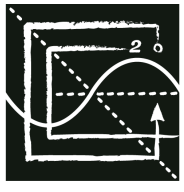
MINUTES OF THE PARTICIPATING ORGANIZATIONS LIAISON COUNCIL

March 2016



NCEES

Participating Organizations Liaison Council

Michael Conzett, P.E., Chair

The annual meeting of the Participating Organizations Liaison Council (POLC) was held Saturday, March 5, 2016, at the Westin Atlanta Airport in Atlanta, Georgia. NCEES President Michael Conzett, P.E. presided.

The following were present from NCEES:

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

Societies were represented as follows:

- Miller Love, P.E.—American Council of Engineering Companies (ACEC)
- Joseph Cramer, Ph.D., P.E.—American Institute of Chemical Engineers (AIChE)
- Charles Sparrow, Ph.D., P.E.—American Nuclear Society (ANS)
- Jay Harmon, Ph.D., P.E.—American Society of Agricultural and Biological Engineers (ASABE)
- Monte Phillips, Ph.D., P.E.—American Society of Civil Engineers (ASCE)
- Ben Leppard Jr., 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)
- Aaron Collins, Ph.D., P.E.—Institute of Electrical and Electronics Engineers–USA (IEEE–USA)
- Joe Michels, Ph.D., P.E.—Institute of Industrial and Systems Engineers (IISE)
- Gerald Wilbanks, P.E.—International Society of Automation (ISA)
- Brett Dodge, P.S.—Michigan Society of Professional Surveyors (MSPS)
- Joseph Luke, P.E.—National Council of Structural Engineering Associations (NCSEA)
- Kodi Jean Verhalen, P.E.—National Society of Professional Engineers (NSPE)
- Mark Golden—NSPE
- William Coleman, L.S.—National Society of Professional Surveyors (NSPS)
- Chris Jelenewicz, P.E.—Society of Fire Protection Engineers (SFPE)
- Moojane Louie, P.E.—Society of Naval Architects and Marine Engineers (SNAME)
- Gregg Brandow, Ph.D., P.E., S.E.—Structural Engineering Institute of ASCE (SEI)
- Jeffrey Fergus, Ph.D., P.E.—The Minerals, Metals and Materials Society (TMS)

The following societies could not attend:

- American Academy of Environmental Engineers (AAEE)
- American Society for Engineering Education (ASEE)
- Architectural Engineering Institute of ASCE (AEI)
- Council of Engineering and Scientific Specialty Boards (CESB)
- California Land Surveyors Association (CLSA)

President Conzett called the meeting to order and welcomed all attendees. POLC member organizations submitted the following reports.

American Council of Engineering Companies (ACEC)

The ACEC Management Practices Committee examines issues relating to licensure and how they impact professional practice. ACEC participates in discussions related to licensure, continuing education, and the stature of the engineering profession, both nationally and in the states.

ACEC offers a wide array of professional education programs at its conferences, standalone seminars, and online seminars. ACEC continues to provide business resources and educational programming that provide content in key management areas taught by qualified, respected practitioners and that address the latest issues, trends, and developments in the industry.

Some of ACEC's educational course offerings include the following:

- Green Infrastructure and Sustainable Communities
- Navigating Government Projects and FAR Requirements: A/E/C Insiders' Guide to Government Procurement and Compliance
- Essentials of A/E Financial Management and Firm Valuation
- Applying Expertise as an Engineering Expert Witness
- Business of Design Consulting
- Senior Executives Institute, ACEC's flagship leadership training program, presented in partnership with the Brookings Institution

The ACEC Registered Continuing Education Program (RCEP.net) web-based educational management system continues to grow. RCEP promotes quality and consistency in continuing education for professional engineers and surveyors and related industry professionals. Education providers vetted through the RCEP program are measured against an established set of standards to ensure the credibility and value of the continuing education activities offered by that provider, recognizing those that adhere to effective practices. Serving as a single source for obtaining and recording continuing education activities for licensees, RCEP offers state licensing boards free access to PDH records of its licensees through the RCEP.net system to facilitate an efficient and easy audit or review. RCEP.net currently holds PDH records for over 64,000 professionals. The number of providers continues to grow; there are currently 126 RCEP providers in the system. Notable providers added in 2016 include the Transportation Research Board, North American Geosynthetics Society (NAGS), and Pennsylvania State University.

ACEC fully supports the concept of elevating the stature of engineers, fighting commoditization, and achieving relevant, educational programming. Ultimately, "raising the bar" for the profession is a matter of many factors beyond a bachelor's plus 30 requirement, and ACEC's leadership and business training critical to this effort. Key recommended education areas beyond core technical knowledge include community and client challenges, innovation and entrepreneurship, leadership in project delivery, multidisciplined project team leadership, project financing, ethics, public policy, community leadership, and political leadership.

American Institute of Chemical Engineers (AIChE)

The NCEES Principles and Practice of Engineering (PE) Chemical exam committee continues to write, review, edit, and approve new questions for inclusion on future exams. The committee is transitioning the exam from the pencil-and-paper format to computer-based testing (CBT). The PE Chemical exam will be the first Group I committee transitioning to CBT (the PE Nuclear exam is the first Group II exam). The remaining pencil-and-paper exam forms are complete, and the final administration of this format will be in 2017. Once the transition to CBT is complete, the test results, based on psychometric measures, are expected to be commensurate with the hard-copy format. As part of the transition to CBT, a subcommittee is drafting a supplied reference handbook that will contain the necessary information for candidates to take the exam. A hard copy and PDF version will be available to the public in early 2017. When the transition to CBT is complete (scheduled for January 2018), the committee will shift focus to developing a new professional activities and knowledge study (PAKS). This will require input from a large number of chemical engineers, and the AIChE membership will be solicited. The number of new items on exams has been increased so that there are sufficient ratios of bank items to exam items in each specification area to support CBT. These higher ratios are essential for CBT and the ratios should continue to expand over the next several years. The committee continues to grow its volunteer base, and several first-time volunteers were present at each of the most recent meetings.

During 2015, the Fundamentals of Engineering (FE) chemical engineering team prepared questions for the FE exam. These questions exhibited high psychometric measures when compared to other disciplines. Due to the

productivity of the FE committee team and the relatively low number of chemical engineers sitting for the FE exam (when compared to the other disciplines such as civil engineering and mechanical engineering), the FE chemical engineering team was restricted to meeting at NCEES for exam preparation only twice per year (down from four meetings annually). The chair of the FE chemical engineering team, in contrast, was required to attend all four meeting sessions. After the first full year of operating under this newly implemented FE format, the FE chemical engineering team recommended that at least the chair and a minimum of one team member attend off-cycle meetings. This has greatly improved the use of the chemical engineering manpower and increased the efficacy of the off-cycle meetings for the chemical engineering FE team. For the 2016 year the chemical engineering FE group is seeking to add one to two new participants to support the team and replace members who are no longer participating on a regular basis. The trend for the number of chemical engineering FE examinees has increased from the low numbers encountered during the initial implementation of the CBT exam but is still down. The team strongly encourages the continued implementation of programs encouraging chemical engineers to obtain engineering licensure.

Leadership of the PE Chemical committee is well represented by the Career and Educational Operating Committee of AIChE, and service on both the FE and PE Chemical committees is considered to be service to AIChE. In addition, AIChE follows the work of the NCEES Committee on Examinations for Professional Engineers and sends an AIChE representative to each EPE meeting.

AIChE continues to oppose inclusion 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. In 2014, NCEES removed the requirement from the *Model Law* but 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. The Licensure that Works consortium will continue to closely monitor developments.

In a related activity, AIChE completed a body-of-knowledge (BOK) document for chemical engineers working as engineering professionals and to guide the education efforts of AIChE. The BOK may be used as a basis for restructuring some of the AIChE offerings in the AIChE Academy, its continuing professional education entity. The intent is to align the course offerings with the needs of chemical engineers throughout their careers. Several members of the PE Chemical exam development committee participated in this working group, which reported to the society's CEOC. The document is available online at www.aiche.org/resources/publications/body-knowledge. A technical session discussing the BOK will be held at AIChE's 2016 annual meeting in November.

AIChE created the Licensing and Professional Development Committee (LPDC) under CEOC in 2014. One major focus 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. This spring similar presentations will be made at four student regional conferences, each attended by as many as 1,000 students. LPDC also includes a new programming group charged with developing regular programming of interest to chemical engineering P.E.s. The programming group reports to both LPDC and to the Management Division of AIChE.

Last year 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.

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. As an integral part of that effort, AIChE began to offer sessions of specific interest to chemical engineering P.E.s at its spring 2013 meeting (this effort continues) 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 is also vigorously expanding 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 continues to expand 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 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 sSustainability entails, as well as to establish a BOK in the field of sustainability. Additionally in 2016, the AIChE Center for Process Safety will begin to offer a professional credential-certifying competency in chemical process safety. Based on the process safety BOK largely defined by the center, the credential will rest on a foundation of risk-based process safety and be supplemented by other center guidelines and methods as well as the work of DIERS and other widely-agreed upon standards.

American Nuclear Society (ANS)

ANS has developed a vigorous approach to the matter of encouraging professional registration and maintaining consistent and reasonable standards for the content of the PE Nuclear exam. Within the society, leadership for these matters has always been the responsibility of the professional engineering examination committee. The years of experience with these two aspects—registration and standards—provide historical data with which to make useful observations.

