.
  - MSPS maintains communications with LARA and the Professional Surveyor Licensing Board Chair to ensure important information regarding Continuing Education (CE) audits, complaints, sanctions and Occupational Code impacts are reviewed at the board of directors meetings and relayed to the membership.
  - The MSPS Communications Committee has continued to provide a top-notch publication, the Michigan Surveyor that includes current information impacting our profession. This year we have also obtained legal reviews of survey cases that have been brought to the attention of the board of directors.
  - In addition to ensuring the website is current, the Communications Committee has also introduced a blog to the site where members are able to interact around various issues impacting our profession.
  - The Seminar Committee continues to provide quality programs to educate our members and assist in meeting the requirements of the continuing education required for licensure.

## **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 the Rationale Research Task Force, a task force composed of two members each from SEI and NCSEA, to develop a rationale for structural licensure and produce a white paper covering professional liability and risk, discipline cases and structural failures, and the growth of code complexity
- Participate in the development of the 2018 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. Right now, 23 states currently have some form of structural licensure distinction and 13 have an active SE licensure effort. The committee has set forth 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.

During the past year, the committee addressed several issues related to licensure. Only some of the issues are mentioned here, but all of them are forward-thinking and focus on protecting the public's health, safety, and welfare. Many of the issues were addressed after long-standing committee member and chair, Joe Luke, stepped down to devote more time to the Structural Engineering Certification Board (SECB) and Kristin Killgore and Alan Kirkpatrick agreed to co-chair the committee.

In September 2016, the committee met during the NCSEA Summit in Orlando, where each represented state gave a comprehensive report on its 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 NCEES Motion 12, which was defeated in August 2016. Approval of the measure would have amended the *Model Law* and *Model Rules* by adding language for structural engineers that parallels language for professional engineers and professional surveyors. Reasons behind the motion's defeat have served to make the committee more effective and wiser in its support of SE licensure.

The forum at the summit brought to the committee's attention issues that relate to basic licensure concepts:

- Who are the primary organizations interested in SE licensure?
- Why are they interested?
- Why are some opposed?
- What common language can be used to cultivate consistent communication?
- What does it mean exactly to be a "Roster State"?
- What are the most commonly asked questions about licensure?
- How can we simply describe legislative acts that promote licensure?

The committee continues to discuss these issues with consideration from all sides.

Momentum from the summit helped shape our priorities for 2017. Our first goal for the year is to clearly define licensure issues to member organizations by identifying frequently used terms in the licensure lexicon. This will serve to create a consistent message and an understanding of objectives with all players, including outside organizations. Next, we are developing an easily accessible document of facts, questions and answers. Finally, we are improving our part of the NCSEA website so that it can effectively communicate essential information to anyone seeking it, but more specifically to member organizations who want to pursue structural licensure. The next summit will be in October 2017. 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 SE licensure to discuss efforts moving forward and hope to pick up some new members along the way. Our goal is to draw feedback from these visits so that we can better address our goals for 2017 and, after the next summit, refine our goals for 2018.

### **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 to eventually 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.

NSPE works to improve the lives of both the public and the P.E.s that serve it through efforts to:

- Define the P.E. license as the highest measure of professionalism and qualification to protect the public health, safety, and welfare
- Promote awareness and recognition of the value and meaning of the P.E. license
- Protect the integrity of the profession and the welfare of the public by vigorously opposing the practice of engineering by unqualified persons; and advocating the highest standards of licensure, ethics, and professional practice

Consistent with its mission, as a multi-tiered (national, state, local) federation representing the licensed professional engineer in all disciplines, NSPE is currently proactively addressing a wide-range of issues. Key areas of current focus are summarized below.

### **The future of the profession**

This is a time of momentous activity for all the professions (legal, financial, medical, engineering) and for licensure. In fact, this is a time of fundamental change for professions in general. NSPE has therefore put together a task force, using as its basis the seminal "The Future of the Professions," among other resources, to identify areas in which professional engineers must be prepared to change to be successful and sustainable moving forward. The task force is analyzing the current state of the profession, the delivery of its services, and how these methods may evolve over time or need to change and be adaptive in the current and future marketplace, including mobility of the license.

For additional information on this initiative, good points of reference include:

- President Verhalen's October 2016 blog post
- Executive Director Golden's August 2016 blog post
- "The End of an Era?" *PE magazine*, September/October 2016

### **Threats to occupational licensure—efforts to erode and eliminate occupational licensure**

The debate over the role of government in regulating occupations and professions has recently come to the forefront. According to the Bureau of Labor Statistics, occupational licensing directly affects nearly 30 percent of U.S. workers. Barbers, cosmetologists, florists, interior designers, naturopaths, manicurists ... and the list goes on. While the work of professional engineers—like that of doctors, registered architects, and attorneys—clearly affects the public health, safety, and welfare, it is not uncommon for state legislatures to categorize highly educated and trained P.E.s with barbers and cosmetologists in the debate over eliminating occupational licenses. For example, model legislation championed by the American Legislative Exchange Council, an association of state lawmakers that supports private-sector interests, led to a recommendation that would have eliminated the P.E. license in Indiana.

On August 20, 2015, as the result of extensive advocacy efforts by the Indiana Society of Professional Engineers and NSPE, the Indiana Job Creation Commission, inspired by ALEC's model law, rescinded its troubling recommendation to eliminate licensure of the professional engineer. (Nearly identical versions of this model legislation were quickly introduced in several state legislatures, including Arkansas, Iowa, and Minnesota.)

