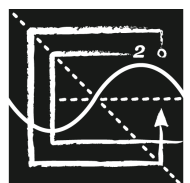


MINUTES OF THE PARTICIPATING ORGANIZATIONS LIAISON COUNCIL

March 2023



NCEES

Participating Organizations Liaison Council

Christopher Duhamel, P.E., P.L.S., Chair

The annual meeting of the Participating Organizations Liaison Council (POLC) was held Saturday, March 11, 2023, in Scottsdale, Arizona. NCEES President Christopher Duhamel, P.E., P.L.S., presided.

NCEES Representatives

- Christopher Duhamel, P.E., P.L.S., NCEES president
- Laura Sievers, P.E., NCEES president-elect
- Davy McDowell, P.E., NCEES chief operating officer (COO)

Society Representatives

- Marie Ternieden, Ed.D.—American Council of Engineering Companies (ACEC)
- Andrea Reynolds, P.E., S.E.—Architectural Engineering Institute of ASCE (AEI)
- Joseph Cramer, Ph.D., P.E.—American Institute of Chemical Engineers (AIChE)
- Zhegang Ma, Ph.D., P.E.—American Nuclear Society (ANS)
- Dana Porter, Ph.D., P.E.—American Society of Agricultural and Biological Engineers (ASABE)
- Dennis Truax, Ph.D., P.E.—American Society of Civil Engineers (ASCE)
- Jenna Carpenter, Ph.D.—American Society for Engineering Education (ASEE)
- Douglas Fick, P.E.—American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- David Soukup, P.E.—American Society of Mechanical Engineers (ASME)
- David Dexter, P.E.—American Society of Plumbing Engineers (ASPE)
- Frank Taylor, C.P., P.P.S.—American Society for Photogrammetry and Remote Sensing (ASPRS)
- Rob McMillan, P.L.S., E.I.T.—California Land Surveyors Association (CLSA)
- John Steadman, Ph.D., P.E.—Institute of Electrical and Electronics Engineers-USA (IEEE-USA)
- Joseph Michels, Ph.D., P.E.—Institute of Industrial and Systems Engineers (IISE)
- Gerald Hollbanks, P.E.—International Society of Automation (ISA)
- James Hollandsworth, P.E., P.S.—Michigan Society of Professional Surveyors (MSPS)
- Britt Smith, P.E.—National Society of Professional Engineers (NSPE)
- Mark Sargent, L.L.S.—National Society of Professional Surveyors (NSPS)
- Chun Lau, P.E., S.E.—Structural Engineering Institute of ASCE (SEI)
- Andrew Schissler, Ph.D., P.E.—Society for Mining, Metallurgy and Exploration (SME)

The following societies could not attend:

- American Academy of Environmental Engineers and Scientists (AAEES)
- Council of Engineering and Scientific Specialty Boards (CESB)
- National Academy of Forensic Engineers (NAFE)
- National Council of Structural Engineers Associations (NCSEA)
- Society of Fire Protection Engineers (SFPE)
- Society of Naval Architects and Marine Engineers (SNAME)
- The Minerals, Metals and Materials Society (TMS)

President Duhamel called the meeting to order and welcomed all attendees, presented the agenda to the group, and asked attendees to introduce themselves.

POLC Reports

The first order of business was reports from the POLC representatives. Reports submitted by POLC member organizations are included at the end of these minutes.

NCEES Activity Update

President's Report

President Duhamel provided an update on NCEES undertakings and highlighted committee and task force activities.

- The Advisory Committee on Council Activities (ACCA) is studying a proposal made at the 2022 NCEES annual meeting to change the requirements for comity licensure in the *Model Law*.
- The Committee on Education is looking at several issues regarding continuing professional competency requirements as well as reviewing the two NCEES education awards (engineering and surveying).

- The Committee on Examination Policy and Procedures (EPP) is reviewing the process and policy for how a new examination is requested and developed. EPP is also studying the five-year requirement to complete all parts of the PE Structural examination, considering the changes to four sections when transitioned to CBT.
- The Committee on Examinations for Professional Surveyors (EPS) is studying the results from the professional activities and knowledge study (PAKS) and will make a recommendation to the Council about the number of divisions needed for the PS examination.
- The Committee on Uniform Procedures and Legislative Guidelines (UPLG) is conducting its five-year comprehensive review of the *Model Law* and *Model Rules*.
- The Engineering Licensure Model Task Force is reviewing the current NCEES engineering licensure model and considering the development of a rubric to track and identify key skills and competencies from graduation to first license, laying out a specific strategy to build a new licensure model and developing a framework for standing committees and key stakeholders to work with in future years.

President Duhamel then turned the program over to COO McDowell to provide updates on examinations, advocacy, and outreach initiatives.

COO McDowell provided the following updates.

NCEES Exam Updates

Computer-Based Testing (CBT) Update

Transitioning examinations to CBT continues to be a major initiative for NCEES. The Fundamentals of Engineering (FE) and Fundamentals of Surveying (FS) examinations moved to CBT in 2014, and the Principles and Practice of Surveying (PS) examination followed in 2016.

NCEES now offers the Principles and Practice of Engineering (PE) examinations via CBT. The PE Civil, which is the largest-volume PE examination, successfully transitioned to CBT in January 2022. This transition was accelerated and completed well in advance of its regularly scheduled date of April 2023 so that NCEES could increase testing opportunities for these examinees.

Only the PE Structural examination remains in pencil-and-paper format, and it is scheduled to convert to CBT in 2024. Until that time, it will be administered at regional test sites in April and October, with October 2023 being the last pencil-and-paper administration.

Exam Volumes

Engineering exam volumes are down compared to last year, while the surveying examinations continue to have moderate growth. The FE examination had 44,000 examinees in 2021–22, compared to nearly 49,000 in 2020–21. PE exam volumes were down as well: 27,000 compared to 31,000.

For the surveying exams, FS volume was 1,750 examinees (up from 1,630), and PS was 1,020 (up from 825).

More facts, figures, and data from the 2021–22 fiscal year can be found in the NCEES *Squared* publication.

PS PAKS

In FY 2021–22, the EPS Committee was charged to continue the development of a plan to restructure the PS examination into the following separately scored divisions: Core PS, Boundary, Public Land Survey System, Mapping Science, and Incidental Drainage Design. As part of the charge, EPS oversaw the PAKS performed by the PS exam development committee to determine the topics covered on the potential divisions and which divisions are practical.

With over 1,000 respondents to the PAKS survey, the results showed that an examination for Incidental Drainage Design lacked support and that Core PS and Boundary could be combined due to the similarity of responses. EPS felt that Mapping Sciences needed more study and has asked for a task force to investigate mapping science licensure. EPS will come forward with a motion at the 2023 annual meeting for development of an examination module on PLSS-related topics.

Advocacy

Alliance for Responsible Professional Licensing (ARPL)

NCEES is one of the founding members of ARPL, which launched in July 2019. ARPL is a coalition of national associations that represent highly complex, technical professions and their national licensing boards. It was

created to ensure that a unified voice for the advanced professions is heard in discussions of the appropriate level of licensure for professions and occupations. Lawmakers around the country are taking steps to weaken or even eliminate occupational licensing laws. While these laws may not intentionally target the professions of engineering and surveying, we are at risk of being swept up in overly broad legislation. ARPL members include NCEES, NSPE, ASCE, and our counterparts in the professions of architecture, accountancy, and landscape architecture.

ARPL's overarching goal is to educate policymakers and the public on the importance of—and the need to maintain—clear, responsible licensing standards within our professions. Specifically, ARPL is driving a coordinated, national communications and engagement strategy to

- Inject our perspective into media coverage concerning the issue
- Ensure that the advanced professions are at the table in forums where the issue is being discussed
- Provide messages, tools, and materials to help individual state organizations and complement their own activities on the issue
- Connect state stakeholders and state-level boards and chapters

ARPL is engaging on two levels:

- First, it serves a central communications committee, providing template support materials and communications tips and tools available for use by anyone. These resources are available on the ARPL website, responsiblelicensing.org.
- Additionally, in priority states, ARPL is coordinating with state partners to offer an amplified presence through media outreach, paid advertising, and other communications tools as needed.

There are approximately 172 licensure reform bills currently active in 37 states. These bills range from board reform to universal licensure. It is becoming more and more clear that the groups promoting licensure reform are almost exclusively focusing on mobility. The use of the least-restrictive means to increase the number of people who are quickly eligible to work across state lines within licensed occupations and professions is prevalent.

The issue is that these groups are disregarding the impact that their proposed legislation will have on public protection. They make no distinction between occupations and professions. Engineers, surveyors, and other highly technical professions should not be grouped with occupations that do not have the same licensing standards in place. Education, exams, and experience are the foundation of safeguarding the health, safety, and welfare of the public. It only takes removing or lowering the standards of any of the 3 E's in one state to have a negative impact on mobility and to weaken public protection throughout the country.

Other Initiatives

To increase awareness of professional licensure to the general public and to promote licensure to students, NCEES produces P.E. and P.S. profiles on the website as well as a podcast series. NCEES continues to be a major sponsor of DiscoverE and has recently initiated efforts to increase the number of FE and FS takers. These initiatives include

- Launching an FE Ambassadors program, which will kick off at five schools in fall 2023
- Providing graduation honor cords to students who have passed the FE or FS will still in enrolled in college
- Providing digital badges through Credly for passers of the FE and FS examinations

President Duhamel asked President-Elect Laura Sievers, P.E., to provide remarks to the POLC members.

NCEES President-Elect's Report

NCEES President-Elect Sievers provided the following report.

Anticipated Directions for NCEES

Comity and mobility are important issues that need to be better addressed by NCEES. The two task forces that NCEES will have in 2023–24 will help to address concerns related to these areas.

The Engineering Licensure Model Task Force will continue its work to study other licensure models and work on the experience portion of our licensure requirements. While the education and examination components of

licensure are well structured, the experience portion is not. A more structured experience component using rubrics is important to allow NCEES and member boards a consistent and objective method of reviewing experience.

The Surveying and Mapping Sciences Licensure Task Force will study licensure for those in the mapping sciences area and determine which examinations, what type of education, and what progressive experience are needed.

NCEES has many volunteers who not only work on standing committees and task forces but also spend numerous hours developing NCEES examinations. One other priority for the coming year will be to celebrate the work put in by all volunteers and to celebrate the final transition of exams to CBT. A journey that began in 2014 with the FE and FS examinations will culminate with the transition of the PE Structural exam in 2024.