Encouraging registration

For approximately the last 20 years, ANS has visibly encouraged registration. The main way of communicating with its members on a regular basis is *ANS News*, a newspaper-style mailing to all members. The committee has regularly furnished articles concerning the value of registration. Editors of *ANS News* have put them in conspicuous places, normally close to the center of the newsletter. The board of directors of the society has always taken a supporting position on registration, with a history of financial support for committee travel. A liaison person is appointed to provide communication between the working elements at ANS offices and the committee. The ANS liaison appointees have, without exception, supported the activities of the committee in a professional, effective manner.

This year, the Professional Engineering Examination Committee will have a session at the ANS Student Conference, with a presentation scheduled for April 1.

Computer-based testing

The first computer-based PE Nuclear exam will be administered in 2018. NCEES has scheduled a working meeting from March 17–19, 2016, to finalize the workbook to be used as the single reference. Questions from the October 2017 PE examination will be used to determine whether item bank problems can be solved using only a single reference.

Group II administration

The Professional Engineering Examination Committee continues to discuss a change in administrative responsibility in which NCEES would assume some of the workload associated with examination offerings. ANS has not yet taken a position on this matter.

Rebecca Steinman, Ph.D., will pass the chairmanship of the committee to John Bennion, Ph.D. Steinman has been a very effective leader of the committee. We are very fortunate that Bennion has agreed to chair the committee once again. These two individuals have provided significant direction to a committee, which enjoys the full support of our society.

American Society of Agricultural and Biological Engineers (ASABE)

ASABE continues to offer PE/FE exam resources including a mentor program, monetary incentives for first-time takers and repeat takers, webinar series, PE and FE exam review materials, and articles in society publications highlighting and encouraging licensure.

Members of ASABE ED-414 committee, which oversees the PE Agricultural and Biological exam, continue to provide new items, review items, assemble examinations, review examinations, and respond to issues raised in exam administration. Preparation is being made for moving to computer-based testing (CBT). The exam writing session at Clemson University was held February 16–17, 2016.

To assist individuals in their goal of becoming licensed, ASABE hosts a free webinar series designed to aid in preparation for the PE Agricultural and Biological exam in the United States. Online sessions were presented by instructors from across the United States. Each two-hour segment focused on one topic, collectively providing basic refreshers on the range of topics addressed by the PE Agricultural and Biological exam.

In preparation for a move to CBT, an electronic reference resource has been assembled. Seven sections were posted and available free of charge at http://www.asabe.org/membership/career-resourcespe-licensure/pei.aspx. Exam candidates have been invited to use this while preparing for the PE Agricultural and Biological exam and are invited to provide feedback to the development committee. The staff at ASABE headquarters have assisted with document preparation and obtaining publishing permissions as needed. This reference is in addition to a printed publication containing specific ASABE standards for use during taking the PE Agricultural and Biological exam.

NCEES agreed to change the date of the examination from an October administration to an April administration, with the first spring exam given in April 2015. It was thought that this would eventually raise the number of test takers because many agricultural and biological engineers are involved in field work during the summer and winter is a more logical time to prepare for the exam. In October 2013, there were 32 total takers (26 first timers) and in April 2015 there were 31 total takers (24 first timers). It is hoped that numbers will grow as people become more familiar with the changes.

In support of the transition to the new PE Agricultural and Biological exam, a sample exam was developed including solutions and cited references. This was made available free of charge at www.asabe.org/membership/career-resourcespe-licensure/pei.aspx

ASABE is making $75,000 available to its members in 2016 for special initiatives to grow the society and increase its visibility in the world.

The Ag and Bio Ethics Essay Competition will be offered again this year to undergraduate and graduate students. It invites participants to write on an ethics topic of their choice that impacts the professional activities related to engineering and technology for agriculture, food, and biological systems. ASABE also continues to offer the Ethics Video Challenge by which entrants describe an ethical issue(s) faced by agricultural and biological engineers in practice or research in a video of five minutes or less. Winning videos are used in interactive continuing education sessions promoting engineering ethics and young engineer involvement at the annual international meetings.

The 2016 ASABE annual meeting is scheduled for July 17–20 in Orlando, Florida. The society will also hold the Engineering and Technology for Global Food Security Conference in Stellenbosch, South Africa, on October 24–27, 2016. Visit www.asabe.org for more information on these events.

American Society of Civil Engineers (ASCE)

ASCE has several items of interest for POLC. These issues continue to be top priorities of ASCE.

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. In addition, one or more new webinars will be produced in the coming year to increase awareness of current licensure issues and ASCE's support of licensing.

Policy statements

ASCE has updated many of its policy statements that address various aspects of licensure and help it to promote licensure. Newly adopted Policy Statement 547 states ASCE's belief that, prior to licensure as a professional engineer, an engineering graduate should have progressive experience in technical breadth and depth in their chosen subdisciplines of civil engineering, and in certain professional practice areas that are outlined in the policy. This is consistent with the outcomes that the *Civil Engineering Body of Knowledge* describes as necessary for professional practice. The policy also states that progressive experience as described in the NCEES *Model Law* should be a prerequisite for licensure.

All of ASCE's policy statements can be viewed on its website at www.asce.org/public_policy_statements.

ASCE's Committee on Licensure 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, ASCE will publish guidelines to the prelicensure experience, targeted at both engineer interns and their employers and mentors. The guidelines will note that, while not required by licensing boards, the capabilities described are important for career development.

Raising the bar for the engineering profession

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. ASCE formed a task committee to explore how it will move forward in implementing this bold vision and link the vision to the on-going strategic planning processes. The task committee's report 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 critical action is reform in the education and pre-licensure experience of civil engineers through implementing ASCE Policy 465 better known as the Raise the Bar initiative. The ASCE continues to promote and distribute copies of Vision 2025 and would be glad to send copies of the *Vision for Civil Engineering* in 2025 to any member of the POLC upon request.

ASCE policy related to additional education

Every three years since 1998, the ASCE board of direction has reviewed, refined, and reapproved its Policy Statement 465 (Academic Prerequisites for Licensure and Professional Practice). ASCE Policy 465, as most recently approved by the board on October 5, 2014, states in part the following:

> ASCE supports the attainment of an engineering body of knowledge for entry into the practice of engineering at the professional level, i.e., practice as a licensed professional engineer, through appropriate engineering education and experience, and validation by passing the licensure examinations. To that end, ASCE supports an increase in the amount of engineering education, such that the requirements for licensure would comprise a combination of
> - A baccalaureate degree in engineering
> - A master's degree in engineering, or no less than 30 graduate or upper level undergraduate technical and/or professional practice credits or the equivalent agency/organization/professional society courses which have been reviewed and approved as providing equal academic quality and rigor with at least 50 percent being engineering in nature; and appropriate experience based upon broad technical and professional practice guidelines which provide sufficient flexibility for a wide range of roles in engineering practice

The full statement of Policy 465 is posted at www.asce.org/issues-and-advocacy/public-policy/policy-statement-465—academic-prerequisites-for-licensure-and-professional-practice/. The society continues to refine this policy and any further changes will be posted to this website.

Master plan for implementing ASCE Policy 465—overview

ASCE's master plan for implementing ASCE Policy 465 is based on ASCE's *Vision for Civil Engineering in 2025* and the *Civil Engineering Body of Knowledge for the 21st Century* (BOK). The vision describes a future desired state for the profession. The BOK implies the need for changes to the educational and licensure processes of the civil engineering profession including the (1) accreditation criteria of engineering programs, (2) university curricula, (3) on-the-job education and training of engineer interns, (4) NCEES *Model Law/Rules*, and, ultimately, (5) state laws and regulations governing the licensure of practicing professional engineers.

The work products associated with this master plan are briefly explained below. For a more detailed explanation, please go to www.asce.org/raisethebar.

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 (and other information about ASCE's Vision 2025 and "raise the bar" initiative) is available at 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.

It is very important to note that, from ASCE's perspective, the BOK represents 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 in an increasingly complex environment. Since input into the accreditation and licensing processes comes from a considerable number of stakeholders beyond just ASCE, it is unlikely that these processes will reflect all aspects of ASCE's BOK. ASCE is optimistic that the accreditation and licensing processes could change over time to more closely align their requirements 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 are effective for the 2016–17 accreditation cycle.

Curricula

The *Civil Engineering Body of Knowledge for the 21st Century* motivated civil engineering faculty to re-examine 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 Body of Knowledge and its influence on curricula. Many of these papers are available at http://www.asee.org/search/proceedings or by contacting Mark Killgore of ASCE staff at mkillgore@asce.org. 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.

Moving ahead in 2016

Communications and state legislative activities

The Raise the Bar Committee was formed to implement the society's Raise the Bar initiative. The focus of the committee's activities includes:

- Developing messages, tools, and strategies to influence ASCE members, major employers of civil engineers, lead client groups, leaders of engineering organizations, and other key stakeholders to understand and commit to the changes necessary to implement the Raise the Bar initiative. A new infographic helps stakeholders understand the importance of enhancing the educational requirements for future professional engineers.
- Supporting individuals and state organizations that are working to pass changes to the licensing laws in the states to reflect the NCEES *Model Law* and raise the bar for the licensure of engineers. In 2015, ASCE State Government Relations solicited requested lobbying studies to determine the legislative climate in Alaska, Idaho, Kentucky, and New Jersey and help chart steps forward.
- ASCE continues to collaborate with NSPE in advancing the educational requirements for engineering licensure. To help with this effort, Raise the Bar resources can continue to be accessed at www.RaiseTheBarforEngineering.org. Highlights of this website include 8-minute and 3-minute videos that feature some key national engineering leaders promoting the Raise the Bar initiative.
- ASCE State Government Relations staff monitored legislative and regulatory trends in the states. In particular, opposing recent proposals 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". Bills to eliminate licensure were taken up in five state legislatures (Arkansas, Iowa,

Minnesota, Nevada, and Washington) and in one state (Indiana) the proposal came from a Governor's Job Creation Commission.