Although ALEC's model legislation does not specifically target P.E.s, in opposing occupational licensure in general, this broad attack undermines the value of the P.E. license and unintentionally impacts engineering licensure. NSPE is working closely with its state societies to ensure that any effort to undermine the value of the P.E. license is promptly and soundly defeated. Promoting and protecting the P.E. license is of the utmost importance. The member organizations of POLC must unite in efforts to ensure the protection of engineering licensure.

### **Changes to licensing board composition and oversight as a result of the *North Carolina State Board of Dental Examiners v. Federal Trade Commission***

The 2015 US Supreme Court decision in *North Carolina Board of Dental Examiners vs. Federal Trade Commission* has led some states to consider changing the oversight and composition of their licensing boards to ensure compliance with the decision. An increasing number of states are expected to introduce legislation and regulations to ensure that states and state boards do not subject themselves to increased liability. These changes increase oversight and supervision of licensing boards, often by the state attorney general. They also, in some instances, change the composition of the state board to include nonactive market participants. Any changes to composition and oversight must not interfere with the practice of professional engineering and the capacity of the state boards of licensure to properly regulate the profession.

### **Attempts to erode qualifications-based selection of engineering services**

Qualifications-based selection (QBS) is a procedure whereby service providers are retained on the basis of qualifications, rather than price factors. Under the QBS method, the procuring agency reviews the qualifications submitted by interested individuals and firms, ranks respondents, and then negotiates with the most qualified respondent for a mutually agreeable contract. The federal Brooks Architect-Engineers (A/E) Act (PL 92-582), enacted in 1972, requires federal agencies to use QBS procedures when procuring design services. Forty-seven states have implemented some sort of QBS law, and numerous localities have also adopted laws modeled after the federal statute (known as "mini-Brooks" acts). They require states and localities to use QBS procedures when procuring design services. Other states and localities have adopted regulations or executive orders that accomplish the same objectives as the statutes. QBS is vital to the public health, safety and welfare and ensures the best engineering outcomes. In 2016 and already in 2017 we have seen attempts, both through legislation and regulations, to undermine QBS. Any attempts to erode QBS must be defeated.

### **Licensure requirements for federal engineers**

The year 2016 was an extraordinary year for strengthening requirements for licensure of federal engineers, a top and longstanding NSPE priority. Regulatory advocacy initiatives yielded strengthened requirements for professional engineers in engineering projects across the country, particularly in the Environmental Protection Agency and the Department of the Interior. The Trump administration and 115th Congressional leaders have pledged to deregulate and roll back many of these regulatory requirements, which has the potential to impact the strengthened requirements already enacted as well as prospects for further requirements in these and other federal agencies. We must ensure that only qualified professional engineers are in responsible charge of engineering projects at the federal, state and local levels. Exemptions, such as the federal exemption, as well as the industrial exemption, undermine licensure, create confusion, and most importantly endanger the public.

## **Engineering education requirements**

Engineering education requirements have long been the subject of great debate in our profession. At NSPE's annual meeting, the House of Delegates approved a revised professional policy addressing education requirements:

With the continuing rapid expansion of knowledge required to practice in the basic, as well as the many specialized areas of engineering, NSPE believes that additional engineering education, but not limited to formal academic education, beyond the four year ABET/EAC degree should be required to meet the formal preparation necessary for the practice of licensed professional engineering.

Therefore, NSPE supports the concept of engineering licensure candidates meeting additional academic or other educational requirements as a prerequisite for engineering licensure. Additional education requirements should include formal education (such as a master's degree in an engineering discipline) or alternative approaches (such as additional coursework or professional development education) after obtaining a baccalaureate degree.

In December 2016, the NSPE board of directors approved a position statement providing more specific information.

## **Peer review legislation**

NSPE recently adopted a position statement to encourage the enactment of professional engineer peer review statutes in each jurisdiction. NSPE believes that professional engineers participating in peer review and post-project review "lessons learned" processes should be protected by appropriate legal immunity and legal privilege. Peer reviews include the review of designs by outside firms prior to project completion, as well as in-house post-project reviews of completed projects to identify best practices and reduce errors and omissions in future designs. Because they lead to improved practices, NSPE believes that both types of reviews benefit the public health, safety, and welfare. Well-crafted peer review legislation which includes appropriate safeguards can help to limit the liability and risk exposure for both engineers and engineering firms that employ peer reviewers as well as those engineers who actually perform the peer reviews and post-project reviews.

## **National Society of Professional Surveyors**

The annual Surveying, Mapping, and Geospatial Conference was held in Arlington, Virginia, March 14–18, 2016. During these meetings, NSPS established a Workforce Development initiative to work in concert with the activities of the Future of Surveying Task Force and the respective state surveying societies to develop a program to create the framework for insuring the perpetuation of the surveying profession. Three state societies (Maryland, Oklahoma, and Virginia) have initiated workforce development initiatives through their respective state governments/agencies. A page (<http://www.nspss.com/page/WorkforceDev>) has been set up on the NSPS website where information about NSPS and state society efforts can be viewed. Subsequently, during a meeting of the task force, June 10–11 in Baton Rouge, NSPS took the reins as the lead organization for future activities of the group, which was originally initiated with NCEES support. Surprising, and very rewarding, is the fact that from among the 18 organizations participating in the initial forum meeting in January 2016, 16 of those organizations sent representatives to this second meeting. It is important to note that NCEES funded travel for all groups to the initial meeting, but each organization was responsible for the expenses of its representative for the second meeting. Continued participation under this circumstance is indicative of the importance of this effort and the dedication of so many organizations to the cause. The NSPS 2017 budget includes money to fund the cost for the facilitator utilized during the first two meetings to provide that service during a spring/summer 2017 meeting of task force. The NSPS 2017 budget includes money to fund the cost for the facilitator utilized during the first two meetings to provide that service during a spring/summer 2017 meeting of task force.