Conclusion

With no new business to be brought before the group, President Duhamel thanked all attendees for their participation. The next POLC meeting will be held in Greenville, South Carolina, at NCEES headquarters. Dates will be determined later.

American Council of Engineering Companies

Founded in 1906, ACEC is a national federation of 51 state and regional organizations representing more than 5,500 engineering firms and nearly 600,000 engineers, surveyors, architects, and other specialists nationwide. ACEC member firms drive the design of America's infrastructure and built environment.

Professional licensure

ACEC provides resources and support for our state member organizations (M.O.) when they contend with challenges to professional licensure in their legislatures. These challenges have taken several different forms over the years. They range from universal licensure to requiring a 'least restrictive' regulatory approach to sunset reviews with a presumption against licensure. ACEC M.O.s have engaged with their state legislatures and strongly advocated for licensure for professional engineers due to the impact on public health and safety.

As part of its efforts to engage on challenges to engineering licensure, ACEC has joined the American Legislative Exchange Council (ALEC) in order to be a voice in the room as ALEC considers policies on licensure and other key issues. ALEC is currently engaged in updating its model policy on universal licensure, and a key goal for ACEC is to ensure that this and related policies do not impact engineering licensure.

IIJA and IRA implementation

Effective implementation of the *Infrastructure Investment and Jobs Act (IIJA)* remains a high priority. ACEC is engaged on an array of issues with federal agencies and state and local client organizations, including procurement and contracting policies, new Build America Buy America requirements, NEPA requirements, and alternative project delivery reforms. One point of emphasis with public sector clients is workforce shortages (see below) and utilization of available contract mechanisms to accommodate the resulting escalation in salaries and other costs for employee recruitment and retention.

ACEC is also tracking the rollout of the *Inflation Reduction Act (IRA)*, particularly tax credits and other incentives for renewable energy investments, manufacturing facilities, and energy efficient buildings.

Workforce

Data from the Bureau of Labor Statistics shows that the engineering workforce is already at full employment and ACEC's analysis of the IIJA finds that we will need an additional 82,000 engineers and other professionals to deliver the projects funded under the new program. The National Science Foundation reports that a significant portion of the existing engineering workforce is nearing retirement age, and NSF research has also highlighted that current STEM education programs are not sufficiently reaching women and underrepresented minorities to meet the needs of a growing economy.

ACEC supports programs that introduce engineering in K-12 curriculum and attract more college students to engineering programs. The CHIPS and Science Act, which was signed into law in August, includes provisions that seek to improve the alignment of undergraduate and graduate STEM education with workforce needs, as well as grow the overall number of students pursuing STEM degrees. Council members advocated for this new law during the 2022 ACEC annual convention.

ACEC also supports policies that enable firms to hire global talent when qualified Americans are not available. The American Society for Engineering Education reports that in 2019 over half of engineering master's and doctoral degrees awarded by U.S. universities were earned by international students. Optional practical training (OPT), H-1B visas and employment-based green cards are all tools that allow engineering firms to tap into this important part of the talent pool. Demand for these visas far outweighs the supply: for fiscal year 2023, there were 483,000 registrations for the 85,000 H-1B visas available in the lottery, and applicants from certain countries may wait for years for an employment-based green card. ACEC continues to ask Congress to raise the cap on H-1B visas, recapture unused employment-based green cards from prior fiscal years, and is exploring administrative actions the President could take to facilitate the visa process for engineering firms that are delivering the projects funded through IIJA.

Diversity, equity, inclusion and belonging

Another key element of expanding the engineering workforce is committing to diversity, equity, and inclusion (DEI) in the workplace. Driven by its strategic plan, ACEC stood up a Diversity, Equity, Inclusion & Belonging (DEI&B) Committee. The DEI&B Committee is leading ACEC's work to advocate for legislative and regulatory policies that advance DEI, develop educational programming, build partnerships with engineering societies that represent diverse communities, provide communication tools for the M.O.s and member firms, and assist in the development of materials to ensure that paths to leadership within ACEC are transparent.

ACEC is participating in the Women of Color in Engineering Collaborative, an organization made up of engineering associations and societies that are working together to identify barriers to women of color in the engineering workforce and strategize about ways to mitigate those barriers. ACEC was accepted into the most recent cohort of ACCESS+, which brings together STEM organizations to learn about evidence-based DEI programs and practices and help organizations create action plans to further their own DEI work.

Education

ACEC continues to provide business and education resources for engineering consulting firms, offering more than 100 webinars and an on-demand library of 200+ resources. ACEC presents a variety of online education courses including—The Essentials of Risk Management for Consulting Engineers, Project Management Essentials, DEI Program Firm Implementation and other timely topics. ACEC also offers education resources related to IIJA/IRA and opportunities for firms. Roundtables and Forums to share best practices take place annually and include areas such as IT, Finance, HR, Risk Management, and Business Development.

www.acec.org/education

ACEC Coalitions provide timely and practical resources for firms in a specific discipline including MEPs, Structural Engineers, Land Development, Geoprofessionals, and Surveyors. Coalition publications are templates and guides intended to aid in the development of engineering firms. Each document has a short abstract for download that describes its content. The documents are available electronically and can be downloaded directly from the ACEC bookstore. <https://www.acec.org/coalitions/coalition-publications/>



**ARCHITECTURAL
ENGINEERING
INSTITUTE**

Architectural Engineering Institute

*Report to the Participating Organizations Liaison Council of the
National Council of Examiners for Engineering and Surveying,
March 11, 2023 in Scottsdale, AZ*

Vision:

To be the worldwide resource for the advancement of the design and construction of integrated buildings

Mission:

To promote an integrated, multi-disciplinary approach to planning, design, construction and operation of buildings by encouraging innovation, collaboration, and excellence in practice, education and research of architectural engineering.

Architectural engineering is the application of engineering principles and technology to building design and construction. Architectural engineers work together with architects and civil engineers but are unique in both their skills and role as part of the building design team. AEI provides its members timely technical information, professional advocacy, continuing education, and opportunities to excel in their careers.

AEI Committees

AEI's committees provide a forum to study and present new developments and technologies and to stimulate the multi-disciplinary cooperation needed to advance the field and state of the art in creating better buildings. AEI currently has approximately 6,000 members and support many different committees:

- Board of Governors
- Academic Council
- Architectural Engineering Exam
- Awards
- Emerging Leaders Council
- International Student Design Competition
- Journal of Architectural Engineering Editorial Board
- National Student Officers
- President Emeritus Council

AEI Build

In response to increased hazards and their effects on the built environment, the Architectural Engineering Institute (AEI) has established a technical forum to amass a growing knowledge base for the Architectural Engineering community to discuss, debate, and share new ideas that affect a more pronounced change in the design, construction, and maintenance of buildings.

AEI Build draws on the best ideas in design, construction, and maintenance of buildings and offers the Architectural Engineering community a new resource of innovative research, new advancements, and

best practices in key focus areas, which are most critical to the advancement of design, construction and maintenance of integrated buildings in the 21st century. The AEI Build initiative is one of several strategic steps embraced by the AEI Board of Governors to help realize the Institute's vision to be the worldwide resource for the advancement of the design and construction of integrated buildings.

AEI Build outlines eight practice focus-areas of the architectural engineering profession. Each AEI Build category is multi-disciplinary in nature and requires interdisciplinary collaboration.

- Deliver
- Enclose
- Learn
- Modular
- Perform
- Resilient
- Secure
- Sustain

Licensure and AEI Architectural Engineering Exam Committee

The architectural engineering professional engineering exam was first offered in 2003 and is now recognized in Puerto Rico and within the United States and Puerto Rico excluding the following states: Alaska, California, Hawaii, Nevada, and Oregon. On December 1st, 2022, the Vermont's Board of Professional Engineering voted unanimously to recognize Architectural Engineering as a distinct specialty discipline and recognize the associated NCEES Examination as a qualifying credential for that specialty. AEI and volunteer Anthony Flynn were instrumental in moving the issue forward.

The architectural engineering exam is ideal for engineering candidates who want a licensure exam that addresses areas directly related to buildings and building systems. The AE PE Exam covers:

- Building systems integration
- Electrical systems
- Mechanical systems
- Structural systems
- Project management and construction administration

Architectural Engineering PE Exam Review

AEI has developed a 4-part AE PE Exam Review Series to assist candidates in preparation for the exam and to gain confidence to pass the exam. Four content areas are covered in this review series: electrical systems, mechanical systems, structural systems, and project management and construction administration. During live sessions, the instructors review tools and strategies to prepare and pass the exam and solve problems in a step-by-step manner to prepare you for the AM and PM exam. These courses also serve as refreshers for AEs seeking to refresh their knowledge base in a secondary or tertiary AE technical sector currently outside of their primary practice.

AIChE 2023 Participating Organization Liaison Council Report

PE and FE Committee Support

The NCEES Principles and Practice of Engineering (PE) Chemical Exam Development Committee continued writing, reviewing, and approving items for the PE Chemical Exam during a spring 2022 in-person meeting and a fall 2022 in-person meeting. The committee leadership remained in place for 2022, with the next leadership transition due in August of 2024. 2022 marks the fifth year of computer-based testing for the exam.

One major activity was developing items needed for a new exam specification that took effect in 2020. This new exam specification was the culmination of a Professional Activities and Knowledge Study (PAKS) conducted from 2017 to 2019. The feedback provided by the chemical engineering community led to the new exam specification emphasizing topics deemed to be increasingly important with the consequence that new items were needed to support the increased focus on these topics.

Another major activity was improving the reference handbook provided to examinees during the exam. The handbook will typically be updated annually for suggestions made by examinees and committee members. Of note in 2022, as in 2021, were improvements resulting from suggestions made by the author and instructor of the **AIChE Chemical PE Exam Review Course**, which were clearly the result of a thorough and critical review of the handbook.

The committee plans to meet twice in 2023 to develop exam items and to edit the handbook for annual revisions. The committee is comprised of 33 volunteer members from a range of industries and engineering functional roles. Most committee members will participate in one exam development meeting each year.

The Fundamentals of Engineering (FE) Exam team also continued its work and the Chemical Engineering Module continued to perform well. Two in-person meetings were held in 2022 with ninety-five (95) new items written, reviewed and approved for the 2023 pre-test pool. Thirty-eight (38) new items were also written, reviewed, and approved for the 2024 pre-test pool. Work in 2022 was focused on the new specification areas and cleanup of the existing question bank by flagging pairs of questions which should not appear on the same exam (bad pairs).

The FE Exam team will meet twice in 2023 for in-person meetings (1st and 3rd quarters). The committee is composed of 16 volunteer members from a variety of backgrounds in industry and academia. Most committee volunteers participate in at least one exam development meeting each year.