Specialty certification for civil engineers

Civil Engineering Certification Inc., 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, the Academy of Geo-Professionals, and the Academy of Coastal, Ocean, Ports and Navigation Engineers were created and are led by the Civil Engineering Certification.

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 is based on the work done by the ASCE Committee on the Academic Prerequisites for Professional Practice (CAP3) and the 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 + master's/doctorate/30 credits, 10+ years of professional water resources engineering work experience (of which 6 years must be accumulated after first achieving the P.E. licensure or foreign equivalent), and a commitment to professional development and ethics. Twenty professional development hours (PDHs) 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 700 individuals have qualified for this certification. Visit 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 PDHs in geo-professional engineering, including four PDHs in ethics and two hours in sustainability. As of February 1, 2016, AGP has certified about 330 professional engineers. The AGP website can be found at 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 sub-disciplines embraced by COPRI. ACOPNE has defined subspecialty fields of expertise consistent with the sub-disciplines contained in COPRI: coastal engineering, ocean engineering, port engineering, and navigation engineering.

ACOPNE has granted about 250 certifications as of February 1, 2016. Diplomate subdiscipline certifications under ACOPNE include Diplomate, Coastal Engineering (D.CE), Diplomate, Ocean Engineering (D.OE), Diplomate, Port Engineering (D.PE), and Diplomate, Navigation Engineering (D.NE).

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 ACOPNE's website, www.acopne.org, for more information.

Building Security Certified Professional (BSCP)
In addition to these specialty certification academies, CEC is responsible for the BSCP certification program. ASCE created the BSCP certification to allow building security professionals a way to gain further recognition in the field. The BSCP certification has a comprehensive, multidisciplinary focus on building security that makes it unique in the field.

A BSCP is an individual who is licensed to practice engineering, architecture, or landscape architecture in a U.S. jurisdiction or who is certified by ASIS International as a Certified Protection Professional (CPP) or Physical Security Professional (PSP). A BSCP, thus, has demonstrated minimum competence in a specific discipline. A BSCP also has broad knowledge and understanding of security considerations and can address them effectively in the integrated planning, design, construction, operation, and risk assessment of buildings. In particular, the BSCP is familiar with the building classification and field evaluation procedures described in the BSC Building Security Rating System, and has the expertise to apply them within the context of a multidisciplinary team. Upon earning a BSCP, individuals are required to earn twelve PDHs over a two-year period in order to maintain their certification. See more at bscp.asce.org.

A total of 65 individuals have been certified as a BSCP to date.

Other ASCE Initiatives
Utility Engineering and Surveying Institute (UESI)
ASCE's newest institute, UESI, offers civil engineering and surveying professionals working within the utility and pipelines engineering and the surveying communities a recognizable home which they can join to collectively work to improve the profession. The UESI aspires to become the world leader in generating products and services that promote and reward excellence in the engineering, planning, design, construction, operations, and asset management for utility infrastructure and engineering surveying.

More information on the institute's values, goals, and programs can be found at http://www.asce.org/utility-engineering-and-surveying/utility-engineering-and-surveying-institute/.

Envision rating system
The Envision ratings system is administered by the Institute for Sustainable Infrastructure (ISI), which was founded in 2010 by ASCE in partnership with ACEC and the American Public Works Association. Envision measures the sustainability of an infrastructure project from design though construction and maintenance. Design teams and project owners use it to set and achieve sustainability goals, adopt and implement effectively sustainable choices, and help set standards for others to follow. ASCE continues to support Envision and the efforts of ISI by promoting ENV SP credentialing, use of the Envision assessment tools, and submission of projects for Envision consideration. More information is available at www.sustainableinfrastructure.org.

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

ASCE annual conference and exposition
ASCE's 2016 convention will be held in Portland, Oregon, on September 28–October 1, 2016.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
President's report
For many years, ASHRAE has worked with NCEES and POLC to promote engineering as a profession and an industry. A summary of ASHRAE's efforts in support of engineering and licensure are provided below. We look forward to continuing our relationship with NCEES and POLC to ensure a strong engineering community.

- Ensure that a member sits on the P.E. examination committee
- Ensure approval of professional development courses, technical programs, and other educational activities for P.E. continuing education credits
- Offer scholarships to undergraduate engineering, engineering technology, or pre-engineering students who meet a series of criteria, one of which is
  - The institution hosts a recognized ASHRAE student branch or
  - The program is accredited by ABET in the United States
- Sponsor DiscoverE and National Engineers Week

- Sponsor Solar Decathlon in the United States and other parts of the world to encourage engineering and STEM
- Develop and implement a strategic initiative to get more HVAC&R courses into engineering curricula
- Participate in the HVACR Workforce Development Foundation, which seeks to identify future workforce gaps from technicians through engineering
- Provide a membership recognition program with the UK's Chartered Institute of Building Services Engineers (CIBSE) to help encourage P.E. and Chartered Engineer relationships
- Provide a Women in ASHRAE (WIA) program; just nominated a woman to be treasurer for society year 2016-17. If elected, she will become the society's second female president, and her term will be 2018–19, all to encourage women to pursue professional engineering careers.
- Implement a strategic initiative to quantify underscore the influence of ASHRAE engineers in energy conservation in the built environment
- Participate in the Licensing that Works coalition
- Support 2015–16 President David Underwood's theme that focuses on the significance of the Canadian iron ring ceremony for professional engineers in Canada and the status and ethical obligations of professional engineering licensure

ASHRAE facts

- Has more than 55,000 members representing 140 countries; most members are assigned to one of almost 180 chapters in 14 regions; have more than 5,000 student members and 380 student branches
- Maintains 125 active standards, including a new standard on legionellosis
- Attracted 60,000 participants to the 2016 Winter Conference and AHR Expo that were held at the end of January in Orlando

American Society of Mechanical Engineers (ASME)

ASME membership profile

- ASME currently has 130,000 members, including student members.
- Approximately 29 percent of nonstudent members hold P.E. licensure in one or more states.

Conferences that are venues for licensure discussions

- International Mechanical Engineering Education Leadership Summit, March 16–19, 2016, Tampa, Florida.
- ASME annual meeting, June 4–8, 2016, Louisville, Kentucky
- International Mechanical Engineering Congress and Exposition (IMECE), November 12–16, 2015, Phoenix, Arizona

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
- Revising ABET MET program criteria to explicitly require use of industry codes and standards
- Revising 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, the National Science Foundation approved a 2-year proposal from 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 ACEC have also taken their own positions against the master's or equivalent requirement.

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. Additional information can be found at the Licensing That Works website (LicensingThatWorks.org).

In contrast to a depiction of B.S. credit hours linearly declining through 2025, an analysis of the change in credit hours between the 1950's and 2010's 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 leveled 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.

Codes and standards

- The ASME Standards and Certification Sector recently updated a booklet, *Examples of Use of Codes and Standards for Students in Mechanical Engineering and Other Fields*, which provides a background on the role of standards in everyday life and offers specific examples of their application ranging from plumbing

fixtures to cranes and elevators to nuclear power plant equipment. The booklet was distributed to more than 500 universities. It also created a web page that contains information geared to students and early career engineers.

- A number of schools are using current ASME standards-related assessment based courses for extra credit or as part of class assignments.

Continuing education

ASME trained more than 7,000 participants in fiscal year 2015. 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 Mechanical Engineering FE exam development committee has consistently prepared exams with high psychometric measures. FE Mechanical exams had an 80 percent pass rate for the latest two offerings. Historically, the FE exam has had pass rates ranging from 77 percent–85 percent for first-time takers. The 2,278 individuals who took the exam in the latest two offerings represent 29 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. The exam committee completed the professional activities and knowledge study (PAKS) process and obtained approval from the Examinations for Professional Engineers (EPE) Committee for new specifications for the three Mechanical PE exams. Similar to what has happened with the FE exams and with the 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 will be 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.

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 its 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. Because of our in-progress change of specification, the PE Mechanical exam committee is projected to be approximately the fourth Group I PE exam to make the move.

Committee assignments

Beginning January 1, 2017, the new chair of the PE ME committee will be 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–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 (ASPRS)

Photogrammetric licensure updates

- Washington—It is looking into the licensure of photogrammetrists. It submitted a draft of the proposed legislation (includes some changes for engineers and surveyors) to ASPRS this past August for review and comment. The Professional Practice Division (PPD) officers reviewed the document and submitted it back to the LSAW for final review. The LSAW is in the processing of reviewing it at the committee level prior to taking it to the state legislature.
- Texas—PPD of ASPRS made a presentation regarding the state licensure of photogrammetrists to the Texas Board of Professional Land Surveying this past year. The Practices Committee of the Texas Society of Professional Surveyors is going to make this same presentation on May 2, 2016 to the Governmental Affairs Committee.

- Florida—The State Board for Surveying and Mapping has approved a change in the makeup of its board. This change is to drop the requirement of a having one qualified photogrammetrist as a board member. The primary reason for this change is the very limited number of qualified/willing candidates. This change is a part of the Department of Agriculture's Consumer legislation package that goes before the state legislation for a vote on March 1st, 2016. If passed, it will become law on July 1, 2016.
- The PPD maintains a licensure status map on the ASPRS website.