The next Surveying, Mapping, and Geospatial Conference will be held in Silver Spring, Maryland, March 12–17, 2017. The annual NSPS Student Competition, two all-day workshops, agency briefings, Capitol Hill Day, and NSPS business meetings will take place during this time. Current information can be found from the home page of the NSPS website, [www.nspss.com](http://www.nspss.com).

The NSPS 2016 National TrigStar competition for high school students included participation by 38 state winners. The TrigStar Committee continues to work for broader participation among the state societies. The recently initiated NSPS \$5000 TrigStar scholarship (<http://www.nspss.com/?page=TSScholarship>) seems to have served as an incentive. Any graduating high school student who has competed in TrigStar at any time

during his or her high school years, and can demonstrate proof of acceptance in a college program providing education applicable toward achieving licensure, is eligible to apply for the scholarship.

The NSPS Foundation, initiated two new scholarships in 2016. One was created through the New Jersey Society of Professional Surveyors in the name of well-known Surveyor/Attorney/Instructor Walt Robillard. The other was initiated through NSPS, and resulted from a gift of \$130,000 from the estate of Dr. Ing. Desider E. Slavoj. Learn more about the scholarship program at <http://www.nspss.us.com/?page=Scholarships>. The foundation is currently working on a support program through which individuals and companies can support its activities. This year over \$29,000 in scholarships were given to deserving students enrolled in various surveying and mapping programs.

NSPS is beginning an initiative to establish student chapters within the respective college programs throughout the United States and its territories. Thanks to information provided from NSPS members, leaders, and affiliated state societies, NSPS has created a page on its website listing of all the programs of which it is aware. Currently, only 12 of those programs have NSPS student chapters.

NSPS is nearing completion of the first edition a workshop speaker database to be shared with the respective state societies for use in planning for their conferences and other educational activities. The list will include primarily those speakers who can be available on a nationwide basis. More than 30 speakers have responded positively to the inquiry sent by NSPS. NSPS hopes to also coordinate with other national organizations that provide workshops to their respective members, but could also be pertinent to surveyors.

NSPS continues to work with the governmental agencies for the following issues:

- FEMA: There is rekindled interest for expanding the use of a joint NSPS/ASFPM Certified Floodplain Surveyor certification program to other states. Currently the program is available only in North Carolina.
- NGS: NSPS representatives worked with NGS and representatives from other groups to develop template legislation for use by the respective state legislatures to revise/amend their state laws dealing with datums when NAD 22 becomes effective.
- BLM/Alaska: A NSPS Committee has submitted its final report related to the effect of the DPPS process proposed by BLM for the establishment of boundary line markers for the remaining lands to be ceded to the State of Alaska as a result of Alaska statehood over 50 years ago. The DPPS process, as proposed by BLM, would utilize calculated GPS positions rather than monuments placed in the ground, as was initially required in the statehood agreement. The Committee is now in the process of developing a response in opposition to a statement by a BLM official stating that the Committee found “no fundamental technical issues” related to BLM’s proposed approach. (<http://www.nspss.us.com/page/BLMDPPSAlaska>)
- DoL: NSPS recently sent a letter ([http://www.nspss.us.com/resource/resmgr/Davis-Bacon/NSPS\\_letter\\_to\\_Dept\\_of\\_Labor.pdf](http://www.nspss.us.com/resource/resmgr/Davis-Bacon/NSPS_letter_to_Dept_of_Labor.pdf)) to the Department of Labor (DoL) regarding the application of Davis Bacon prevailing wage rates to members of survey crews. The letter suggests that a recent statement by DoL related to the classification of air balance engineers also “accurately describes the standing and circumstance of a survey crew member”, albeit in the performance of a different activity. The NSPS letter also requested that DoL issue a revised All Agency Memorandum reflecting this fact. In its response dated 11/28/16 DoL rejected the NSPS proposal, stating “the Department believes that its current guidance is accurate and that no additional action is necessary” With the potential impact on federal agency leadership as a result of the recent elections, NSPS will revisit this issue.

NSPS is continuing its outreach through participation with the following groups:

- The American School Counselors Association (ASCA) at its conference in July, 2016
- Property Records Industry Association (PRIA) and NSPS will hold a two-hour session at the NSPS annual meeting on the concept of establishing a way to link actual survey plats to property records so they are used for property information rather than relying on GIS data.

NSPS is a member of an international coalition of professional organizations, agencies, and academia which have developed nonbinding international standards for property measurement (what is located, not how) and ethics.

In preparation for its sponsorship of the team of Merit Badge advisers for the upcoming Boy Scouts Jamboree, NSPS is seeking donations to its ongoing fund for the project. No donations have been solicited during the past few years; however, expenses for the upcoming jamboree are anticipated to be substantially higher. The concept

is to establish an ongoing donations program. The 2017 event will be held at the Bechtel Reserve in West Virginia.

The NSPS Foundation Disaster Fund to assists individuals whose homes, families, and businesses affected by natural disasters such as the recent floods and fires. Donations fund this important endeavor.

New brochures related to surveying careers, NSPS benefits, and information about what NSPS does have been developed, and printed. These brochures are available to members, the state societies, and educational institutions. Samples can be viewed at <http://www.nspss.us.com/page/PamphletsfromStates>.

Members are also encouraged to take advantage of the extensive NSPS social media outlets. In addition to the very popular weekly email newsletter, NSPS News and Views (which is sent via email) and the weekly web radio show, NSPS Radio Hour (accessible at <http://www.nspss.us.com/?page=RadioShow>), members can also get current information and share in dialog by searching National Society of Professional Surveyors on Twitter, Facebook, LinkedIn, and YouTube accounts.