The number of FE Chemical test takers was 1,601 in 2022 with 1,467 first time test takers and 134 repeat test takers. The overall pass rate was 68% with a pass rate of 71% for first time test takers and 34% for repeat test takers.

AIChE 2023 Participating Organization Liaison Council Report

Other Licensing Support Developments

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

The AIChE Licensing and Professional Development Committee follows developments in licensure and works to promote awareness of the importance and benefits of licensing. A presentation to undergraduates has become a fixture of the annual student conference. In 2022 the presentation was made in person at the Annual Meeting in Phoenix. Similar presentations are also presented virtually to undergraduate AIChE student chapters and other groups upon request.

AIChE strongly supports professional licensing and its importance to maintaining high standards of ethical practice in the engineering profession. Through the entities referenced above it continues to monitor developments relating to licensing and has on occasion spoken out as required.

Other AIChE Educational, Professional and Outreach Initiatives

AIChE and its Meeting and Education Programs continued to evolve and grow its activities and to more closely approach the pre-Covid offerings in 2022. Noteworthy elements include the following.

RAPID

In 2016, the U.S. Department of Energy established AIChE's Rapid Advancement in Process Intensification Deployment (RAPID) Institute. This institute which aims to boost energy and capital efficiency in the process industries has become a major initiative for AIChE with:

- Launching of a new eLearning course "A Practical Guide to Life Cycle Assessment and Life Cycle Thinking".
- Award of a \$9.5 million grant from NIST to fund three pandemic response projects.
- Announcement of a new, university-only membership tier: AffiliateU.

AICHE 2023 Participating Organization Liaison Council Report

- Hosting of the 2nd Annual ChemE Cube Competition at the 2022 Annual Student Conference. Seven teams designed, built, and competed a mini plant in a 1-ft cube. (Congratulations to Carnegie Mellon University who took home the 1st Place Award)
- Receiving Invitation to submit a proposal for institute renewal, focusing on industrial efficiency and decarbonization, in the new Renewal Process for DOE-funded Manufacturing USA(R) Institutes.
- Hosting of two in-person DEPLOY events on Process Electrification (April) and Advanced Energetics Reactors (August).

CHS

Established in 2019, AIChE's Center for Hydrogen Safety (CHS) is becoming the global leader in hydrogen safety. CHS guides industry stakeholders in the safe handling and use of hydrogen and provides international partner organizations with resources that address traditional uses of hydrogen and its growing use as a fuel source.

CHS experienced a very successful 2022, growing 98 member organizations and 14 strategic partners. CHS added three eLearning courses and an industry-first hydrogen safety credential; conducted four technical webinars with more than 2,000 registrants; and held a successful US Conference with 183 attendees representing 13 countries and 9 company sponsorships. CHS eLearning courses exceeded 3,500 in attendance. Additionally, CHS conducted two AIChE-first LinkedIn Live sessions with more than 400 persons in attendance.

Institute for Learning & Innovation (ILI)

- Expansion of ILI (Institute for Learning & Innovation) includes new credentials launched for Hydrogen Safety and Process Intensification.
- ILI launched Data Analytics Internship program.
- ILI / Academy launched new Instructor-led Virtual Course in collaboration with the University of Houston called The Hydrogen Economy Program.
- ILI Career Discovery conducted 10 Career Discovery Workshops.
- ILI Practice+ kicked off first cohort of Sustainable Energy Corps projects with Lamar University & University of Houston.
- Young Professional Committee launched AIChE's first-ever Three Minute Thesis (3MT) Competition at 2022 Annual Meeting in Phoenix.

**Report of the American Nuclear Society to the
Participating Organizations Liaison Council of the
National Council of Examiners for Engineering and Surveying**

March 11, 2023 (Scottsdale, AZ)

The American Nuclear Society (ANS) Professional Engineering Examination Committee (PEEC) has been and continues to be responsible for encouraging professional licensure of nuclear engineers. The committee has maintained consistent and reasonable standards for the content of the Principles and Practice of Engineering (PE) examination in Nuclear Engineering since 1973. To ensure adequate turn-over and effective leadership, the chair of the PEEC is designated as a three-year commitment. Dr. Joshua Vajda is the current chair; the vice-chair is Ms. Alexandra Siwy, who will assume the chair appointment in mid-June 2023.

Encouraging Professional Licensure

ANS actively encourages professional licensure of nuclear engineers through several avenues, e.g., publishing promotion articles in the monthly magazine *ANS News*, organizing periodic technical sessions or panel sessions at ANS national meetings, ANS Young Professionals Congress (YPC) meetings, and ANS student conferences, using new e-services such as broadcast e-mail, the *ANS Newswire*, online collaboration tools, and the ANS Webinar series to promote licensure and increase outreach. A few example activities in 2022 are:

- In August 2022, a PEEC member presented a professional development information session, *The ABCs of the P.E.: Basics of Engineering Licensure*, to the Nuclear Regulatory Commission (NRC) staff about professional engineer (PE) licensure, including what it means to be licensed, reasons to pursue licensure, the licensure process, exam preparation, and available resources.
- In June 2022, a promotional blog, *Earn Professional Engineer (P.E.) Licensure*, was published in Pacific Northwest National Laboratories (PNNL) monthly employee newsletter. PNNL, with more than 5,000 staff, is one of the United States Department of Energy national laboratories with field of research on energy, national security and the environment.
- In April and September of 2022, *ANS Nuclear News* magazine published short articles promoting the Nuclear Engineering PE Exam, including the study material available for examinees.
- In April 2022, PEEC members / designees attended the ANS Student Conference at University of Illinois and handed out promotional flyers highlighting both the importance of the Fundamentals of Engineering (FE) Exam and the Nuclear Engineering PE Exam.
- In March 2022, the ANS PEEC distributed a *Nuclear PE* promotional package to select employers, including Duke Energy, which is one of the largest private nuclear utility companies.

- In January, March, and July of 2022, the *ANS NuclearNewswire* blog ran Nuclear Engineering PE Exam promotional ads.

Nuclear Engineering PE Exam Preparation Tools

The PEEC has also played a pivotal role in providing study material for industry candidates desiring to take the Principles and Practice of Engineering Exam in the nuclear engineering discipline. Over the last several years since 2019, the ANS PEEC transitioned from an in-person PE preparation workshop to an online format, known as the PE Nuclear Exam Preparation Module Program. This transition required significant effort with the development of video-based content, which captures several diverse subject areas tested on the Nuclear Engineering PE Exam. Lecture material includes coverage for five topical areas: radiological analysis and consequences; the nuclear fuel cycle; nuclear systems and components; reactor physics; and safety analysis. The PEEC successfully created over 130 ten-minute tutorials/modules that map directly to the National Council of Examiners for Engineering and Surveying (NCEES) blueprint. The modules are instructional with an abundance of fully worked example problems to emphasize practical learning. Since the modules are available year-round and do not require travel to the ANS Annual Meeting, more exam candidates will use this resource for exam preparation.

In addition to the ANS online study modules, NCEES offers a Nuclear Engineering PE Practice Exam for purchase. This study aid was developed in 2019 by the PEEC in collaboration with NCEES. The NCEES practice exam contains 85 exam questions. It simulates the format, style, and level of difficulty of actual exam questions and provides solutions to enhance examinee understanding for each blueprint area. Purchase of the NCEES Nuclear Engineering PE Practice Exam is provided on the NCEES website (<https://account.ncees.org/exam-prep/>).

American Nuclear Society Support

The ANS Board of Directors continues to maintain a supporting position on professional licensure and the NCEES organization: (1) ANS provides financial support for one PEEC member to travel to the ANS Student Conference each year. The PEEC representative typically hosts a lunch-and-learn session on licensure, participates in the career fair, and often acts as a judge for student research presentations; (2) ANS provides financial support for one PEEC member to attend the annual NCEES Participating Organizations Liaison Council (POLC) meeting; and (3) the PEEC organizes periodic technical sessions at ANS national meetings to promote PE licensure, including at last year's ANS YPC meeting in Washington, DC.

Nuclear PE Examination Remedial Action Plan

In 2019, when pandemic started, the number of nuclear PE examination first-time takers dropped to single digit. The numbers have increased each year after 2019, but with slow pace (15 first-time takers in the October 2022 Nuclear Engineering PE Exam). PEEC developed and submitted a Remedial Action Plan to NCEES Examination Policy and Procedures (EPP) Committee. The Remedial Action Plan includes four action items for the PEEC: (a) to update the nuclear PE practice exam, (b) update the ANS study guide, (c) continue the online module development, and (d) further promote professional licensure for nuclear professionals; and two

recommendations for NCEES: (a) to move the Nuclear Engineering PE Exam out of October and (b) only offer the exam on a Monday or Tuesday.

Thanks

ANS thanks the NCEES for its support and interest, especially in the matter of ensuring examination quality. We appreciate the NCEES-sponsored opportunities the last several years for Group II exam committee meetings. We look forward to continuing exam development activities and to continue improving nuclear safety standards across the industry.

Respectfully submitted,

Joshua L. Vajda, D.Eng., P.E.
ANS PEEC Chair

Zhegang Ma, Ph.D., P.E.
co-ANS POLC Representative

Stanley H. Levinson, Ph.D., P.E.
co-ANS POLC Representative

ASABE POLC Report on 2022 Activities February 2023

ASABE Membership Profile

ASABE currently has 7,652 members and has grown undergraduate student membership by 1,000 since November 1, 2022. Approximately 33 percent of nonstudent members hold PE registration in one or more states.

Venues for Licensure Discussion

ASABE EOPD-414 Winter Item Writing Workshop, February 7-8, 2022 at NCEES Headquarters in Greenville, SC.

ASABE EOPD-414 Fall Item Writing Workshop, September 12-13, 2022.

ASABE EOPD-414 Writing Workshop (virtual), February 9-10, 2023.

The 2022 ASABE Annual International Meeting was held July 17-20, 2023 in Houston, Texas. Licensure support activities at this meeting included:

- Professional Development Hours available through technical sessions and workshops
- Engineering Ethics Session sponsored by the ASABE Professional Ethics Committee provided 2.5 Professional Development Hours.
- Engineering Ethics session sponsored by the Young Professionals Community provided 2 Professional Development Hours.

Section Meetings (State and Regional Sections of ASABE) also Professional Development Hours. These are great opportunities for members who do not attend the Annual International Meetings.

ASABE EOPD-414 and Professional Engineers Institute held a joint meeting (virtually) on August 25, 2022. PEI is coordinating webinar presentations to assist examinees with PE Exam preparation.