ASPRS—certifications
In August 2015, ASPRS announced the launch of both a Professional and Technologist LiDAR certification, the Certified Mapping Scientist, LiDAR (CMS, LiDAR) and the Certified LiDAR Technologist (CLT).

New division
ASPRS created the new Unmanned Aerial Systems (UAS) division to focus on the regulation and development of UAS/UAVs in the geospatial environment.

New positional accuracy standards for digital geospatial data released
ASPRS officially released the new standards in March 2015. The document, "ASPRS Positional Accuracy Standards for Digital Geospatial Data Edition 1," can be found on the ASPRS website. The new ASPRS standards address recent innovations in digital imaging and non-imaging sensors, airborne GPS, inertial measurement units (IMU), and aerial triangulation (AT) technologies. Unlike prior standards, the new standards are independent of scale and contour interval, address higher levels of accuracies achievable by the latest technologies (e.g., unmanned aerial systems and LIDAR mobile mapping systems), and provide enough flexibility to be applicable to future technologies as they are developed. Finally, the new standards provide cross-references to older standards as well as detailed guidance for a wide range of potential applications.

California Land Surveyors Association (CLSA)

The following activities of CLSA of interest to POLC are as follows:

Our 2016 officers are Roger Hanlin, president; Ian Wilson, president-elect; Jeff Steffan, secretary; Annette Lockhart, treasurer; and Jay Seymour, immediate past president.

Membership
Membership is currently about 2,000 members.

CLSA 50th anniversary and conference
The year 2016 marks CLSA's 50th anniversary. The anniversary issue of *California Surveyor* will include a history of CLSA and will list the accomplishments of CLSA, pictures celebrating CLSA, and much more.

The 50th year California-only state conference will be held in Rohnert Park, Sonoma County, California, on March 19–22, 2016, to honor this achievement.

125th year of licensure
We are also celebrating being the first state to license land surveyors (in 1891) pursuant to the first Land Surveyors Act enacted in the United States.

Scholarships
CLSA's 501(c)(3) Education Foundation issued $55,000 in scholarships to 26 land surveying students.

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. Non-members 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.

Land surveyors week
CLSA will be celebrating Land Surveyors Week March 20–26, 2016. 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 of the opportunities at both the chapter and state level, gaining 30 hours in two years is easily achievable.

Institute of Electrical and Electronics Engineers–USA (IEEE–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 2015. Key events and developments of special interest to IEEE's U.S. members include the following:

NCEES annual meeting
IEEE-USA Past President Gary Blank attended the NCEES annual meeting.

Participating Organizations Liaison Council
One member of the Licensing and Registration Committee continues to attend the POLC meetings. Aaron Collins will represent IEEE-USA at the March 2016 meeting.

EPE Committee
The January 2016 EPE Committee meeting was attended by David Whitman (current EPE chair), Steve Barrett (as new ECE exam committee chair), and Glen Parker (representing IEEE).

PE Electrical and Computer exam
The ECE Committee met twice in 2015 to review and update the power, electrical and electronics, and computer modules of the PE 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. Steve Barrett serves as ECE exam committee chair.

In October 2015, the first-time pass rate for 78 PE ECE exam takers was 79 percent; the first time pass rate for 288 Electrical and Electronics Exam takers was 72 percent, and the first time pass rate for 1650 ECE Power exam takers was 60 percent. The repeat pass rate was about half as high as usual.

The ECE exam professional activities and knowledge study (PAKS) was completed in 2015 for the PE Power and the Electrical and Electronics exams. The Computer exam is still trying to get the necessary 200 minimum surveys from currently licensed computer engineers. All three surveys had very low numbers, even the Power exam. IEEE is not well prepared to help generate the names of licensed IEEE members since that is not a question on the annual renewal form for IEEE members, so we don't know which members are licensed.

The PE ECE exams are working toward migrating to computer-based testing (CBT). The FE committee recommends that PE exams committees not try to finish PAKS and launch CBT simultaneously. Conversion of these three exams to CBT is projected to be complete on time in the 2018–2021 time frame. Meanwhile, development of a PE ECE supplied reference manual for use in CBT has begun and will continue over the next two or three years. One special meeting is probably needed later in 2016 to complete the first draft of the supplied reference manual. It appears that the PE ECE reference manual will look in form a lot like the FE reference manual and that perhaps only the NEC code will be needed as an online standard for CBT. There should be very little descriptive material but mostly equations in the ECE supplied reference. Information from other standards can be included in question stems.

PE Software Engineering exam
The Exam Development Committee continues to meet once per year for cut score determination and exam review. There have now been three annual exam offerings, with a small increase in the number of examinees each year; numbers remain low. There were 12 takers in 2013, 16 in 2014 and 18 for spring 2015. The first-time

pass rate for 2015 was 63 percent. The first draft of the Software Engineering CBT exam reference manual is complete. More than 40 states are offering the exam.

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 at a rate of almost one per month. These articles have appeared in *Today's Engineer* but have now migrated to a new online publication entitled *IEEE-USA Insight*. Readership metrics indicate that articles on licensure and NCEES-administered exams were among the most widely read in *Today's Engineer*.

Institute of Industrial and Systems Engineers (IISE)

IISE, formerly IIE, 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 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, ISEs are rooted in the sciences of engineering, production system analysis and design, and the management of people.

The Institute has over 15,000 members comprising students, practicing professionals, academics as well as retired members. Institute membership is international in scope reflecting the diversity of application domains and broad contribution to the industrial and systems engineering body of knowledge and practice.

The Professional Engineering (PE) Examination development committee is chaired by Mike Graul, Ph.D., P.E. with co-chairs Joe Michels, Ph.D., P.E., C.P.L. and Roberto Lu, Ph.D., P.E.

The PE examination development committee has met twice in 2015, once at NCEES offices in Clemson, South Carolina as well as during the IISE annual conference, held this past year in Nashville, Tennessee. Meeting dates for 2016 include March 2016 at NCEES HQ at Clemson, May 2016 at the IISE annual conference in Anaheim, CA as well as a fall 2016 meeting at a yet to be determined location.

The committee has begun earnestly working on the development of a Professional Engineers reference manual for the PE examination. Initial steps were undertaken to collate all of the material associated with industrial engineering topics currently contained in the NCEES Fundamentals of Engineering (FE) reference manual. This data correlation resulted in an initial starting solution for the development of PE reference manual. A subsection of the PE examination development committee met at NCEES HQ at Clemson in November 2015 to further refine and add material to the ISE/PE reference manual. The committee's goal is to use the designed and developed reference manual for pretesting of the ISE/PE 1704 examination to be administered in April 2017. This testing will transpire during the ISE/PE examination development meeting in Anaheim, California in May 2016 during the IISE national conference. Necessary adjustments and additional material required to successfully complete the examination will be added during committee meetings in 2016. The goal is to have a complete ISE/PE reference manual available for use during the 2017 examination.

The Industrial and Systems Engineering Professional Engineering 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.

IISE has a committee working to develop the Industrial and Systems Engineering Body of Knowledge. Although no ISE/PE examination committee members are assigned to this committee, we have had liaison with the committee chair to try and insure that we have careful alignment and congruency of the body of knowledge and the ISE/PE examination.

The ISE/PE examination development committee successfully petitioned the IISE Board of Directors to change the title of the (formerly) IE professional engineering examination from Industrial Engineering [IE] to Industrial and Systems Engineering [ISE]. This name change of the PE licensing examination came about due to the rapidly increasing degree of systems engineering tasks, roles, and responsibilities that industrial and systems engineers are completing in industry today. Further, the name change reflects the voice of the professional

society, formerly the Institute of Industrial Engineers, which recently agreed on a society name change from the Institute of Industrial Engineers [IIE] to the Institute of Industrial and Systems Engineers [IISE].

The ISE/PE examination committee held a worldwide webinar, attended by over 100 individuals in November 2015 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 ISE/PE review course for the PE examination was conducted by professional staff at IISE headquarters in February 2015 as well as planned for February 2016. This course is part of the extensive training suite that IISE offers to engineers worldwide. This course can also be taken in an on-line digital format. This course is designed to provide industrial and systems engineers with the academic review material to aid in successfully passing the NCEES ISE/PE examination.

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 fundamentals of engineering (FE) examination.

A new PAKS study is required in 2018. Initial planning work is currently begun to enrich and enhance the breadth and depth of industrial participants in this 2018 study. With the increased emphasis on systems as well as industrial engineering, we wish to ensure that the new examination specification is as comprehensive and complete as possible.

The IISE Board of Directors and 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. IISE feels that the addition of 30 upper division/graduate credits, as a requirement for sitting for the PE exam, will not provide any greater safeguard for public safety, health, or welfare. The practical work experience, gained by an engineer during the first four years of involvement in the industrial and systems field is more necessary than additional educational hours for successful completion of the exam and to assure competent practice for the professional industrial and systems engineer.

International Society of Automation (ISA)

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

ISA promotes and encourages professional engineer registration and license, by participating in the activities of the National Council of Examiners for Engineers and Surveyors (NCEES) and supporting the Control Systems (CS) Professional Engineer 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 Examinations for Professional Engineers (EPE) Committee, Participating Organizations Liaison Council (POLC), state registration boards, and other professional societies. Also, ISA is a major supporter of National Engineers Week, both on a national level and at the local section level. This includes recognitions of outstanding engineers, local displays at schools, and assisting with other promotions.