NSPS has begun its research to determine whether to make a bid to host the 2022 FIG Congress and General Assembly. FIG holds an international meeting each year, but its Congress and General Assembly meets every four years, during which meeting the FIG presidency transitions. The last FIG meeting to be held in the US was sponsored by ACSM and ASPRS in 2002.

### **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.

#### **Keynote presentation to the 5th FORUM for advanced fire education/research in Asia 2016**

On October 23, 2017, SFPE Technical Director Chris Jelenewicz, P.E. made a keynote address at the 5th FORUM for Advanced Fire Education/Research in Asia about the licensure system for fire protection engineers in the United States. The presentation also focused on the NCEES exams (FE and PE) and the organizations that partner with NCEES to offer these exams in Asia.

#### **New technical document committees established**

In 2016, SFPE started two new technical document committees that were asked to update existing SFPE documents. The first committee is revising SFPE's first standard on calculating fire exposures to structural assemblies. The current version of this standard will be referenced in the Appendix of the next edition of ASCE/SEI 7. When the ASCE document is published, this will be the first time that "fire load" will be defined as a load in a U.S.-based structural engineering standard. Additionally, SFPE started the process of revising its *Guide to Fire Risk Assessment*. This guide is known as the definitive document that provides guidance on the application of risk assessment in fire protection design and the use of risk assessment methodologies in the design and assessment to building and/or process fire safety.

#### **PE Fire Protection exam**

SFPE continues to promote the PE Fire Protection exam. In 2015, the society sponsored a web-based preparation course for the PE Fire Protection exam. Over 100 students participated in this course. In addition, SFPE used the NCEES speaker's kit to make presentations on the FE and PE exams at the University of Maryland Department of Fire Protection Engineering and the Eastern Kentucky University Fire Protection and Safety Engineering program. Additionally, in 2016, seven SFPE chapters sponsored PE exam problem writing sessions.

### **Society of Naval Architects and Marine Engineers**

SNAME was organized in 1893 to advance the art, science, and practice of naval architecture, marine engineering, ocean engineering, and other marine-related professions. For more than a century, its members have included commercial and government practitioners; students; and educators of naval architecture, shipbuilding, marine, and ocean engineering.

The society has about 8,000 members in the United States, Canada, and abroad, with membership distributed in 12 U.S., 3 Canadian, 3 European sections (Western Europe, Italian, Greek), and one Asian section (UAE). These

sections host 41 student sections: 21 U.S.; 3 Canadian; 2 Greek; 3 Turk; 3 Egyptian; 1 Argentine; 1 Ecuadorian; 1 Mexican; 1 Filipino, 1 Italian, 1 Dutch, and 3 British. The sections hold technical meetings on a regular schedule to help members develop and retain relevancy to technical developments in the field. SNAME holds an annual meeting and exposition, supports several annually held symposia, and is a founding and participating society in the Offshore Technology conference.

The society encourages the exchange and recording of technical information, sponsors applied research, offers career guidance, supports education through ABET accreditation activities (now for more than 30 years) and its scholarship program, and enhances the professional status of its membership by actively promoting professional engineering licensure. The society offers accredited continuing education courses at its annual meetings and accredited professional development presentations at section meetings, symposia, and industry conferences. For 15 years, the society has offered an online professional engineer review course that has had over 500 registrants. Over 90 percent of those who have taken the examination have now become licensed professional engineers.

The society has a number of standing committees, including Technical and Research; Scholarships; Education; Academic Program Accreditation; and Professional Engineering Licensure. The Technical and Research Committee hosts 11 technical committees with 84 technical panels having about 1,200 members who address current problems in the field and prepare technical reports reflecting advancements in the field and providing improved design information.

SNAME's P.E. Licensure Committee consists of about 40 practicing licensed professionals in the United States who review, prepare, and test the validity of the NAME exams. Other licensed P.E. members (currently 10) conduct the P.E. review course each year for those preparing to take the NAME exam. SNAME conducted a Cut Score Study in Washington, DC on May 11-12, 2016, for an anchor exam that had 65 examinees and a 65 percent pass rate.

The accreditation activities of the society have been an ongoing effort for more than 30 years, and the scholarships program has been ongoing for almost 70 years. The society's ABET accreditation committee works diligently to ensure that accredited programs are current, with the state-of-the-art courses to prepare graduates for practice in the field.

On August 24, 2015, NCEES adopted a position statement on future engineering education requirements for licensure as a professional engineer, following a 2014 vote to remove from the NCEES *Model Law* and *Model Rules* the additional education requirements for engineering licensure that were set to take effect in 2020 in order to allow work on implementation to continue without a set effective date. These requirements called for an engineering licensure candidate to obtain a master's degree or its equivalent before initial licensure.