Examinations

The majority of students and graduates from ABET-accredited Agricultural and Biological Engineering programs sit for the Other Disciplines (OD) module of the NCEES FE examination. FE OD exams had a 55% pass rate for the July-December 2022 administrations for 404 examinees. Historically, the FE OD exam has had pass rates ranging from 77 percent to 85 percent for first-time takers. Of the 404 examinees in the July-December 2022 time period, 60 individuals self-reported to be from Biological (non-Biomedical) programs. Pass rates for first-time examinees was 50%.

The Principles and Practice Exam for Agricultural and Biological Engineering was administered in October 2022. Pass rate for 18 first-time examinees was 83%; the one repeat examinee did not pass.

ASABE EOPD-414 Engineering Licensure committee is responsible for maintaining and enhancing professionalism of the members of ASABE by providing services related to the Principles and Practice of Engineering (PE) Exam for Agricultural and Biological Engineering. Major activities for EOPD-414 this past year included the October PE Exam offering, which benefitted from recent completion of the Supplied Reference Handbook (SRH) and updated practice exam (available at NCEES.org), and updating the Exam Specification to reflect the recent PAKS study and Computer Based Testing format prior to the first CBT administration of the exam in October 2022. In preparation also for the CBT offering, the committee continued to build up the bank of active exam items and revised the practice exam.

Licensure Promotion and Encouragement

ASABE promotes professional licensure in a variety of ways, including helpful resources and links on the ASABE Career page on their website, <https://www.asabe.org/Careers>; active volunteer support on the

ASABE Engineering Licensure Committee, Young Professionals Community, Professional Engineers Institute, Professional Ethics Committee; and continuing education opportunities.

The Professional Engineering Institute of ASABE (PEI, with 110 members), a not-for-profit professional and technical institution within ASABE, strives to foster the ideals of the professional engineer and to help the public understand the diverse and unique knowledge base of agricultural and biological engineers. PEI annually recognizes a licensed engineer who has made outstanding contributions to the engineering profession, the public welfare, and/or humankind with the PEI Professional Engineer of the Year Award. Some EOPD-414 members active in PEI also are active in ASABE's Engineering Ethics committee; promotion of licensure and ethics are integral to promotion of professionalism.

Sessions encouraging engineering licensure (encouraging students to take the FE exam and providing guidance on steps to engineering licensure) are held at ASABE Annual International Meetings. PEI, the Dale Wm. Zimmerman PE Fund of the ASABE Foundation, and the ASABE Board of Trustees have partnered to provide two incentives for first-time candidates: 1) reimbursing Agricultural and Biological Engineering PE Exam registration fees up to \$300; and 2) giving \$150 to examinees to be used in any way they see fit. Repeat candidates can receive the \$150 incentive payment. ASABE also has a mentoring program to match individuals who plan to take the PE exam with engineers who have relatively recently passed the exam.

Continuing Education

ASABE trained more than 1,200 participants in conferences and webinars in 2022. ASABE continues to offer a number of free services (including subject matter review webinars) to assist examinees in preparing for the Principles and Practices Examination (PE Exam) for Agricultural and Biological Engineering and continues to provide economic incentives to first-time and repeat test takers.

In-person training includes Continuing Professional Development sessions preceding ASABE Annual International Meetings. The ASABE Engineering Ethics Committee provides CEU opportunities through technical sessions at the ASABE International Meeting, as well as student engineering ethics competitions, including video and essay competitions. The student activities are excellent opportunities for students to engage with practicing professional engineers.

Committee Assignments

The chair of the ASABE Professional Engineering Institute is Brady Lewis, P.E.; Ajay Kumar, Ph.D., P.E., chairs the ASABE EOPD-414 Professional Licensure committee; and Andy Hale chairs the ASABE EOPD-204 ABET accreditation committee. EOPD-414 chair Ajay Kumar, Ph.D., P.E., is the ASABE representative to NCEES EPE, and ASABE President-elect Dana Porter, Ph.D, P.E., represents ASABE on NCEES-POLC. ASABE member (and member of our Board of Trustees) David Jones serves on the ABET Board of Delegates; ASABE member Thomas Brumm serves on the ABET Engineering Technology Area Delegation.

Standards

ASABE's Standards program continues to thrive, thanks to the dedicated efforts of committee members and the longstanding support of industry partners. The committee work is driven by approximately 2,000 unique volunteer positions. The 2022 ASABE Standards CD includes 284 standards, with 36 active projects. In comparison, the 2004 Standards collection comprised 217 standards. Additionally, ASABE has nationally adopted 61 ISO Standards as American National Standards; in 2004 there were four such national adoptions. In the U.S., the right to nationally adopt ISO Standards is granted to the organization who administers the U.S. position for a specific ISO Technical Committee or

Subcommittee. ASABE currently has responsibility for sixteen ISO/US Technical Advisory Groups (TAGs); in 2004, ASABE administered only two TAGs. In 2022 ASABE completed the process to become the 14th Standards Development Organization in Canada. With our accreditation by the Standards Council of Canada, ASABE will be able to develop National Standards of Canada in much the same fashion as we currently develop American National Standards under our accreditation by the American National Standards Institute.

Publications

An open access *Irrigation Systems Management* textbook (<https://www.asabe.org/ISM>) is for the reader to understand the complexities of irrigation systems and how they are to be managed to meet the water needs of the crop production system. It is not an irrigation engineering design textbook, but it fills an important subject matter gap. The intended audience of the book is upper-level undergraduate students and graduate students who are pursuing degrees in agricultural or natural resource sciences. A supplemental downloadable instructor's kit is available for purchase.

Our peer reviewed journal *Transactions of the ASABE* has been renamed to *Journal of the ASABE* beginning with 2022. Our Editor in Chief, Garey Fox, is now providing an optional literature review service for journal authors that provides a list of key articles from our journals that are related to their topic. A reviewer training was held at the 2022 Annual International Meeting. The most recent impact factor for *Transactions of the ASABE* increased for the seventh year in a row and now stands at 1.238. The median number of days to first decision over the past year is about 67 days.

A new open access *Journal of Natural Resources and Agricultural Ecosystems* is available effective January 2023. It will be published four times per year, with articles published online as they are completed.

Special issues of *Resource* magazine produced over the past year included a "Capstone" issue showcasing senior design projects in agricultural and biological engineering academic programs. It complements the "Discover" issue published last year highlighting programs, opportunities and careers in agricultural and biological engineering.

K through 12 STEM Programs

ASABE reaches out to students and educators throughout the year through staff- and member-led activities. The Society produces a variety of printed and digital career-related materials that include flyers, brochures, and special issues of *Resource* magazine that focus on career options in agricultural and biological engineering and technology. ASABE members are encouraged to use these materials in local Engineers Week and other STEM-related events. In addition, we support DiscoverE and the National FFA organization and participate in their events and programs as we are able. In 2022, ASABE sponsored two DiscoverE Future City Competition Special Awards (Renewable Energy and Most Sustainable Food System). Members of ASABE served as judges in local/regional Future City events and in the Future City Finals competition.

Diversity Efforts in ASABE

The vigor and growth of the Society depends upon cultivating a diverse, thriving, and engaged membership, and ASABE is providing resources and support to create a society in which all feel welcome. The Society is a charter member of the Societies Consortium on Sexual Harassment in STEMM. The consortium has become a valued resource for codes of conduct and best practices that advance equality in our programs and activities. A grassroots effort led to the creation of BIPOC (Black,

Indigenous and People of Color) in ASABE. This group is open to all and is focused on providing networking, mentoring, and professional development opportunities.

Board-level discussions and member input led to the creation of the IDEA (Inclusion, Diversity, Equity, and Access) committee. This committee provides a proactive educational approach toward IDEA topics, organizing in-person and virtual opportunities for continued professional development and toward creation of a shared understanding of IDEA concepts. The first recipient of the new major award focused on Inclusion, Diversity, Equity, and Access was recognized at the 2022 Annual International Meeting.

Engaging Membership

Throughout the COVID-19 pandemic ASABE converted many events, including opportunities for networking and learning opportunities, to virtual formats. The ASABE Member Hour initiative had more than 550 participants in its initial series, and it has continued to be an avenue of engaging participants in discussions of interest from industry, research, and Society. The ASABE Board of Trustees and Membership Department have created new opportunities to engage students and have increased undergraduate memberships by more than 1,000 individuals. ASABE sponsors ten competitions for undergraduate students and seven competitions for graduate students; three scholarship programs for undergraduates and one fellowship for graduate students; and five major awards for students.



**ASCE 2023 Report to the
NCEES PARTICIPATING ORGANIZATIONS LIAISON COUNCIL (POLC)**

Presented by
Dennis D. Truax, Ph.D, P.E., BCEE, D.WRE, Pres.22.ASCE , F.NSPE, F.ASCE

Supporting professional licensure is integral to the American Society of Civil Engineers’ (ASCE’s) mission to advance civil engineering and protect the public health, safety, and welfare. Of the many committees supporting the mission of this Society, ASCE has a standing committee that reviews and proposes policy related specifically to the profession. Other committees deal routinely with the aspects of licensure, i.e., accredited education, the body of knowledge required for practice, certification and experience, etc.

Some specifics of select ASCE’s programs dedicated to furthering our mission of supporting licensure are summarized below:

I. Promoting P.E. licensure

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

- a. Policy Statements – ASCE has 9 policy statements that address various aspects of licensure and help it to promote licensure. In 2022, ASCE updated 3 policies: PS 432 Licensure Examinations, PS 524 Advanced Credentialing within the Civil Engineering Profession, and PS 559 Licensure of Civil Engineering Faculty.

In 2023, ASCE is in the process of reviewing and updating the following policies: PS 130 – Licensure of Professional Engineers, PS 464 – Professional Licensure Mobility, and PS 547 – Engineering Examination for Professional Licensure.

All of ASCE’s policy statements can be viewed on our web site at <https://www.asce.org/advocacy/policy-statements>.

- b. ASCE’s Committee on Licensure promotes the licensure of civil engineers, collaborates with other key stakeholders, such as the [Alliance for Responsible](#)

[Professional Licensing](#), and monitors, supports, and encourages licensure activities and policies.