One of the primary areas of interest is the maintenance and improvement of the Control Systems PE exam. An annual meeting of practicing engineers is held 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 CSE PE 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 2015 statistics, with 268 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 web site.

Plans are in place for a new PAKS survey starting in August 2016, 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 2018 exam administration. The Control Systems PE Exam committee conducted an item writing session in Houston in January 2016 in preparation for the October 2016 administration. The plan calls for similar meetings with new members being enlisted to update the exam and maintain the quality of the final results. Also, the control systems exam committee continues to work toward computer based testing for the control systems professional engineer exam.

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.

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, NC, 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 CSE PE Exam is supported with various training and educational endeavors by ISA. A Study Guide has been developed, 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 2016 as the sixth edition. The Publications Department of ISA has several books that are designed to provide assistance to prospective registrants. In addition, the three day CSE PE Exam Review Course was offered five times in 2015, with sites in North Carolina, Georgia, Texas (2), and California. This has been a well-attended class over the past ten years with increasing enrollment each year.

In addition, a new instructor assisted online training class was developed in 2014 that consists of 20 one hour pre-recorded sessions, which may be viewed by the participant 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 and the course was offered two times in 2015 with good reviews and excellent participation.

The training and education plans for 2016 remain the same as 2015, with five or six offerings of the three day review class (North Carolina, Texas, California, Illinois, Pennsylvania, and Georgia). The online, instructor assisted course is being offered two times in 2016, starting in April and June.

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 and the continuing education development 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.

Michigan Society of Professional Surveyors (MSPS)

Annual meeting

We had a successful meeting at the Kewadin Casino in Sault Saint Marie, Michigan, with over 375 professional surveyors in attendance.

Legislation

The Condominium Act PA 59, of 1978—Legislation by SB 309 of 2015

Issues have been occurring where professional engineers have been signing the Survey Plan for a Condominium. This is not anything new; however, it seems to continue even though Act 299 of 1980, Article 20 clearly states that this is in the field of land surveying. At the direction of the MSPS board of directors, the committee focused their efforts on drafting a proposed amendment to include only changes affecting Section 66, dealing with engineers/architects signing the survey plan. SB 309 was passed into legislation in 2015

PA 132, of 1970, as amended—Survey Recording Act—proposing legislation changes

The legislative committee is in the process of preparing changes to this act. It became clear, early on, that this would not be an easy task, so we placed our efforts on hold in order to coordinate with other interested groups. We hope to continue moving toward a draft bill soon. Some of the changes being considered are mapping sizes, ALTA/ACSM Land Title Survey inclusion, corner material/exceptions, mandatory recording of surveys, and other issues, which have turned this proposed amendment into a major revision. There are many interest groups and issues to look at that include the interests of the Michigan Association of Register-of-Deeds (MARD). A subcommittee has been formed to reach out to MARD, and we will continue our efforts to meet and discuss legislative issues that affect both our organizations.

Quality-Based Selection (QBS) proposed legislation

There are two bills that have been introduced by the engineers, HB 4025 and HB 4026. These particular bills fell on really hard times and opposition because they were very poorly written. The legislative committee was asked to review and make comments on a revised draft bill. The committee completed that task and provided comments to the engineers for further drafting of the proposed law change. To date, we have not seen a new proposed bill.

Young Surveyors Council

This council was established to involve young surveyors into our membership and committees. Our chairs, Brett Hollandsworth and Scott Roth, have been very active and successful to date. They both attended the FIG conference in Minnesota this February.

Our executive director, along with other members from MSPS, attended the conference last April and was able to assist with obtaining sponsors for national issues on lobby day. We will be attendance again in March.

This year, MSPS is celebrating its 75th anniversary.

National Council of Structural Engineering Associations (NCSEA)

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

Listed below is a partial list of NCSEA activities:

- Provide practicing engineers access to the development and revision process for codes and standards
- Advocate positive changes in the building code development process
- Convey accurate information to the general public relative to structural-engineering-related events
- Educate elected officials about the importance of structural engineers in order to gain their support of legislation for S.E. 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 and 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. A summary spreadsheet of state licensing and examinations will be developed as well. State organizations will then be able to use the white paper to reach out to their state boards.

Just a few of NCSEA's accomplishments include the following:

- Passing a position statement recommending that special inspections as mandated by the IBC be implemented and enforced in all local jurisdictions that have adopted the IBC
- Active participation by the Code Advisory Committee (CAC) in the development process for the 2015 and 2018 International Building Code (IBC), International Residential Code (IRC), and International Existing Building Code (IEBC)
- Working with the California Governor's Office of Emergency Services (Cal OES) to deliver the Safety Assessment Program (Cal OES SAP), a six-hour post-disaster assessment webinar that is one of only two post-disaster assessment programs that will be compliant with the requirements of the forthcoming Federal Resource Typing Standards for engineer emergency responders. This training is offered by NCSEA on a semi-annual basis. The next course will take place on May 6, 2016.
- Continuing to provide an online review/refresher course, specifically designed for the NCEES Structural Engineering (SE) examination and given twice per year (currently being offered, vertical on February 20–21 and lateral on March 19–20)

NCSEA Licensure Committee

The NCSEA Licensure Committee continues to actively advocate structural licensure in every U.S. jurisdiction. Progress has been made in this effort as several states have moved forward in their efforts.

The structural engineers in Texas worked to prepare to bring the proposed changes to the legislature in 2015. The bill died in committee and did not make it to the floor of the legislature. They are refocusing their efforts and using a lobbyist to help with all legislative issues relating to structural engineering, not just licensure.

The proposed changes in Florida were introduced in the house and senate with sponsors in each chamber. The licensure committee proceeded without a lobbyist, at the suggestion of their sponsor, but with the support of a number of professional organizations including FSPE, the Florida chapter of NSPE. The measure passed both chambers of the Legislature but was vetoed by the Governor on the rationale that the "grandfathering" provision was not acceptable under any circumstances.

In Alaska, the S.E. license as a post-P.E. license was adopted at the May meeting of the board. It will require two years of structural engineering experience after P.E. licensure to take the 16-hour structural engineering exam. An S.E. license will be required on significant structures, similar to how it is done in Washington and Oregon.

In Oklahoma, the Structural Engineers Association (OSEA) worked with the Oklahoma State Board of Professional Engineers (OSPE) to develop mutually agreeable language for an SE Title Act. The SE Title Act was bundled with other statute updates in a bill submitted to a State Senate Committee. Ultimately, it was removed so that the rest of the bill could move forward. OSEA will try again next year.

Other states continue to make progress toward post-P.E. specialty licensing of structural engineers as well, including Georgia and Connecticut.

Several articles related to the licensure of structural engineers appeared in *STRUCTURE* magazine. More resources have been provided on the website and these continue to be updated.

The Licensure Committee is currently chaired by Joseph Luke, a former board member of NCSEA and an active NCSEA Licensure Committee member involved in the efforts in Texas.

NCSEA also continues to be active in the Structural Engineers Licensure Coalition (SELC). Susan Jorgensen, NCSEA's representative to the SELC Steering Committee, is serving the second of her two-year role as SELC chair.

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 separate and recognizable profession, because the competent practice of structural engineering is essential to protection of the public, and because the generic engineering licensing laws adopted by some states, that do not recognize structural engineering as a unique discipline, do not adequately protect the public. The SECB criteria parallel those of the NCEES Model Law Structural Engineer, but establish more rigorous goals for primary structural engineering education, continued structural practice, and continuing professional development. They are intended eventually to serve as the basis for national uniformity in the qualifications required for SE licensure.

SECB is continuing its open enrollment method, for licensed professional engineers practicing structural engineering, to attain certification based upon experience and education. The open enrollment method was first enacted in 2013 when the NCEES exam requirements were revised. The license and/or registration must have been awarded on or before July 1, 2005 and must remain valid continuously through the time of application.

NCSEA and SECB

Improving the practice of structural engineering continues to be a high-priority goal for both NCSEA and SECB. As part of that goal, NCSEA will continue to focus on licensure, certification, a formal degree program for structural engineers, and the active promotion of the NCEES 16-hour structural engineering exam.

National Society of Professional Engineers (NSPE)

Being a licensed professional engineer 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 by advocating the highest standards of licensure, ethics, and professional practice

The past year has been an extraordinarily active and productive year. With 2016 well underway, NSPE's top licensure priorities are outlined below.

Challenges to the integrity of the P.E. license

NSPE's foremost priority is to serve as the advocate for licensed professional engineers. The society works to promote expanding the role of licensed engineers in order to improve public safety and to protect against efforts that would result in the devaluation of the P.E. license. NSPE is currently addressing this issue on three main fronts, as described below.

Attacks on licensure as a barrier to trade

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—unequivocally 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, successfully achieved elimination of the

Indiana Job Creation Commission's proposal, inspired by ALEC's model law, to rescind its 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 and continue to be introduced in other states). 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. and unintentionally impacts engineering licensure.

NSPE is leading the effort to defeat these misguided and dangerous efforts to erode the P.E. license and, as a result, place public safety at great risk. This is an area in which we see frequent developments (on a monthly or even weekly basis). In order to succeed in these efforts, its state societies and partner organizations must work together to ensure that any effort to undermine the value of the P.E. license is promptly and soundly defeated.

Discipline-specific licensure

In recent years, concerted efforts by structural engineering groups have resulted in an increased push to fracture the engineering profession by creating a separate license for structural engineers. Although separate licensure for structural engineers is the most active, current example in play in the states today, this issue is fundamental to the credibility and integrity of the P.E. license and applies equally to all specialties within the licensed profession.