SNAME shares NCEES' dedication to ensuring that the education requirements for engineering licensure continue to safeguard the public in the future. However, SNAME is strongly opposed to the requirement for a master's degree or equivalent pathway for a licensure candidate to obtain the body of knowledge necessary to enter the profession. SNAME's position on this issue is based on the following factors:

- It is recognized there have been major advances in science and technology over the past several decades. However, colleges and universities hosting programs in naval architecture, marine engineering and ocean engineering have faculty, facilities and program content that are regularly updated and advanced to meet state-of-the-art requirements of the marine industry. This issue has been at the forefront of discussion for more than fifty years and has been actively addressed at all of the institutions hosting Naval Architecture/Marine Engineering/Ocean Engineering (NA/ME/OE) programs. There is no evidence that the content, vigor, and intensity of the programs have decreased. The evidence is that the quality of faculty, facilities, and program content have regularly increased. The capabilities of students entering the programs have similarly increased, with most students now bringing Advanced Placement backgrounds into the programs allowing them to accelerate their study, pursuing more advanced subject matter with more advanced tools than were even conceivable 50 years ago. The society believes it is not possible or even conceivable to make a valid comparison between the engineering programs of today and those of the mid-1950s, much less the 1920s.
- While those moving to change the NCEES Model Law minimum requirements for licensure rest part of their argument on the perceived "steady" decline in credits for graduation, no multidiscipline documentation supporting this claim has yet been presented. At the institutions hosting programs in NA/ME/OE, that has certainly not been demonstrated to be the case for the past 50 years. For the premier institutions in this field, that is categorically not the case. It is well recognized that the number and distribution of credits each

institution requires for the granting of an engineering degree give consideration to the background of the entering students as well as the relative importance of the content of the program elements, the faculty capabilities, available facilities, etc. As each program is accredited individually, it is recognized that one program is not directly relatable to a similar program at another institution. The competence of a graduate from a university to enter practice depends heavily on the quality of its entering students, its faculty, facilities and particularly the breadth, depth, and intensity of the university's program. These are issues that must be and are addressed by accreditation teams, not in an ad hoc manner as appears to be the case at hand. SNAME accordingly strongly rejects this argument as a suitable basis for arbitrarily increasing the minimum academic requirements for licensure.

- A survey of the SNAME licensed membership was conducted regarding this issue. The survey results showed that more than 90 percent of the responders were unable to find or report evidence of incompetence on the part of recent graduates. Further, recent graduates with an advanced degree were found to be no more capable than those without the advanced degree. A number of responders noted, however, that additional work practice experience in design before licensure could be beneficial. It was also noted that having a master's degree does not provide added competence unless the additional education was obtained to support professional needs in the work place. The net result of requiring advanced education prior to licensure would be to increase the cost and time to produce a licensed engineer, but without an identified benefit.
- It has also been noted in recent years that there has been a significant decline in the number of engineering graduates and increasing the time and cost to obtain licensure will further deplete the availability of licensed professionals. SNAME accordingly rejects the requirement for a master's degree or equivalent as the minimum basis for licensure as there is no identified basis for claiming this approach will increase competence of licensed practitioners, or increase the level of protection of public health and safety.
- Further to the issue, SNAME is not aware of any licensed P.E. incompetence having been identified by any state board of licensure or other regulatory agency on the part of newly licensed, recent graduates, or practitioners in the NA/ME/OE field.
- No inadequacy in the current NA/ME/OE academic programs has been identified, so there has not been any definition of a program requirement deficiency that needs to be addressed. Increasing the degree requirements for licensure without specificity as to academic requirements provides a solution to an undefined problem. SNAME rejects this approach as technically unsound.
- Because of the mobile nature of marine structures, ships, and offshore vehicles, NAME P.E.s are often faced with design in one jurisdiction; construction in another jurisdiction; and vessel operation, maintenance, etc., in yet another. This results in many NAME P.E.s being licensed in multiple jurisdictions. For this situation, comity becomes an important issue. It is noted that more than half of the state licensing boards are in opposition to the Model Law increased education requirements, and 75 percent of the jurisdictions offer licensure in NAME. If this issue is pursued to its intended conclusion, it can be expected that more difficulty will be made for those seeking licensure in the marine field, further impacting the future availability of licensed practitioners. Such a situation is not in the interests of the nation or the SNAME membership, and it provides an additional basis for rejecting this approach to licensure.

In summary, SNAME supports sound practices for ensuring that professional program needs are met at accredited institutions, and is committed to continuing education during professional practice, but is strongly opposed to requiring a master's degree or equivalent as a minimum requirement for licensure. SNAME believes that the ABET provides the best mechanism for achieving the desired level of competence in engineering graduates, ensuring adequate preparation for licensure at the bachelor's degree level. If the advocates of the master's-or-equivalent pathway for licensure candidates to obtain the body of knowledge necessary to enter the profession have found fault with content or product of current engineering programs, such fault should be exposed so that a suitable remedy can be prescribed. The arbitrary approach proposed does not offer opportunity to solve any undefined problem with the current status of licensure.

#### **Structural Engineering Institute of ASCE SEI and SELC**

SEI was established in October 1996 in order to serve the unique needs of the structural engineering community more effectively while also being their voice on broader issues that shape the entire civil engineering profession. Today, over 22,000 structural engineers within ASCE are members of SEI, including over 2,000 international members. Membership includes leaders in both structural engineering practice and academia, and for this reason SEI provides networking opportunities while also stimulating coordination and understanding between academia and practicing structural engineers.

The institute has encouraged discussions about licensure issues through summits on structural licensing and related activities undertaken by its Professional Activities Committee (SEI-PAC) during the past 10 years. The board of governors of SEI has adopted and endorsed a policy statement in support of licensing for structural engineers. This position is in concurrence with policy statement 524 of ASCE regarding additional credentialing for civil engineers beyond the professional engineer license.

SEI, NCSEA, Structural Engineering Certification Board (SECB), and Council of Structural Engineers (CASE) have created a coalition—Structural Engineering Licensure Coalition (SELC)—with the intent to gain wider support for structural engineering licensure and to support efforts in any states to pass legislation for structural engineering licensure.

SEI continues to support the efforts by NCEES in the writing of the structural engineering examination and the administration of this exam in all jurisdictions across the country. As in the past, the institute supports a uniform set of standards for the licensing of structural engineers, including the examination component of these requirements. This will create consistency among the various jurisdictions, and facilitate comity for licensed structural engineers.