- c. [Published Resources](#) – Copies of publications may be requested from professional@asce.org. Examples are:
- “Guidance on Licensing and Ethical Responsibilities for Civil Engineers” provides guidance on the licensing process, the importance of licensure, and technical and ethical responsibilities of licensed civil engineers. <https://www.asce.org/-/media/asce-images-and-files/career-and-growth/ethics/documents/licensing-ethics-guidance.pdf>
 - “Guide to Professional Engineering Licensure for the Construction Engineer” is intended to assist the engineer working in construction in the process of pursuing licensure as a Professional Engineers. <https://www.asce.org/-/media/asce-images-and-files/communities/institutes-and-technical-groups/construction/documents/construction-engineering-pe-guide.pdf>
 - “Engineers Guide to Pre-Licensure Experience” intended to be a resource for both Engineer Interns and their employers and mentors. The guidelines note that, while not required by licensing boards, the capabilities described are important for career development. https://www.asce.org/uploadedFiles/Education_and_Careers/Licensure/Content/Pieces/Engineers%20Guide-flierFINAL.pdf
- d. [A Question of Ethics](#) – The Society maintains a column offering authoritative examination of ethical conduct cases related to the profession and practice. Published 11 times per year, these articles are available in *Civil Engineering* magazine and on our website. <https://www.asce.org/career-growth/ethics/question-of-ethics>
- e. [FE and PE Examination Preparation](#) – Through our Education portal, ASCE offers guidance on taking and passing the Fundamental of Engineering (FE) Exam. <https://www.asce.org/education-and-events/explore-education/fe-exam>. We are also negotiating to obtain a student member discount for a national review course. The Society also support online review courses and free webinars to help those

taking the Principle and Practices of Engineering (PE) Examination.

<https://www.asce.org/education-and-events/explore-education/pe-exam-reviews>

- f. **Accreditation** – Through its membership in ABET, Inc., ASCE supports accreditation of engineering degree programs, a vital cornerstone of licensure requirements in most jurisdictions. ASCE is the lead society supporting the Engineering Accreditation Commission for all civil engineering, architectural engineering, construction engineering. ASCE also supports the Engineering Technology Accreditation Commission as the lead organization for civil engineering technology, architectural engineering technology, and construction engineering technology programs accredited through ABET. Not only does ASCE help ABET develop and establish program criteria in those areas, it actively recruits, trains, and coordinates volunteer program evaluators assignments for program accreditation assessment annually.
- g. **Recognition** – ASCE’s Walter LeFevre Award is made annually to a program at an academic institution that offers an ABET accredited civil or related undergraduate engineering program. Recipients are recognized for their actions in promoting licensure, ethics, and professionalism, and ASCE membership is not a consideration for this award. In addition, many of ASCE’s awards require the individuals who are recipients to be licensed. <https://www.asce.org/awards/>

II. **Vision for the future of the civil engineering profession**

a. **Civil Engineering Body of Knowledge**

The 3rd edition of ASCE’s *Civil Engineering Body of Knowledge for the 21st Century* (CEBOK) was published in 2019. The CEBOK defines the knowledge, skills and attitudes necessary for entry into the professional practice of civil engineering. It is comprised of outcomes accomplished through formal education, mentored experience, and self-development. <https://www.asce.org/career-growth/cebok>

b. **Engineer Tomorrow**

ASCE’s Engineer Tomorrow initiative is focused on ensuring that today’s civil engineers gain the necessary knowledge, skills, attitudes, and experience to sustain the profession in the future. For decades, ASCE has been central to examining and shaping civil engineering education. Through its forward-thinking [Civil Engineering](#)

[Body of Knowledge: Preparing the Future Civil Engineer](#), ASCE has defined the knowledge, skills, and attitudes that civil engineers need for exercising responsible charge in the practice of civil engineering.

Complex challenges facing 21st-century society require professional civil engineers to advance their technical excellence and leadership to continue to protect the public. Future civil engineers will need to master many new fields, such as sustainability, computer applications, advanced materials, nanotechnology, and the like.

While the knowledge, skills and attitudes needed to practice civil engineering have increased steadily, the educational standards for our profession have remained virtually the same for decades. The current engineering education will not be sufficient to prepare civil engineers to address the civil engineering challenges of the future. <https://www.asce.org/initiatives/engineer-tomorrow>

c. Civil Engineering Technologist Body of Knowledge

ASCE developed the *Civil Engineering Technologist Body of Knowledge* (CET-BoK) to describe functional areas a civil engineering technologist might work in and the skills required to perform in those areas at a professional level. The CET-BoK was published in 2019 and may be downloaded for free from the ASCE Library at <https://ascelibrary.org/doi/book/10.1061/9780784415382>. In addition, ASCE is the lead society within ABET for accreditation of programs in civil engineering technology, architectural engineering technology, and construction management technology.

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

III. Specialty Certification for Civil Engineers and Guided Online Course and Certificate Programs

a. Civil Engineering Certification

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

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

Information on the specialty certifications and their requirements can be found at: <https://www.asce.org/career-growth/professional-certifications>

b. Sustainable Infrastructure

ASCE's Sustainable Infrastructure Certificate Program provides knowledge, tools, and techniques needed to design, build, and manage sustainable projects and to take a leadership role in making our infrastructure sustainable.

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

Based in Washington, DC, the Institute for Sustainable Infrastructure (ISI) is an education and research nonprofit that was established in 2010 by ASCE working with the American Public Works Association (APWA) and the American Council of Engineering Companies (ACEC). ISI collaborated with the Zofnass Program for

Sustainable Infrastructure at the Harvard University Graduate School of Design to develop the Envision Sustainable Professional (ENV SP) program as a premier program for training and credentialing professionals working on broad categories of infrastructure development. <https://sustainableinfrastructure.org/about-isi>

c. Asset Management Certificate Program

ASCE's Geographic Information Systems for Asset Management Certificate Program is designed for practicing engineers to develop in-demand skills used to manage GIS applications for infrastructure assets. Upon completion, participants will earn 12 CEUs / 120 PDHs and are able to apply the fundamental concepts of GIS, including development of GIS applications, implementation of GIS data within existing networks, process improvement using geospatial analysis, and proper maintenance and operation of spatial databases.

Information on the program is at <https://www.asce.org/education-and-events/explore-education/certificate-programs/geographic-information-systems-for-asset-management-certificate-program>.

d. Port Engineering Certificate Program

ASCE's Port Engineering Certificate Program is a series of career-focused courses taught by practicing engineers and university professors providing professional engineers in-demand skills used in the field of port engineering. Upon completion, participants will earn 12 CEUs / 120 PDHs and will learn the fundamental concepts of port engineering, the design, construction, and management of port facilities, types of seismic design classifications, and how to interpret geotechnical data.

Information on the program is at <https://www.asce.org/education-and-events/explore-education/certificate-programs/port-engineering-certificate-program>.

e. Structural Earthquake Engineering for Buildings Certificate Program

ASCE's Structural Earthquake Engineering for Buildings Certificate Program is a series of career-focused courses taught by practicing engineers and university professors and provides professional engineers in-demand skills used in the field of seismic engineering. Upon completion, participants will earn 12 CEUs / 120 PDHs and will

learn the fundamental concepts of earthquake engineering, seismic analysis of buildings, and design and detailing of steel and concrete structures. Information is provided for both new and existing buildings.

Information on the program is at <https://www.asce.org/education-and-events/explore-education/certificate-programs/structural-earthquake-engineering-for-buildings-certificate-program>.

f. Water Treatment Certificate Program

ASCE's Water Treatment Certificate Program is designed for the practicing engineer. Upon completion, participants will earn 12 CEUs / 120 PDHs and will learn how to use the technology to make drinking water from groundwater, lakes, rivers, streams, oceans, stormwater, and wastewater reuse to all the planning aspects required to lay the groundwork for a new water treatment plan.

Information on the program is at <https://www.asce.org/education-and-events/explore-education/certificate-programs/water-treatment-certificate-program>

In addition, ASCE will relaunch the Construction Engineering Certificate Program in 2023 and expand upon it in 2024. Originally released in 2016, a completely updated and expanded set of courses will incorporate new developments in the field and the latest e-learning technology and best practices.

IV. Other ASCE Initiatives

a. Communications and State Legislative Activities

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

Additionally, ASCE is a member of the Alliance for Responsible Professional Licensing (ARPL). The Alliance promotes a balanced approach to professional licensing and aims to educate policymakers and the public on the importance of high standards,

rigorous education, and extensive experience within highly complex, technical professions that are relied on to protect public safety and enhance public trust.

b. ASCE's Future World Vision

ASCE has undertaken a rigorous examination of future macrorends that will impact the infrastructure 10, 25, and 50 years down the line. ASCE's Future World Vision is an interactive, immersive experience exploring the built environment of 2070.

<https://www.futureworldvision.org> Identified trends for the project include alternative energy, autonomous vehicles, climate change, smart cities, high-tech advanced materials, and policy and funding. The website provides an interactive experience and highlights six (6) key trends that will impact us and the systems we build: alternative energy, autonomous vehicles, climate change, smart cities, high-tech construction, and policies and funding. It also provides an interactive, desktop application so a person can visit and interact in the city of the future.

The goal of the project is to through understand the implications of these trends on the profession and help civil engineers prepare themselves, and the build environment, for what lies ahead. On February 22, 2022, ASCE released the Mega City, which examines how civil engineers can accommodate a population of 50 million, while still preserving a city's historic character, promoting accessible green space and supporting a diverse array of lifestyles. In 2019, ASCE unveiled the Floating City. In October 2023 we anticipating the premiere of our next IMAX movie, *Cities of the Future*. ASCE has reunited with MacGillivray Freeman Films for another giant-screen feature film, following the massively successful Dream Big, released in 2017.

c. ASCE's Grand Challenge

ASCE has taken on the challenge to find ways to significantly enhance the performance and value of infrastructure projects over their life cycles by 2025 and to foster the optimization of infrastructure investments for society in its Grand Challenge initiative. Support for Grand Challenge continues to grow and now, nine years later, Grand Challenge concepts have been integrated into ASCE activities across the Society. Details are at www.ascegrandchallenge.com.

d. Civil Engineering Technology

Noted previously, ASCE is active in helping establish criteria for CET education standards. More recently, this effort has expanded into a Society-wide evaluation of how to more fully embrace those with degrees in civil engineering technology as part of the profession of civil engineering. These effort are also expanding beyond just those with an ABET/ETAC degree, but to pull all of those impacting civil engineering projects into the “family” making them professional accountable per ASCE’s new Code of Ethics. <https://www.asce.org/career-growth/ethics/code-of-ethics>

e. Surveying

ASCE’s newest institute, the Utilities Engineering and Surveying Institute (UESI), is increasing engaged in establishing standards for surveying practice and members are working with NCEES on the development of the surveying exams. They are developing programs to modernize the profession of surveying while engaging other stakeholders in the effort. They are also working within ASCE to establish engineering surveying standards in civil engineering programs

V. ASCE Participation with NCEES

ASCE maintains formal relationships with NCEES through several ASCE Member liaisons and ASCE Staff Contacts, listed in the Appendix. In addition to those listed, a significant number of ASCE members serve on standing committees, examination preparation committees, and task forces to support the NCEES mission to advance licensure for engineers and surveyors in order to safeguard the health, safety, and welfare of the public.