Of paramount importance to licensure as a professional engineer is the ethical commitment to limit one's area of practice only to those fields of engineering in which he or she can demonstrate competence. A P.E. who is not fully competent to perform structural engineering is already ethically obligated not to do so, even as he or she is obligated not to practice in other areas that are beyond their established expertise and competence. The obligation to stay current and practice in one's own field of competence is the bedrock of P.E. licensure, and is hindered, not strengthened by requirements for separate, discipline-specific licensure. For decades, licensure as a professional engineer has been central to protecting the public health, safety and welfare. As we face increasingly complex challenges, NSPE believes that the continued recognition of P.E. licensure as the defining qualification for practice is critical to guaranteeing the trust and protection of the public. Layers of licensing requirements would cloud that perspective and create uncertainty.

The current system recognizes that the line between disciplines can at times be difficult to demarcate and therefore, allows the individual professional to exercise the appropriate professional judgment, autonomy and discretion similar to other professionals rather than controlling by rigid, bureaucratic means. Many of the S.E. activities are also activities of other civil engineering professionals (site, geotechnical, foundation, etc.), which tend to cross over discipline boundaries. Wouldn't such a change then, interfere with the practice of thousands of duly licensed and qualified professional civil engineers? Furthermore, the discussion regarding a separate S.E. license does not address the success of the current system. Tens of thousands of superb structures have been designed and built not only without harm, but in fact with great benefit to the public. NSPE therefore urges our partner organizations to join us in actively ensuring that the P.E. license remain the hallmark of professional engineering licensure and join us in actively opposing these efforts to balkanize our profession.

Use of certifications

The recent proliferation and commoditization of credentials has resulted in substantial confusion and misinformation pertaining to the fundamental differences between various forms of credentials: certificates, certifications and professional licenses. NSPE and the Council of Engineering and Scientific Specialty Boards (CESB) collaborated on a document to explain the key differences. NSPE Position Statement 1737 establishes, inter alia, that:

> "Following licensure as a professional engineer, individuals may voluntarily have their expertise in a specified field of engineering recognized through an appropriate specialty certification program. Such certification must not imply that other licensed professional engineers are less qualified for practice in a particular field of specialty. Professional engineering licensure is the only qualification for engineering practice. NSPE and its state societies will actively oppose attempts to enact any local, state, or federal legislation or rule that would mandate certification in lieu of or beyond licensure as a legal requirement for the performance of engineering services."

Unfortunately, the confusion between certifications and licenses persists. Indeed the problem is exacerbated by the trend (not limited to engineering organizations) for professional societies, compelled to find non-dues revenue sources, to offset declining membership revenues with certification programs, which can be an

attractive and lucrative opportunity. Certainly many of these certifications have merit, but sometimes the motivation for additional certification programs appears to be driven more by organizational economic interests than the legitimate protection of the public's interests. Increasingly, local ordinances (e.g., at the municipal level) are being promulgated (often in response to lobbying by the technical society that provides the certification) to require specialty certification within their jurisdiction, often without reference to the definitions of professional practice contained in the state's engineering licensure laws. Municipal authorities are often unaware of this higher precedence obligation, and neglect to incorporate it in enforcing the certification regulations.

Accordingly, it has become apparent to NSPE that we must specifically address how certification credentials should be used when it comes to the practice of engineering to ensure that the importance of engineering licensure not be minimized or diluted by the use of credentials that overlap with the role of the licensed professional engineer. NSPE is currently developing such recommendations and welcomes your input.

Role of licensed P.E.s in ensuring the safe development and deployment of automated vehicles
Embracing its Grand Challenge to foster ethical innovation, NSPE has been working on multiple fronts to promote and protect the public health, safety, and welfare in the development and deployment of autonomous vehicle technologies. NSPE is taking action to give professional engineers a leading voice in ensuring that the same attention to safety and reliability that went into the built transportation infrastructure are incorporated into autonomous vehicles and smart transportation systems. NSPE has been collaborating with the California Department of Motor Vehicles, which has been tasked with developing the nation's first deployment regulations (including both functional operations and behavioral competencies for autonomous vehicles).

NSPE has been at the forefront of this issue, participating in recent stakeholder meetings in Sacramento, Los Angeles, and Washington, D.C. The society has provided formal written input to the California DMV urging a comprehensive and informed approach. In these submissions, NSPE President Tim Austin, P.E., F.NSPE, called for professional engineers to play a key role in vehicle safety certification that must include safety certifications by the manufacturer and third-party testing by competent and independent third-party authorities (i.e., P.E.s). These focused efforts will be followed by steps to engage other stakeholder groups (such as public safety, insurance, and consumer access organizations), which will not only ensure a good outcome, but also increase public awareness of the role of licensed professional engineers.

This issue has quickly emerged as not only one of the top engineering issues of our time but one of the top public policy priorities in the country. Unfortunately, due to financial interests and the influence of large corporations, there has been extraordinary pressure on the California DMV and the US Department of Transportation to deploy these vehicles without first fully developing the necessary functional operations and behavioral competencies, ensuring these technologies work in all modes, and that the necessary testing is conducted by qualified professionals, namely professional engineers, to ensure that if these technologies are deployed they are designed first and foremost to protect the public health, safety and welfare. NSPE is making major inroads on this issue, with new developments on an almost weekly basis. However, to maximize our capacity to advocate for the role of the professional engineer in this vital phase of 21st century engineering innovation, our engineering partners must actively collaborate on this effort.

Persistent issues regarding failure to effectively enforce existing licensing rules and requirements.
Many of the issues we discuss pertain to needed changes to statutory rules. However, one of the foremost concerns in the professional engineering community is the continued failure to effectively enforce existing licensing rules and requirements. When a concern, potential infraction or some other matter pertaining to existing licensing rules is raised with a state engineering board, one of the following responses is often given: a) the state board lacks the authority to act on the issue, b) the state board lacks the resources to pursue action, and c) the state board does not believe further action needs to be taken. As a result, errors are not corrected, infractions are not disciplined, violators are not taken to task and prevented from further bad actions and the rules on the books are not enforced. As several of the nation's leading engineering organizations, we are in a unique position to urge action on this matter. If state boards lack the necessary authority, we need to work to ensure that they get it and when they do have such authority, that they wield it accordingly. Continued failure to effectively enforce existing licensing rules and requirements threatens to undermine our profession and puts the public health, safety and welfare at great risk.

National Society of Professional Surveyors (NSPS)

NSPS and MAPPS will sponsor the second Surveying, Mapping, and Geospatial Conference at the Hilton Hotel Crystal City in Arlington, Virginia, March 14–18, 2016.

Among the conference activities will be the finals for the NSPS annual student competition. This year 10 four-year degree programs and 2 two-year degree programs will compete in their respective categories. The conference will again include a Day on Capitol Hill during which members of NSPS and MAPPS are set to visit with legislators and their staffs to discuss issues of importance to surveying, and the overall geospatial community.

The NSPS annual Trig Star competition is underway within the respective states. Thirty-nine state winners participated in the national competition in 2015. NSPS recently established a TrigStar scholarship of $5,000. Any student who has participated in TrigStar during their high school years and has been accepted to a college program leading related to surveying is eligible.

NSPS continues to support survey technicians, who are so important to the profession, through its four-level Certified Survey Technician program. In 2015, NSPS signed an agreement with the U.S. military through which the CST exams will be used as assessment tools for the Technical Engineer course within the Advance Individual Training program at Fort Leonard Wood, Missouri. The program includes participants from most, if not all, branches of the military. NSPS sees the potential for individuals within this program to become an integral part of the professional surveying community in their future endeavors.

NSPS supports a Young Surveyors group, which is also associated with the international FIG Young Surveyors initiative. The aim of this program is to engage young surveyors (under 35 years old) in the activities of the organizations representing the interests of the profession and to encourage them to take on leadership roles in those organizations to share their perspectives, ideas, and talents as a means to perpetuate the profession by making it attractive to other young people. The Young Surveyors group is part of a broader effort that includes NSPS participation in the Future of Surveying initiative that NCEES took the lead role in establishing. NSPS has committed to enhancing its role as a lead organization in this effort.

The NSPS joint membership program continues to expand with the addition of the West Virginia Society of Professional Surveyors in January 2016. This leaves only the surveying societies in Arkansas and California as those not yet participating. The program has proven to be very successful in the outreach efforts undertaken by NSPS, especially those that include interaction with legislative and regulatory bodies.

Two major events for NSPS take place early in 2016. February 23 marks the official effective date for the 2016 *ALTA/NSPS Standard Detail Requirements for Land Title Surveys*. The standards are reviewed continually, and officially updated every five years. The second major event is National Surveyors Week (March 20–26). NSPS has sought an official proclamation from President Obama, and many state societies are able to have proclamations signed by their respective governors. NSPS is using National Surveyors Week to kick off its efforts to assist the National Geodetic Survey (NGS) with its plan to replace the North American Vertical Datum of 1988 (NAVD88). NSPS is also working with NGS to develop template legislation for states needing to replace their current NAD 83-based legislation with new legislation.

NSPS continues to address issues related to the profession. In 2015, the issue of certification vs. licensure was raised in a number of cases, especially with regard to qualifications required to perform hydrographic surveys. It has been suggested by some that the NSPS–THSOA Hydrographer Certification is sufficient qualification to perform such surveys. NSPS has long taken the stance that certifications can be very beneficial in assisting professional surveyors to further document their capabilities for certain activities (another arrow in the quiver, so to speak), but do not replace the requirement for a professional license as stated in the respective state licensing laws.