### **Role of SEI/SELC with NCEES**

As interest in structural engineering licensure continues to gain momentum, both SEI and SELC are looking to NCEES for collaboration. At the current time, there are 11 states that recognize/license structural engineers and there are another 13 states where there is activity pursuing structural engineering recognition/licensure. NCEES has both a stake in this process and an important role in establishing consistency between states.

The question is: How does SEI/SELC have a voice at NCEES and how does SEI/SELC work with NCEES as the recognition/licensure efforts move forward in various states? Specifically, SEI/SELC are looking to NCEES for the following:

- Collaboration in developing a model for structural engineering recognition/licensure
- Improving comity between SE states
- Establishing continuing professional development for structural engineers
- Periodically reviewing and updating the MLSE requirements
- Promoting SE licensure

We appreciate all the efforts that NCEES has made on behalf of structural engineering, but the journey is only partially completed.

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

The second PE Metallurgical and Materials exam written to the new exam specifications (2015) was administered in October 2016. The exam has performed well according to exam indicators in both 2015 and 2016.

TMS offered the second PE Metallurgical and Materials exam review course in August 2016. Twenty-three people attended the course, and seven instructors collaborated to present the teachings in a three-and-a-half day course. The course will be offered again in August 2017 in Pittsburgh, Pennsylvania.

TMS continued its collaboration with four 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 2016 Conference (MS&T'16) held in Salt Lake City, Utah.

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 2016 which included three international visits.

The Accreditation Committee held the sixth offering of an engineering education symposium entitled “Curricular Innovations and Continuous Improvement of Academic Programs (and Satisfying ABET Along the Way): The Elizabeth Judson Memorial Symposium,” at MS&T'16. The objective of the day-long symposium is to provide support to academic programs in developing continuous improvement processes and provide a forum in which programs can share ideas, experiences, and best practices.

The TMS board of directors approved a status change for the Professional Development Committee from ad hoc to standing committee in 2016. The committee actively assesses and develops programs and activities that address the professional development and training needs of materials science and engineering professionals in both technical and nontechnical areas.

The Education Committee, which focuses on undergraduate education, sponsored the third graduate student-run symposium at the TMS annual meeting 2016. Education Committee members mentor graduate students from a select university on how to organize a symposium. Students are allowed a great deal of autonomy and have produced high quality symposia. The 2016 symposium entitled, “Transforming the Diversity Landscape: Significance and Impact” was organized by students of the University of California, Santa Barbara.

In 2016, the TMS board of directors approved a proposal by the TMS Diversity Committee to provide, through an application process, Family Care Grants, which can be applied to a variety of uses (e.g., childcare, eldercare, or care of a family member with disabilities) to support a member’s participation in the TMS annual meeting. The program will be implemented in 2017 with 20 available grants.

The Material Advantage Student Program, a cooperative venture with the Association for Iron and Steel Technology (AIST), the American Ceramic Society (ACerS), ASM International, and TMS, continued to thrive and increase student membership which in turn increases awareness of the materials community to students and helps them to build a successful career path.

The TMS Foundation continued revitalization efforts with a successful year in fundraising to support programs that benefit students and young professionals through awards, contests, travel grants, scholarships, and leadership development programs.

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

NCEES President Turner gave the following highlights on 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 2016 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 2015–16 fiscal year, including the number of U.S. licensees and the pass rates and volumes for NCEES exams.

#### **Computer-based testing (CBT) update**

In October 2016, NCEES expanded its exams offered via computer-based testing. Examinees began taking the first computer-based professionals exam—the Principles and Practice of Surveying exam—at Pearson VUE test centers across the country on October 3.

This exam joins our other computer-based exams—the Fundamentals of Engineering and Fundamentals of Surveying exams—which were introduced in 2014.

NCEES introduced a new testing component with the computer-based PS exam: alternative item types. AITs are items other than traditional multiple-choice questions with one correct answer. They include

- Multiple choice that allows multiple answers to be correct;
- Point and click, in which examinees click on part of graphic to answer;
- Drag and drop, which allows examinees to click on and drag items to match, sort, rank or label; and
- Fill in the blank, which provides space for examinees to enter a response to a question

NCEES plans to introduce AITs next in the FE and FS exams and in the Principles and Practice of Engineering exams as they move to computer-based testing in the future.

The conversion to computer-based testing for the PE exams is an ongoing initiative for the Council, with the exam development committees for each of the 25 PE exam disciplines working toward this goal. Our first PE

exam to convert to computer-based testing is the PE Chemical exam, which we will begin offering in January 2018. The PE Nuclear exam is scheduled to follow in October 2018.

### **Exam updates**

In addition to efforts to move our exams to computer-based testing, NCEES initiated several professional activities and knowledge studies in the past year. These studies, more commonly known as PAKS, are used to update specifications for the exams. New specifications for the PE Environmental exam were introduced in April 2016, and new specifications for the Structural Engineering exam will be introduced in April 2018. NCEES also introduced new design standards for the PE Naval Architecture and Marine Engineering exam in April 2016.

### **NCEES committee/task force updates**

NCEES standing committees and task forces are addressing a range of issues this year.

The Committee on Examinations for Professional Engineers is studying whether NCEES should assume all financial responsibilities for the development of Group II PE exams. As some of you know, NCEES currently partners with professional societies to develop the 11 lower-volume PE exams that are offered once a year. The move to computer-based testing—including developing a supplied-reference handbook and introducing alternative item types—prompted NCEES to look at the policies for developing these exams. This move has received the support of all the Group II societies, and they will continue to serve as the subject-matter experts for their respective exams and create exam items.