VI. ASCE Annual Convention

ASCE’s 2022 Convention will be held October 18 – 21, 2023 in Chicago, Illinois. <https://convention.asce.org/>



APPENDIX

ASCE Contacts to NCEES

Maria Lehman, P.E., ENV SP, F.ASCE
2022-2023 President

Marsia Geldert-Murphey, P.E., F.ASCE
2022-2023 President-Elect

Thomas W. Smith III, ENV SP, CAE, F.ASCE
Executive Director

Dennis D. Truax, Ph.D, P.E., BCEE, D.WRE, Pres.22.ASCE , F.NSPE, F.ASCE
2022-2023 Past-President
ASCE Liaison to NCEES Participating Organizations Liaison Council (POLC)
Engineering Licensure Model Task Force
Member Board, Active

Emily Feenstra, Aff.M.ASCE
ASCE Chief Policy and External Affairs Officer

Caroline M. Sevier, Aff.M.ASCE
ASCE Director, Government Relations

- *Staff Contact for ASCE's Committee on Licensure*

Lindsay O'Leary, P.E., CAE M.ASCE
ASCE Director, Technical Advancement

Leslie Nolen, Aff.M.ASCE
ASCE Director, Educational Activities

For more information, contact us at professional@asce.org.

American Society for Engineering Education Updates

Submitted by: Drs. Jenna Carpenter and Jacqueline El-Sayed

Board of Directors: Jenna Carpenter, Ph.D., ASEE President

First, we have made significant progress since October. We have restructured our accounting and finance practices. We have cut expenses, increased revenue, and implemented a plan for repaying our debt, on which we have already made substantial progress. We have reviewed and restructured each sector of ASEE to be revenue neutral or revenue positive. In short, as an organization, we have turned the corner and are returning to normal operations. We are deeply grateful for the support of our members and partners to date and need your continued support as we move forward. Know that our goal is to emerge from this experience a much stronger and more robust organization, poised to lead engineering education into the future.

We are deeply indebted to our dedicated headquarters staff for their incredible dedication over the past four months. In recognition of their exemplary leadership, ASEE's board is pleased to announce the appointment of Dr. Jacqueline El-Sayed as ASEE Executive Director and Chief Executive Officer, and Patti Greenawalt as ASEE Chief Operating Officer.

President Carpenter has committed to speaking personally to our members by traveling to many meetings, conferences. Her presentations and meetings attended is listed below:

- “Weaving Students Into Engineering versus Weeding Them Out,” Keynote Presentation, ABET Symposium, Nashville, Tennessee, April 2023
- ASEE Engineering Deans Institute (EDI), San Juan, Puerto Rico, April 2023
- Negotiation Skills: Strategies for Success Workshop, University of Minnesota, April 2023
- “Negotiation Skills: Strategies for Success Workshop” and “Dean's Perspective Panel: Keys to Success in Transitioning from Chair to Dean,” ECEDHA Annual Conference, Santa Ana Pueblo, New Mexico, March 2023
- ASEE Southeastern Section Meeting, George Mason University, March 2023
- NCEES POLC Meeting, Arizona, March 2023
- “Weaving Students In, Not Weeding Them Out: Reforming Entry-Level College Mathematics,” 100th Louisiana-Mississippi Mathematical Association of America (MAA) Section Meeting, University of Mississippi, March 2023
- “Weaving Students Into Engineering, Not Weeding Them Out,” Collaborative Network for Engineering and Computing Diversity (CoNECD) Conference, New Orleans, Louisiana, February 2023
- “Weaving In Instead of Weeding Out Through GCSPs,” Keynote Presentation, Grand Challenges Scholars Program Annual Meeting, Tempe, Arizona, February 2023
- “Innovations in Engineering Education: Teaching and Learning in the New Normal,” 2nd International Conference on Engineering and Agro-Industrial Technology (iCEAT2023), Laguna, Philippines, February 2023
- “Weaving Students Into Engineering versus Weeding Them Out,” Engineering Education Department Seminar, The Ohio State University, Columbus, OH, February 2023
- Conference for Industry and Education Collaboration (CIEC) Conference, Charleston, SC, February 2023

- ASEE Public Policy Colloquium and Engineering Deans Capitol Hill Day, Washington, DC, February 2023
- KEEN National Conference and Leader Meeting, Atlanta, Georgia, February 2023
- “The Grand Challenges: How”, Panel Session, AIAA Science and Technology Forum, National Harbor, Maryland, January 2023.
- “Update on Weaving Students into Engineering Versus Weeding Them Out,” Engineering Societies Education Roundtable, December 2022
- “Building a More Inclusive Model of Engineering Education,” International Conference on Engineering Education-Philippines, Philippine Association of Engineering Schools, Manila, Philippines, December 2022.
- “Best Practices on Teaching and Learning in the New Normal,” Panel Session, International Conference on Engineering Education-Philippines, Philippine Association of Engineering Schools, Manila, Philippines, December 2022.
- Dean’s Panels, Faculty Development Symposium, Society of Hispanic Professional Engineers Annual Conference, Charlotte, North Carolina, November 2022.
- Leadership Summit, Engineering Education Societies, October 2022.
- International Conference on Interactive Collaborative Learning 2022, Vienna, Austria, September 2022.
- “Engineering ‘Engineering Education’ for the Future,” 10th Anniversary, College of Engineering, University of Georgia, September 2022.
- “Engineering Education for a Post-Pandemic World,” Panel Presentation, 70th International Session, Japanese Society for Engineering Education (JSEE) Annual Conference, September 2022.
- “Engineering ‘Engineering Education’ For the Future,” Keynote Presentation, IN4OBE Summit 2022, August 2022.

Communication and Marketing Departments: Rafael Grenada, Chief Communications Officer

ASEE has significantly increased communication through town halls, emails, newsletters, and social media. This communication campaign has had excellent feedback from our members. In addition, our award-winning magazine, Prism, and our portfolio of journals have been reorganized with transparent budgets put in place. Several fundraising campaigns have yielded support for ASEE’s 130 Gala and other ASEE initiatives.

Member Services Departments: Patricia Greenawalt, formerly Chief Community Officer now Chief Operations Officer

As we approach ASEE's 130th anniversary year, we are thrilled that a record 3,440 abstracts have been accepted for the annual conference in Baltimore (June 25 to 28). ASEE's annual conference exhibit hall sales have been so brisk that the Society had to add space to accommodate additional sponsors eager to connect with our community. Additionally, attendance is on track for ASEE's council meetings this spring including the Research Leadership Institute (RLI), March 6 to 7, Arlington, VA, and the Engineering Deans Institute (EDI), April 16th to 19th, in Puerto Rico.

This month, more than 120 engineering deans joined ASEE's successful Public Policy Colloquium (PPC) in Washington D.C. to discuss and promote public policies that strengthen engineering and engineering technology education, and many attendees met with their Congressional representatives as part of PPC.

ASEE's voice is valued on Capitol Hill: ASEE was also honored to successfully nominate former ASEE President Bevee Watford to the National Science Board - an appointment made recently by President Biden.

ASEE members have many good things to look forward to this year: Mark your calendar for the 130th Anniversary Gala this fall on October 10 in Washington, D.C. And look for an email invitation soon for a Zoom Town Hall meeting where we will answer your questions and talk about how we can all continue our work to position ASEE for the next 130 years of success.

Professional Services Sector: Jacqueline El-Sayed, Ph.D. formerly Chief Academic Officer now Chief Executive Officer

ASEE has developed significant new programming over the last three years to provide thought leadership on the national level and to provide professional development for our members and the engineering education community at large. This new programming is funded via new fee-based opportunities via the Learning Services and also via significant new external funding which enables participants to attend at no cost. Overall, over \$55 M in new external funding has been awarded to proposals submitted by the Professional Services departments from 2020-present. Below is a listing of some of the new programs with their impact:

Education and Career Development

Current Fee-based Program Updates

- The Learning Services department launched two new courses ([*Efficacy in Hybrid Teamwork: Classroom Instruction & Workforce Preparation*](#) and [*Evaluating Diversity Statements – Improved Inclusivity & Convergent Thinking*](#))
 - IMPACT AND REACH: Since its launch in August 2020, Learning Services has served 2,168 participants across 40 programs.

Current Sponsored Program Updates

- NSF Engineering Education and Centers: Stewarding a Community of Scholars, Leaders and Innovators
 - Hosted the ERC Biennial Meeting, EEC Grantees Conference, and RED Consortium Meeting in September 2022 for 500+ attendees
 - Two events scheduled for 2023:
 - RED Consortium Meeting (September 2023)
 - Virtual RET Site Participant Poster Session (July 2023)
 - IMPACT AND REACH: Through this agreement, we have engaged 1,700+ EEC grantees and stakeholders across 14 in-person and virtual events.
- Collaborative Research: A Virtual Community of Practice to Promote LGBTQ Inclusion in Engineering
 - IMPACT AND REACH: Through this award, we have directly trained 2,000+ individuals across 85+ in-person and virtual LGBTQ+ Safe Zone Ally Training workshops.