Society of Fire Protection Engineers (SFPE)

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.

SFPE published the 5th edition of the *SFPE Handbook of Fire Protection Engineering*

The *SFPE Handbook of Fire Protection Engineering* is widely known as the body of knowledge for the fire protection engineering profession and the most important reference needed for the PE Fire Protection exam. The 5th edition includes new material in topics related to the following:

- Human behavior in fire—egress system design, occupant evacuation scenarios, combustion toxicity, and data for human behavior analysis
- Fire protection systems—selection of fire safety systems, system activation and controls, and CO_2 systems
- Recent advances in fire resistance design
- New chapters on industrial fire protection, including vapor clouds, effects of thermal radiation on people, BLEVEs, dust explosions and gas and vapor explosions

The handbook is available for the first time in a print and electronic format.

SFPE published second engineering standard

SFPE Standard on Calculation Methods to Predict the Thermal Performance of Structural and Fire Resistive Assemblies (SFPE S.02 2015)

The design of structural fire resistance requires three major steps: (1) determination of the thermal exposure to a structure resulting from a fire (2) determination of the temperature history within the structure, or portion thereof, and (3) determination of the structural response. This standard is limited to the second step in this process. The standard provides requirements for the development and use of methods to predict the thermal response of structures using listed fire resistive assemblies to time dependent thermal boundary conditions imposed by fires. It provides requirements for calculation methods that provide time dependent temperature field information resulting from fire exposures required for engineered structural fire design (including structural systems and fire barriers). The annex provides precisely calculated reference temperatures from 16 verification cases that represent a variety of problems that are relevant in fire safety engineering.

Eastern Kentucky University's (EKU) Engineering Technology program receives ABET accreditation

The bachelor's degree program in EKU's Fire Protection and Safety Engineering Technology program accreditation from the ABET Engineering Technology Accreditation Commission. This program becomes the third fire protection program in the nation to have ABET accreditation.

PE Fire Protection exam

SFPE continues to promote the Principles and Practice of Engineering (PE) exam in fire protection. In 2015, the society sponsored a web-based preparation course for the 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. Finally, in 2015, six SFPE chapters sponsored PE exam problem-writing sessions across the nation.

Society of Naval Architects and Marine Engineers (SNAME)

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 13 U.S., 3 Canadian, and 1 European section. These sections host 31 student sections: 24 U.S.; 3 Canadian; 1 Greek; 1 Egyptian; 1 Argentine; and 1 Italian. 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 14 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, approximately 80 percent on the first time and 60 percent on repeat taking of the examination.

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 10 technical committees, with 72 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 will conduct a cut score study in Washington, D.C. on May 11–12, 2016.

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 in 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 (SEI) of ASCE

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 the American Society of Civil Engineers (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 ASCE Policy Statement 524 regarding additional credentialing for civil engineers beyond the professional engineer license.

SEI, NCSEA, the Structural Engineering Certification Board (SECB), and the 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 (SE) 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, 11 states recognize/license structural engineers and another 13 states have activity pursuing structural engineering recognition/licensure. NCEES has both a stake in this process and an important role in establishing consistency among states.

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

- Collaboration in developing a model for structural engineering recognition/licensure
- Improving comity between structural engineering states
- Establishing continuing professional development for structural engineers
- Periodically reviewing and updating the Model Law Structural Engineer requirements
- Promoting S.E. licensure
- Calming the continuing battle between SEI/SELC and NSPE

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

The Minerals, Metals, and Materials Society (TMS)

The TMS Professional Registration Committee completed all work and concluded the professional activities and knowledge study (PAKS) for the Metallurgical Materials PE exam. The anchor exam was administered on October 30, 2015. A standard-setting panel was selected and met to recommend the cut score for the exam. Following the standard-setting panel meeting, a select group discussed the panel recommendation and finalized the cut score. The new exam specifications emphasize the practice of engineering.

TMS developed a PE Metallurgical and Materials exam review course and held the inaugural offering in August 2015. Twenty-two people attended the course, and seven instructors collaborated to present the teachings. The course had positive evaluations. A proposal to repeat the course will be presented to the TMS board of directors in early 2016.

TMS gathered input from Professional Registration Committee members and responded to NCEES regarding the notice of possible Group II exam management by NCEES. The top priority for TMS is ensuring the quality of the exam and appropriateness of the content tested to determining if an individual can adequately perform the professional activities of a metallurgical/materials engineer. TMS stated its desire that TMS remain the lead society for the PE Metallurgical and Materials exam and be the primary source for recommending subject matter experts for all phases of the Metallurgical and Materials Engineering professional activities and knowledge study (PAKS)—for writing items according to the specifications and for the standard setting panel that yields the exam cut score of a new exam.

TMS continued its collaboration with four societies at the Materials Science and Technology 2015 Conference (MS&T'15) held in Columbus, Ohio: Association for Iron and Steel (AIST); the American Ceramic Society (ACerS); ASM International; and NACE, the Corrosion Society.

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 six university programs in fall 2015; this included two international visits.

The Accreditation Committee held the fifth offering of an engineering education symposium entitled, "Continuous Improvement of Academic Programs and Satisfying ABET Along the Way: The Elizabeth Judson Memorial Symposium," at MS&T'15. The objective of the 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 2015 symposium included an afternoon program, "Innovations for Enhanced Learning," which included topics on active and shared learning methodology.

To explore additional membership needs, TMS formed an ad hoc Professional Development Committee to actively assess and develop programs and activities that address the professional development and training needs of materials science and engineering professionals. The committee will coordinate society activities for both technical and nontechnical professional development programs. The ad hoc committee will submit a request to the TMS board of directors to be approved as a standing committee in early 2016.

TMS continues collaborative activities through its Accreditation and Education Committees with the University Materials Council (UMC), which is made up of the department chairs of the materials engineering departments in universities. Two UMC members are now members of the Education Committee ,which will increase cross-communication and idea flow.

The Materials Advantage Program—a cooperative venture with AIST, ACerS, ASM International, and TMS—continued to thrive and increase student membership, which in turn increases awareness of the materials community to students.

In support of engineering education, the TMS Public and Governmental Affairs Committee held a Congressional briefing in September at the Capitol building in Washington, D.C. entitled, "Building the STEM Workforce for a Robust Economy." Introductory comments were made by Congressman Keith Rothfus (PA). Two speakers and a moderator talked about the critical role of science, technology, engineering, and math education for the U.S. economy and competitiveness. Over 40 Congressional staffers attended to hear and discuss this important priority.

NCEES president's report

President Conzett asked representatives to include during their reports whether a body of knowledge (BOK) had been created by that group and, if so, how was the BOK being used. He explained that he was requesting the information on the behalf of the NCEES Education Committee, which continues to investigate potential alternate pathways to licensure. Of those attending the POLC meeting, the following reported that their organization has in place or is working on the development of a BOK. Other organizations stated that they believe their BOK is encompassed within their development of standards/handbooks.

- American Institute of Chemical Engineers
- American Nuclear Society
- American Society of Civil Engineers
- Institute of Industrial and Systems Engineers
- National Society of Professional Engineers
- National Society of Professional Surveyors

Conzett gave the following highlights on current NCEES activities.

About NCEES

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 2015 annual report, which highlights our activities for the past year. You also have our latest publication, NCEES *Squared*, the official NCEES source for engineering and surveying licensure statistics. This issue features data from the 2014–15 fiscal year, including the number of U.S. licensees and the pass rates and volumes for NCEES exams.

Computer-based testing (CBT)

This past January marked the second anniversary of computer-based testing (CBT) for the Fundamentals of Engineering (FE) and Fundamentals of Surveying (FS) exams. The CBT system is still working extremely well and we are beginning to rebound from the initial decrease in number of examinees.

CBT continues to provide many benefits related to exam security and examinee convenience. During the four pencil-and-paper administrations prior to the launch of CBT, there were 112 invalidations for the three most common irregularities:

- 32 for possessing a cell phone
- 26 for failing to cease work
- 54 for possessing an unapproved calculator

During the first two years of CBT, there were only 10 total invalidations:

- 2 examinees for accessing their cell phones during an unscheduled break
- 2 examinees for communicating with each other
- 1 examinee for leaving the test center during an unscheduled break
- 1 examinee for possessing a prohibited item in the testing room
- 4 examinees for testing twice during a window

NCEES Chief Operations Officer Davy McDowell, P.E., provided a presentation that detailed additional information concerning the transition of exams to CBT. Conzett continued with his report.

Exams

In addition to efforts to move our exams to CBT, NCEES initiated two professional activities and knowledge studies (PAKS). These studies are used to update specifications for the exams. This year, all three of the PE Electrical and Computer exams and the PE Architectural Engineering exam underwent a PAKS analysis.

We are approaching the five-year anniversary of the first administration of the 16-hour Structural Engineering (SE) exam. NCEES policy states that candidates must obtain acceptable results on both SE components within a five-year period in order to pass the examination. Examinees who obtained acceptable results on one component in April 2011 must obtain acceptable results on the remaining component during the upcoming April 2016 administration to avoid having to start over.

Committees and task forces

NCEES committees and task forces are addressing a range of issues this year, including how to improve mobility between states. Several of their charges relate to increasing uniformity and cooperation among states regarding continuing professional competency (CPC) requirements for professional engineers and surveyors.