The EPE Committee, along with the Committee on Examinations for Professional Surveyors, is also reviewing the makeup of exam development committees to compare them with the NCEES position statement on diversity within the engineering and surveying professions. NCEES wants to make sure that diversity is represented because a diverse population of licensed engineers and surveyors is a benefit in shaping the future of professional licensure.

The Committee on Education is continuing to work on streamlining continuing professional competency compliance for professional engineers and surveyors. This year, it is developing a checklist that boards can use to evaluate whether CPC activity is appropriate in terms of content and quality.

The committee is also researching a practice-oriented pathway to satisfy Position Statement 35, Future Education Requirements for Engineering Licensure. This will include collaborating with technical engineering societies to establish criteria for education in their respective engineering disciplines. NCEES adopted this position statement in 2015. It reflects the standards that were removed from the Model Law and Model Rules in 2014. The statement outlines several pathways for a licensure candidate to obtain the body of knowledge necessary to enter the profession. It also reaffirms NCEES' commitment to engaging with technical engineering societies and others interested parties to explore additional education pathways.

### **International activity**

NCEES continues to see an increase in international activity. It now has agreements with 15 foreign entities to administer NCEES exams in 9 countries. In the last financial year, NCEES added agreements with four new Canadian provinces. It also began offering the FE exam through the Egyptian Engineering Syndicate. This new agreement expands access to the exam in Egypt to include graduates of Egypt-based engineering programs that are not accredited by EAC/ABET. The exam will assist with assessing the quality of engineering education in Egypt.

NCEES will continue to support member boards as they evaluate international candidates as well as engineers and surveyors who are licensed in the U.S. 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 and surveying awards**

Since 2009, NCEES has promoted licensure to engineering educators and students through the Engineering Award for Connecting Professional Practice and Education. During this time, NCEES has awarded \$500,000 in prize money to recognize engineering programs that encourage collaboration between college students and professional engineers. The University of Nebraska–Lincoln Durham School of Architectural Engineering won the \$25,000 grand prize for 2016, and five other winners received \$7,500 awards.

NCEES introduced a new initiative in 2016 to promote the surveying profession: the NCEES Surveying Education Award. The award recognizes surveying and geomatics programs that best reflect NCEES' mission to advance licensure for surveyors in order to safeguard the health, safety, and welfare of the public. Jury members selected 10 programs to receive the inaugural \$10,000 cash awards to assist with their efforts to promote the importance and value of licensure. We are launching the 2017 competition for this award later this month.

### **Technology Task Force**

For the past two years, NCEES has formed a Technology Task Force to consider new technologies in regard to regulating the practice of engineering and surveying.

Last year, the Council voted to adopt a position statement on remote sensing technologies proposed by the task force. The statement says that the use of these technologies, such as LiDAR, photogrammetry, and unmanned aircraft systems, as well as other emerging technologies should be under the responsible charge of a licensed professional in order to safeguard the public.

The Council also voted to approve amendments to the Model Rules to address the use of electronic methods for signing and sealing professional engineering and surveying documents. The Council will vote at its annual meeting in August on officially adopting those amendments.

This year, I have charged the task force to continue to evaluate the process of building information modeling and the ability of multiple professionals to work on design plans simultaneously. It will provide guidelines for how each design professional accepts responsibility for his or her work and how the finished product denotes each professional's work. It will also recommend changes to the Model Law or Model Rules, where applicable, to address professional responsibility related to the signing and sealing of work products that evolve from a BIM environment.

I have also charged the task force to continue to evaluate electronic- and digital-signature technology. It is studying the latest advances in electronic seals and propose guidelines for their application to ensure that they are authentic and that professionals are assuming responsible charge for their production.

### **CPC Registry**

NCEES is committed to improving licensure mobility, and we launched a Continuing Professional Competency Registry in June 2016 to make it easier for people licensed in multiple states to keep track of and meet the various CPC requirements. This web-based service provides a place for professional engineers and surveyors to track continuing education credits and store supporting documentation.

President Turner called on NCEES Chief Operating Officer Davy McDowell, P.E., to provide an update on the CPC Registry. COO McDowell presented the following presentation.

#### What is the Registry?

- Initiated at the request of the Committee on Education
- Launched in June 2016
- A place for engineers and surveyors to track continuing education with supporting documentation
- Strictly a place to track—does not approve courses or providers
- Free service to everyone who has an NCEES account

#### Registry use

- 2,256 customers tracking CPC
- Tracking for over 9,072 boards
- Over 22,550 courses logged

#### Registry features

- Number of courses that can be logged are unlimited
- Up-to-date tracking for each jurisdiction where you hold a license or for the NCEES CPC Standard
- Courses differentiated by area: technical, ethics, business practice, and laws and regulations
- Courses differentiated by delivery method: live, online
- Certificates, syllabi, course descriptions, and learning objectives can be uploaded

#### Delivery method

- 50.75 percent face-to-face
- 49.25 percent online

#### Course area

- 76 percent Technical
- 9 percent Ethics
- 9 percent Business Practice
- 6 percent Laws and Regulations

#### Top 10 course providers

- ASCE
- Red Vector
- AISC
- NSPE
- PDHOnline
- ASHRAE
- ACEC
- IEEE
- SE University
- American Wood Council

#### Where are we headed?

- Registry is a useful tool for licensees as well as boards.
- Boards could require use of the Registry.
- Licensees initiate process of sending credentials to board—versus board searching for licensee portfolio.
- The Committee on Education can focus on quality CPC. The Registry was first step in capturing data about CPC on a national basis.