New Awards

- Capacity Building for Research at Minority Serving Institutions: Infrastructure Research Readiness (CyBR-MSI: IRR) and CISE Proposal Development Workshop
 - IMPACT AND REACH: Through five MSI-focused awards funded by NSF's CISE Directorate, we have engaged 423 participants from 160 institutions.
- 2022 Underwater Ideas Lab
- 2023 Engineering CAREER Proposal Workshop

Innovation and Strategic Direction (ISD)

Current Sponsored Program Updates

The Innovation and Strategic Direction department continued work on the following 5 grants:

- **Archival Publication Authors Workshop for Engineering Educators, funded by Kern Family Foundation**
 - APA-ENG is a program aimed at increasing the capacity of engineering faculty to produce competitive manuscripts for refereed journals and other publications.
 - Cohort I is culminating with 10 faculty teams finalizing manuscripts for submission. Cohort II will begin in March 2023 with a Networking, Ideation and Collaboration Workshop.
 - A list of the participants and their affiliations from the 20 teams that were accepted into the competitive mentoring/workshop can be found at the following link.
- **Engineering for One Planet-Mini Grant Program, funded by the Lemelson Foundation**
 - EOP-MGP is designed to support faculty teams as they develop and pilot curricula that focuses on instilling concepts of sustainability into higher education programming.
 - The faculty teams that were awarded mini grants from Cohort I showcased project work at an online symposium open to the public in January 2023.
 - Impact: 48 faculty members used the EOP framework to develop/modify 34 courses across 13 institutions, reaching 1615 students in their pilots. Attendees of the public Symposium ranged from interested parties to deans, exceeding 150 participants.
 - A list of the participants and their affiliations from the faculty teams that were accepted into the competitive mentoring/workshop can be found at the following link.
 - Note: Funding for additional cohorts was secured; see below section on "New Awards"
- **Weaving In, Not Weeding Out, funded by NSF**
 - An initiative of ASEE's President Jenna Carpenter, WINWO calls for overturning the tradition of "weeding out" students of STEM fields by instead adopting a "weaving in" philosophy— recruiting, attracting, and graduating engineering students with a wider array of pre-college backgrounds and experiences.
 - A 2-day convening was held on-site at NAE in October 2022 with around 25 faculty leaders, which intentionally included under-represented and under-resourced voices, to develop a framework of evidence-based programs aligned with the WINWO aim. Focus groups are scheduled for February-April 2023 to extend the work and collect student voices on these issues.

- An article was published in November 2022's issue of *ASEE Prism Magazine*, which is accessible here: [ASEE Today – Engineering Education ASEE Prism \(asee-prism.org\)](https://www.asee.org/prism).
- A list of all attendees and their institutions (beyond Senior Personnel) can be found at the following link.
- **Analysis of Variation in Student Success in Engineering Degrees among Several Institutions, funded by NSF as subaward from Association of Public and Land-grant Colleges (APLU)**
 - This project seeks to identify specific equity-focused policies and practices that may explain variation among institutions in undergraduate engineering degrees awarded to underrepresented minority students.
 - ASEE is collaborating with APLU to polish the final report so that it can be submitted to NSF and published as joint publication in the coming months.
 - Data for this project was obtained from the deans from the following three institutions, all which applied to ASEE's Diversity Recognition Program at its inception: The City College of New York, Georgia Institute of Technology and California State University, Los Angeles.
- **Defining and Building the Engineering Workforce of the Future, or Future-Ready Engineering Ecosystem, funded by NSF**
 - The objective of FREE is to define the startup phase of establishing a sustainable Future-Ready Engineering Ecosystem composed of education, policy, and private sector collaborations, that will be necessary to maintain U.S. technological leadership.
 - ASEE held a second set of online convenings in October 2022 with over 150 attendees focused on developing a rubric for action to supplement the taxonomy of competencies derived from an earlier convening.
 - A list of all attendees from the above-mentioned FREE convenings and their institutions (beyond Senior Personnel) can be found at the following link.
 - Separately, ASEE also hosted 2 virtual meetings in November 2022 to publicize the pilot partnership program Advanced Chip Engineering Design and Fabrication (ACED Fab), welcoming 273 registrants, respectively. Participants and their institutions can be provided upon request.

New Awards

The Innovation and Strategic Direction department was awarded and/or began work on the following new grants:

- **Engineering the Inclusive Mindset for the Future: A Blueprint for Systemic Change in Engineering Education, funded by NSF**
 - With broad participation from stakeholders, this project sets out to define a plan of action for achieving changes in engineering education to meet the needs of the future.
 - A convening is scheduled for several dates in February-March 2023, where over 100 thought leaders will come together to address six identified areas of need.
- **ADVANCE Partnership: Engineering Deans' Gender Equity Initiative: Aligning Systems to Ensure Inclusion and Equity in Advancement of Faculty, funded by NSF**

- The Knowledge Initiative sets out to catalyze change in promotion and tenure processes, ultimately to ensure inclusive and equitable success of diverse women engineers.
- An extension of ASEE's Engineering Deans Gender Equity (EDGE) Initiative, this initiative is expected to launch applications for change teams in Spring 2023.
- **Engineering for One Planet-Mini Grant Program Continuation, funded by the Lemelson Foundation**
 - Based on the success of the inaugural cohort, the Lemelson Foundation awarded ASEE with an extension grant to expand the program and support two additional cohorts.
 - Cohort II is in its initial stages with the application period closing in February 2023. As of the end of January 2022, over 375 applications have been received—nearly quadrupling from the previous year.
- **INCLUDES Partnership: Engineering PLUS (Partnerships Launching Underrepresented Students, funded by NSF as subaward from Northeastern University)**
 - Eng+ aims to achieve a national target of 100,000/30,000 (BS/MS-PhD) degrees for underrepresented minorities and women by 2026.
 - ASEE will leverage the Deans Diversity Pledge and ASEE Diversity Recognition Program to develop a critical mass of institutional partners able to collectively reach the target number of degree recipients.
- **Increasing Minority Presence within Academia through Continuous Training at Scale, funded by NSF as subaward from Georgia Tech**
 - IMPACTS sets out to establish an Inclusive Mentoring (IM) Hub to aid faculty members from underrepresented groups to navigate and succeed in the preparation, promotion, and promotion processes.
 - ASEE will provide the core means of soliciting participation in IMPACTS across U.S. engineering academia, as well as using prior constructs to implement and monitor an Inclusive Mentoring Hub.
- **Developing a National Framework for Recognition of Engineering and Engineering Technology Faculty Instructional Excellence, funded by NSF**
 - The goal of this project is to recognize and highlighting undergraduate teaching excellence in the fields of engineering and engineering technology, in turn, increasing the retention rate of students and providing better-prepared technical workers for industry.
 - ASEE will facilitate the identification of senior engineering faculty across engineering disciplines to serve as mentors to untenured and newly tenured faculty from underrepresented groups.
- **Minority Mentoring Program (MMP), funded by Chevron**
 - MMP is a 9-month program designed to support engineering educators from underrepresented, underserved groups at all career stages through Guided Professional Development and a Community of Practice.
 - The inaugural cohort will launch in March 2023 with 25 women of color early in their careers as engineering faculty.

Fellowships and Research Opportunities (FRO)

- **NSWC-Indian Head Postdoctoral Fellowship Program, funded by DOD:**
 - The program places engineering postdoctoral fellows at this government lab.
 - Contract with NSWC-IH ended in September 2022
 - Received positive final reviews of program, which reflect over 90% success rate to federal employee conversion. More than half of those postdocs who converted eventually became advisors within the program.
 - Program success resulted in NSWC interest in continuing the program under a grant instead of contract.
 - ASEE submitted a proposal to continue program administration in October 2022 and should receive feedback within the next few months.
- **NRL Postdoctoral Fellowship Program:**
 - This program places engineering postdoctoral fellows at this government lab. Funded by DOD/NRL.
 - Received approval to begin advance drawdowns for participant and administrative expenses in October 2022, which had positive impact on ASEE cashflow.
 - Of all program participants NRL estimates that over 75% convert to federal employees, which fulfills the purpose of the program. The remaining 25% return to academia or industry.
- **IPERF/NSF Postdoctoral Fellowship Program:**
 - This program places postdoctoral fellows at SBIRs funded by NSF. (IPERF.asee.org)
 - Delivered multiple webinars with experts from entrepreneurial world. Managed regular IPERF-webinars as engagement sessions to potential candidates.
 - Delivered publications & presentations during last few months:
 - "Increasing U.S. Competitiveness by Investing in Underrepresented, Entrepreneurial I-Minded Postdocs in High-Tech Startups". Proceedings of the 2022 IAJC International Conference, 001-x-22, ISBN 978-1-60643-379-9. Oct. 2022.
 - "Expand Underrepresented Participation in High-Tech Start-Ups." Proceedings of the CIEC 2023 conference, Feb.8, 2023.
- **EcoCAR Mobility Challenge:**
 - This award supports engineering contests for campuses in the area of sustainable mobility. It is a joint program between and funded by ANL, General Motors and Mathworks. There are five programs with the newest being a battery competition with Stellantis and ANL. (EcoCAR.asee.org)
- **eFellows Postdoctoral Fellowship Program, funded by NSF:**
 - The goal of this program help new engineering Ph.D graduate navigate the challenging job market due to the COVID pandemic emergency and keep them as researchers in their technical fields by placing them in postdoctoral fellowships at campuses across the country and providing each cohort with centralized professional development and mentoring. (Efellows.asee.org)
 - Cohort One has completed their first 10 professional development webinars with concurrent activities, as prompted by the exercises developed by ASEE's Learning Services team within the ASEE HUB.

- Cohort One has completed both their Opening Meeting Experience as well as their Mid-Program Meeting Experience where they presented posters about their eFellows-related research to all their colleagues.
- Cohort Two has started their appointments at their new research institutions and are starting their professional development webinar series today, Friday, January 27.
- Cohort Two will be participating in their Opening Meeting Experience in February 2023.
- The ASEE eFellows Team is also working to produce an “eFellows Broader Impact” website that will be a public-facing site containing information about eFellows who have left the program to start new jobs and more information about the personal stories provided by the currently active eFellows to demonstrate how the eFellows Program has helped the primary demographic it aims to serve (i.e. groups that have been historically underrepresented in STEM). The information, data, and stories that will populate the “eFellows Broader Impact” website will also be consolidated and presented to NSF with the goal of obtaining funds for (at least) a third cohort.

Institutional Research, Analytics and Informational Technology (IRA)

- Profiles Survey
- Faculty Salary Survey
- IT reorganization and support

Meetings and Conferences

Interest in ASEE’s conferences this spring and summer are very strong, setting records in some cases and necessitating the addition of more hotel rooms and more exhibit hall space for several events.

- *ASEE Public Policy Colloquium (PPC) and Engineering Deans Capitol Hill Day, Washington, DC, February 2023*
The PCC was held the first week of February. Invited speakers included representatives from the National Science Foundation, NIST, and Departments of Defense, Energy, & Commerce. Engineering deans met with their Congressional Representatives and Senate Appropriations Committees on Wednesday. In addition, ASEE successfully nominated Past ASEE President Dr. Bev to the National Science Board, with her appointment made in February 2023 by President Biden.
- *ASEE Research Leadership Institute (RLI), Washington, DC, February 2023*
Sessions for this conference will include a discussion on working with the Department of Defense, building large-scale multi-organizational research teams, facilitating research with industry, and trends for early career faculty progression toward tenure and promotion.
- *ASEE Engineering Deans Institute (EDI), San Juan, Puerto Rico, April 2023*

Keynote speakers this year will include Eileen Velez-Vega, Secretary of the Department of Transportation and Public Works. A number of vendors and industry partners will be participating this this year's conference, as well.