Several NCEES committees continue to address charges to streamline CPC compliance for professional engineers and surveyors. The Education Committee and the Member Board Administrator Committee are working together to further define the concept of a national continuing education standard that can potentially be used by member boards to set their continuing education requirements for licensure renewal.

The Technology Task Force is studying several issues related to the effects of technology within the profession. One of those issues is how to ensure that electronic seals and signatures on design plans and related documents are authentic and that professionals are assuming responsible charge for their production.

At the 2015 annual meeting, the Advisory Committee for Council Activities recommended and the Council voted to adopt Position Statement 35, Future Education Requirements for Engineering Licensure. This position statement 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 the 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 nine foreign entities to administer NCEES exams in those countries.

At the 2015 annual meeting, the Council voted to authorize the negotiation of a contract with the Egyptian Engineering Syndicate to offer the FE exam in Egypt to graduates of the country's engineering programs, regardless of whether they are ABET accredited. The Syndicate will use the FE exam to assist with assessing the quality of the engineering education in Egypt. It also plans to require candidates to pass the exam in order to practice engineering in the country. Successful candidates could use it as a step toward engineering licensure in the United States or a U.S. territory.

Prior to this agreement, NCEES offered the FE exam in Egypt only to students and graduates of the American University in Cairo. It is estimated that this could bring as many as 25,000 additional FE examinees each year.

There are almost 400 EAC/ABET-accredited engineering programs located outside the United States. Due to the increasing interest in using the FE exam as an outcomes assessment tool for accreditation purposes, NCEES is working with those programs that have an existing approved Pearson VUE test center in their area.

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

Emerging leaders

In February 2015, NCEES launched an application process to select 12 young engineers and surveyors to serve as members of its newly formed Emerging Engineers and Surveyors Group. This group was established to connect NCEES decision makers with young professionals who are newly licensed or currently navigating the licensure process to

- Better understand impediments to licensure and the motivation for individuals to pursue licensure
- Promote the value of licensure
- Provide the opportunity to receive feedback concerning the licensure process
- Discuss relevant topics to more effectively shape and influence the future of the professions and the licensure process

The group participated in a focus group with the NCEES board of directors this past August at the annual meeting. Topics for discussion included careers/professions in engineering and surveying licensure, CBT, education, and continuing education. In an effort to share the collective thoughts of the younger generation, a summary report was issued following the forum so that those currently serving on NCEES committees and task forces could use the information as a resource when addressing their charges.

The group was also charged with identifying the most effective ways for engaging the younger generation through marketing and outreach efforts and to recruit their peers to complete a survey designed to help us learn why individuals are entering the professions and what motivates them to pursue licensure.

The initiative has been very successful. They will bring several recommendations forward as part of their annual meeting report.

Future of surveying

The Future of Surveying Task Force was established last year to evaluate the current state of the surveying profession in terms of what NCEES can do to mitigate the low number of candidates seeking licensure as professional surveyors and to better market the value of a career in the surveying profession. In its first year, the task force recognized that the issues affecting the surveying profession are far larger than what any one organization could address and recommended at the 2015 annual meeting that the Council fund a stakeholders meeting that included representatives from across the profession. The Council approved the funding, and representatives from 18 surveying-related organizations met in January to identify key elements and strategies to strengthen the future of the surveying profession. This was the first time organizations with varying perspectives on the profession have come together to discuss the challenges and identify potential solutions. The meeting was very successful, and a second meeting is currently being planned for June.

Also at the 2015 annual meeting, the task force recommended the establishment of a national surveying education award. The task force has spent the last few months establishing its criteria. The first award cycle will be launched this month during National Surveyors Week and the winning programs will be announced in June. The award will recognize up to 10 programs, and each will receive $10,000.

Exam volunteers

NCEES depends on our volunteers to fulfill its 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 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 Conzett call upon President-Elect Daniel Turner, Ph.D., P.E., P.L.S., to address the group.

Background

I am a retired professor from the University of Alabama, who loved his job at his alma mater, and now loves retirement. My professional outlook was shaped by professors with industrial and consulting experience. They emphasized high quality work and took us to professional society meetings to interact with practicing engineers. They stressed licensure and joining engineering societies after graduation. Their message is summarized by a statement from my favorite professor, "Turner, you are not studying to be an engineer. You are studying to be a professional. When I am gone, someone must take care of our profession, and it might be you." I took that message seriously and have been involved in engineering professional societies my entire career.

Emphasis areas

I have been asked to speak about my upcoming role as NCEES president and the topics that I would like the Council to address. A statement made last year by President Conzett summarizes my feelings, "The direction of this organization is ultimately dictated by the member boards of NCEES." So my role will not be to dictate the direction of the Council but to encourage member boards, volunteers, and staff members to continue to produce pertinent, high-quality programs. At the same time, we must keep an eye on the future to ensure that licensure remains relevant and desirable in a changing world. I feel that the following topics that could be fertile ground for NCEES this coming year.

Students

I love being around students. They are bright and energetic, even though they occasionally take the wrong path without realizing it. My desire is to influence more students to begin the licensure path, and I would like for all of us to work on that. The professors who encouraged my licensure have largely disappeared from today's classroom. We must find another way to produce that positive influence.

There is a second good goal under this topic—to retain more students who begin the licensure path but do not reach licensure. An estimated 25–30 percent of licensure candidates who pass the FE exam never return to take the PE exam. It would be good to know why they don't come back, address these issues, and move more candidates to licensure.

Emerging engineering and surveying leaders

NCEES members and officers are generally senior engineers and surveyors. Things have changed a great deal during our careers. The viewpoints of younger members are not always represented in our deliberations. Under Past President Widmer's direction, NCEES made plans to gather younger members to provide feedback about licensure and to discuss topics relevant to the future of engineering and surveying. Applications were solicited, and candidates were selected from those in the licensure path: students, interns, and young licensed surveyors and engineers. They met as a focus group last August under President Conzett's guidance and provided excellent, enthusiastic feedback. They continued to work with NCEES and its member licensing boards, helping to shape the future of engineering and surveying, and the licensure process. This group's viewpoints and feedback provided great value, and I would like for NCEES to investigate ways that it can be maintained or regenerated.

Future of surveying

The number of FS and PS examinees has dropped significantly during the past eight years. Under President Widmer's guidance, a task force was created to examine the future of surveying. The task force found multiple issues involved in the decline. They also found that 18 professional organizations and governmental agencies were involved. They asked to host a meeting of these stakeholders to carry the process further. The task force was extended by President Conzett to conduct such a meeting. The stakeholders analyzed the situation under the guidance of a professional facilitator and are ready to plan how to address the issued important to the future of surveying. That meeting will occur this June. I would like to see the stakeholders design and implement a plan.

NCEES cannot lead that effort, but we should support it so that there are sufficient surveying candidates in the pipeline to meet our nation's surveying/geospatial measurement needs.

CBT

From the beginning of this effort, I have been an ardent supporter of CBT. The conversion to CBT for the FE and FS exams has been successful. It has required extra effort from scores of exam committee volunteers and NCEES staff (remember that traditional pencil-and-paper testing continued for the professional exams simultaneously with this effort), and good guidance from a CBT provider with a network of nationwide and international exam sites. The Principles and Practice of Surveying (PS) exam is following a similar path and will be offered via CBT beginning in fall 2016. The conversion for the Principles and Practice of Engineering (PE) exam is also underway, but the workload is considerable larger than previous exams, especially in preparing a large number of reference handbooks and in arranging access to current design codes. The exams will convert by discipline as the item banks and reference handbooks are ready over an estimated five-year time frame. My role is to continue to support and advocate for CBT conversion to state board members, volunteers, other engineering professional societies, and the employers of licensed engineers and surveyors.

Mobility

The workloads of our member boards could be substantially reduced if they all embraced and followed our *Model Law* and *Model Rules*. The evaluation of candidates' education and experience would be much simpler in such an ideal world. However, all boards are bound to some extent by the unique features of their state laws. As a result, it is not realistic to expect all boards to follow every detail of the *Model Law* and *Model Rules*. But having more complete data, standard evaluations of education and experience, and more pertinent data can go a long way in assisting state boards. A major step in that direction will occur this year when NCEES launches the E3 customer management system, a major enhancement in data and data processing. My role will be to encourage the use of E3 by every board to the extent possible.

Longer-term issues

The engineering profession has changed as sophisticated technologies and computing capabilities have changed. This has produced subspecialties in engineering, altering or splitting current disciplines and creating new disciplines. This can require alterations to existing exams and production of new discipline exams, often to very small populations of candidates. Preparing such exams takes more effort by a smaller volunteer pool, and sometimes there aren't enough candidates to produce statistically significant parameters to assess the quality of items and exams using traditional statistics.

The change in students constitutes a second and potentially more difficult challenge. They are socially oriented and dislike the traditional "grind it out" engineering processes. They are not likely to spend time researching textbooks to find solutions methods for assignments. Instead, they are likely to complete homework problems using information gathered through a search function on their cell phones. This change seems to defy the nature of engineering and if carried to complete fruition, might require NCEES to develop completely new licensure processes. At the minimum, it requires new processes to communicate with these students.

My role in longer-term issues is not to lead the charge to immediate solutions, but to remind NCEES constituencies to expect them and to begin thinking about the extent to which our protocols and procedures might change in the future to better address them.

Adjournment

With no new business to be brought before the group, President Conzett thanked all attendees for their participation. The next POLC meeting will be held March 4, 2017, with the location to be determined.