After COO McDowell concluded the update, President Turner continued his remarks.

#### **NCEES board's leadership visit project**

As part of its strategic plan, NCEES is working to increase effective participation of members and member boards to increase national engagement.

To this end, NCEES launched a board visitation program in 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, address questions, and dispel any misconceptions.

More than 20 boards accepted the initial offer; visits began in September 2016 and are continuing throughout the 2016–17 fiscal year.

#### **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 over 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 very simple to volunteer. Just click on the 'Volunteer' link on our homepage, [ncees.org](http://ncees.org). We've given everyone a card with your materials so that you'll have the details. Exams are at the heart of our work at NCEES, and we need your members to keep our exam development program strong.

### **NCEES president-elect's report**

President Turner called upon President-Elect Patrick Tami, P.L.S., to address the group.

In August 2001, I attended my first NCEES annual meeting, which was held in Little Rock, Arkansas. I attended that meeting, not as a voting member, but as a POLC representative. Like some of you now, I was interested or at least intrigued by what NCEES was doing and how it related to my professional society.

Before attending that meeting in 2001, I did not have a good grasp of why my society was paying dues to NCEES or why I needed to travel 2,000 miles to hear about the topics on the agenda like multiple-choice exams versus essay, licensure mobility, model laws and rules, and computer-based exams versus pencil-and-paper ones. I found out they do impact my society and my profession. I was also introduced to an incredible amount of new acronyms. My hope is that each of you is learning something today about what NCEES is doing and how it relates to your society. I hope that you can take this back to your organization so we can continue to work together, to help each other, to understand each other in an effort to protect the health, safety, and welfare of the public.

So what are some of the important issues on the horizon that impact our mutual interest? First and foremost, in my opinion, is the devaluation of licensure by the public.

How many people here use Uber? Driving a taxi was once a regulated occupation in most every state. The requirements to become a taxi driver vary a little by city but generally include a valid driver's license, passing a health exam, drug testing, a criminal background check, training by an authorized school, paying fees, and passing a test. According to the Uber website, it takes less than 4 minutes to sign up to be an Uber driver—and the American public is happy.

In May 2012, the Institute for Justice published a report on the burdens from occupational licensing. The report documents the license requirements for 102 occupations across all 50 states and the District of Columbia. The study asserts that occupational licensing is overly burdensome and frequently irrational. The study urges state policymakers to review current and proposed licensure schemes to determine whether they truly serve the public or instead fence out competition. The report also concludes that as millions of Americans struggle to find productive work, one of the quickest ways legislators could help would be to reduce or remove needless licensure burdens. According to the Institute for Justice, "economic liberty"—the heart of the American Dream—is the right to earn a living in the occupation of your choice without unnecessary government interference. That's not all the Institute for Justice has been up to. The Institute has filed more than 80 economic liberty cases since it opened its doors in 1991. It has won these economic liberty cases at every judicial level, including the U.S. Supreme Court, state supreme courts, and state and federal trial courts across the country.

In July 2015, the White House put out a report prepared by the Department of the Treasury Office of Economic Policy, the Council of Economic Advisers, and the Department of Labor. The report encouraged state legislatures and governors to take a closer look at their licensing laws with an eye toward rolling some back. It also requested \$15 million for the Department of Labor to identify places where licensing requirements might be excessive.

A year later, in May 2016, Arizona Governor Doug Ducey signed HB2613 eliminating the need to be licensed to practice geology. Initially, the bill included several other professions such as landscape architects, assayers, and materials testers.

On December 6, 2016, Oklahoma Governor Mary Fallin called for a task force to review of all of Oklahoma's occupational licensing laws with the goal of eliminating and reducing unnecessary regulation. Governor Fallin said, "These unnecessary or outdated barriers make it hard for many Oklahomans, particularly those who may not have completed a formal education as well as some minorities." Other groups, such as the Heritage Foundation, the Cato Institute, and the Reason Foundation, have been talking for years about the need to reform licensing laws.

The questions to you and your society are, "When will policymakers include professional engineering or surveying on the list of eliminated professions in a bill?" and "Should we be prepared to do something about it?"

NCEES was originally founded in 1920 to provide for reciprocity among licensed engineers by means of interstate registration. The second issue I will be focusing our efforts on is as old as NCEES. I believe we can find where member boards throughout the United States and territories can agree at some level so that we will be able to announce some significant accomplishments in the area of licensure mobility by our 100th anniversary in 2020.

While my first NCEES annual meeting was in 2001 as a POLC representative, I was lucky enough to participate in an NCEES PS exam cut-score meeting also before being a member of NCEES. It was a great introduction to the exam development process. As President Turner previously discussed, we have begun the process of transferring the development and financial responsibility of all exams to NCEES, including the 11 lower-volume exams, which were being developed with our professional society partners. My third focus will be reviewing all of the exam development policies and procedures to ensure we are consistent, appropriate, and meet the psychometric standards for high-stakes exams such as ours. I will echo President Turner's pitch to you; NCEES is always looking for licensed professionals to work on our exams so that we can provide fair, valid, and reliable licensing exams. If you are a professional engineer or professional surveyor or know a recent licensee, please think about volunteering with NCEES to work on one of exam development committees.

I want to thank each of you for being a part of the leadership that defines our profession and for attending this meeting. I look forward to getting to know and work with you over the next few years. I am looking for ways to collaborate so we can better serve our common constituents and hope that when we look back on our turn at the helm we can honestly know we did the best we could.

#### **Adjournment**

With no new business to be brought before the group, President Turner thanked all attendees for their participation. The next POLC meeting will be held March 10, 2018, in Atlanta, Georgia.