- *ASEE Annual Conference and Exposition, Baltimore, Maryland, June 2023*
An organization-record 3,440 abstracts have been accepted for the ASEE Annual Conference in Baltimore, with similar robust interest in Exhibits. The keynote speaker this year will be Dr. Darryll Pines, President of the University of Maryland.
- *ASEE 130th Anniversary Gala, Washington, DC, October 2023*
The 130th Anniversary Gala will be held this fall at the Omni Hotel on October 10 in Washington, D.C. The gala will include recognition and induction of ASEE Hall of Fame honorees.

Licensure

ASEE Statement on Professional Licensure of Engineering Technology Program Graduates

February 2, 2020

ASEE strongly supports the position that baccalaureate graduates from ETAC/ABET accredited Engineering Technology programs are fully capable of protecting the health, safety, and welfare of the public and should, therefore, be eligible, without additional requirements, to become Licensed Professional Engineers.



ASHRAE 2023 Report to NCEES POLC

Mission: To serve humanity by advancing the arts and sciences of heating, ventilation, air conditioning, refrigeration and their allied fields.

Vision: A healthy and sustainable built environment for all.

ASHRAE Report

ASHRAE's success is a testament to the outstanding work of our more than 52,000 members worldwide who make up our great society and strive to fulfill our mission and support our vision. Our society is led by our 2022-23 President Farooq Mehboob, Fellow ASHRAE whose theme for this Society Year is "*Securing Our Future.*"

[2023 ASHRAE Winter Conference & AHR Expo](#)

- In February of this year, ASHRAE held its 2023 Winter Conference which was presented in Atlanta, Georgia at the Omni Hotel at CNN Center and Building A of the Georgia World Congress Center.
- The Winter Conference consisted of eight conference tracks, more than 100 technical sessions, 20 ASHRAE Learning Institute courses, updates from Society leaders, tours, social events and livestreamed sessions for virtual attendees.
- A new conference track *Pathways to Zero Energy Emissions and Decarbonization*, highlighted methods being developed to reduce carbon impact on the global environment and the actions that ASHRAE and its members are taking to advance these efforts.

[ASHRAE Membership](#)

- 199 Chapters; 15 Regions
- View the latest Society Snapshot at ashrae.org/about/society-snapshot

[Task Force For Building Decarbonization \(TFBD\)](#)

- The evolved TFBD will be developing the strategies to get decarbonization into the regular activities of ASHRAE.
- The TFBD ExCom consists of seven members chaired by Presidential Member Kent Peterson. There are two subcommittees with eight working groups that will be

responsible for overseeing the development of six guides, new training and education products and tools, and revamping the website and knowledge hub.

- The two advisory panels will help provide guidance on what is needed on a global scale from the industry and the users.
- The TFBD released a position document stating that the decarbonization of buildings and its systems must be based on a holistic analysis including safe, and comfortable environments, energy efficiency, environmental impacts, sustainability, operational security and economics.
- The TFBD solicited bids for the development of the “Guide for Designing and Operating Buildings for Decarbonization” – the first in a series of six guides
- ASHRAE’s First International Building Decarbonization Conference in Athens, Greece. Sponsored by the Hellenic chapter. Primary goal was to bridge North America and Europe’s collaboration in decarbonization efforts
- The TFBD host its first Decarbonization Conference for the Built Environment in October 2022 in Athens, Greece. The [2023 Decarbonization Conference for the Built Environment](#) will be in October 2023 – Washington, DC.
- The TFBD has also tasked every ASHRAE Standard to incorporate decarbonization where applicable and many are incorporating these goals

Global HVAC&R Summit

- October 2023, ASHRAE hosted its first Global HVAC&R Summit in Istanbul, Turkey.
- The Summit was designed to create an environment of collaboration and strategic dialogue to address the critical issues of the day, which were determined via the results of an international survey developed and distributed by the ASHRAE Associate Society Alliance (AASA).
- The goal was to develop a plan that could be endorsed by all participants, thereby making our planet a better place for all.
- The Summit and plan dealt with six critical issues of the day:
 - Decarbonization
 - IEQ/Wellness
 - Climate Crisis Mitigation
 - Food Security—The Cold Chain
 - Energy Security
 - Workforce Development
- The [plan](#) is available for download.

Diversity, Equity and Inclusion Subcommittee (DEI)

- The ASHRE Diversity, Equity and Inclusion Subcommittee remains active.

- New resources for volunteers are regularly added to their webpage at ashrae.org/DiversityEquityInclusion.

ASHRAE RP

- The 2021-22 campaign raised more than \$2.5 million, an increase from 2020-21 campaign which raised \$2.3 million.
- \$1.9 million was raised for research.
- \$1 million was given to the ASHRAE Endowment.
- \$235,500 was awarded via 65 ASHRAE Scholarships.

ASHRAE Scholarships

- 32 Society Scholarships totaling \$168,000 for the 2022-23 academic year

Government Affairs

- ASHRAE Government Affairs team conducted 113 outreach events during Society Year 2021-22, on the global, federal and state levels.
- A combined total of 39 letters, briefing and testimonies were produced during Society Year 2021-22.
- [Two workshops](#) were hosted by government agencies at which ASHRAE subject matter experts presented technical information on the cold chain.
 - Philippines Cold Chain Standards and Innovation
 - U.S. Department of Commerce – The Cold Chain Industry
- Government Affairs Update bi-weekly newsletter provides updates on government activities. Subscribe online or by emailing GovAffairs@ashrae.org.

Healthy Workplaces Coalition

- ASHRAE is among 60 national organizations, industry leaders and trade organizations working together to raise awareness about the importance of healthy workplaces, ensuring the public, policymakers and business understand that workplace health and safety is critical to doing business now and beyond the COVID-19 pandemic.
<https://www.wellcertified.com/healthy-workplaces-coalition>

The International Network for Women in Cooling (INWIC)

- INWIC was created to advance engagement, promote career opportunities and increase overall participation of women in the cooling sector, which includes refrigeration, air-conditioning, and heat pumps (RACHP).
- The initiative is led by the World Refrigeration Day (WRD) Secretariat and the United Nations Environment Programme (UNEP) OzonAction, in cooperation with the following influential international organizations representing the building industry worldwide: AIRAH (Australia), AREA (Europe), ASHRAE (Global), CAR (China), FAIAR (Latin America),

IIR (Global), IOR (UK), ISHRAE (India), JSRAE (Japan), U-3ARC (Africa), and Women in HVAC&R (North America).

Recent ASHRAE Publications

- 22 standards and 1 guideline, including new editions of ASHRAE Standards 15 and 34, 90.1 62.1, and 62.2, as well as the first editions of:
 - ASHRAE Standard 15.2-2022, *Safety Standard for Refrigeration Systems in Residential Applications*
 - ASHRAE Standard 90.1-2022, *Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings*
 - ASHRAE Standard 230-2022, *Commissioning Process for Existing Buildings and Systems*
 - ASHRAE Standard 205-2023, *Representation of Performance Data for HVAC&R and Other Facility Equipment*
- Weather Data Viewer 2021, which is now online and sports an improved user interface
- 4 books, including Presidential Member Darryl Boyce’s presidential initiative *Designing for Operational Excellence - Intentional Design for Effective Operation and Maintenance* and a new Advanced Energy Design Guide (AEDG) on Achieving Zero Energy in Multifamily Buildings
- 3 position documents, including new PDs on building decarbonization and indoor carbon dioxide.
- A timely free-download white paper titled *Healthier Homes During Epidemics*.

ASHRAE Professional Development - New and Popular Courses

- Introduction to Building Decarbonization
- V in HVAC – Efficiently Improving IAQ using the Ventilation Rate Procedures (Using Advanced Options for Standard 62.1-2022)
- Smart HVAC Solutions for Climate Design
- Fundamentals of Decarbonization Design Systems and Equipment Applications
- Best Practices for Installing DDC Systems
- V in HVAC – What, Why, Where, How, and How Much (Includes Basic Requirements of Standard 62.1-2019)
- [Essential Controls](#) (eLearning)
- [Achieving Zero-Energy Building Design](#) (eLearning)
- [Energy Conservation and Efficiency in Buildings](#) (eLearning)

United Nations Climate Change Conference (COP27)

- In November, ASHRAE was invited to attend the 2022 United Nations Climate Change Conference known as COP 27, where countries came together to “take action” towards achieving the world’s collective climate goals as agreed under the Paris Agreement.

- ASHRAE President Farooq Mehboob and Treasurer Dennis Knight participated in a side event coordinated with Architecture 2030 and the International Network of Women Engineers and Scientists on Planning, Design and Development in the Global South. Leading up to the event, ASHRAE, along with 24 of the world's top industry organizations, issued a statement pledging to assume a leadership role in decarbonization efforts in the built environment.

ASHRAE to Developing an IAQ Pathogen Mitigation Standard

- The goal is to finalize the consensus-based, code enforceable standard within six months.
- The standard was [acknowledged](#) by the White House Office of Science and Technology policy.

Standard 240P

- ASHRAE and the International Code Council announced joint development of ASHRAE/ICC Standard 240P - *Evaluating Greenhouse Gas (GHG) and Carbon Emissions in Building Design, Construction and Operation* to assess carbon emissions across the entire building life cycle.
- The proposed standard establishes how to measure and verify the greenhouse gas (GHG) and carbon emissions of a building, or group of buildings, over the entire life cycle. The goal is to provide consistent procedures and data to be referenced by policies, codes, and other standards that address new and existing building performance.

ASHRAE Partnerships and Collaborations

- World Health Organization (WHO)
- Federation of European Heating, Ventilation and Air Conditioning Association (REHVA)
- Indian Society of Heating, Refrigeration and Air Conditioning (ISHRAE)

ASME/NCEES POLC Meeting Report February 2023

ASME Membership Profile

- ASME currently has 85,000 members, including 20,000 student members and 13,000 early career members including graduate students.
- Approximately 33% of non-student members in the United States hold P.E. registration in one or more states. An additional 14% have passed the F.E. exam.
- An analysis of membership data shows that members with a P.E. license or who had passed the F.E. exam renew their ASME membership at a higher rate (94%) than non-P.E. s and F.E.s (80%).
- The average tenure of membership for those with a P.E. license or who have passed the F.E. is 12 years longer than the average ASME member.

Conferences That Are Venues for Licensure Discussions

- Mechanical Engineering Education Leadership Summit, March 23-25, 2023, San Juan, Puerto Rico
- ASME Student Conference “EFest” Virtual March 25, 2023
- ASME Student Conferences “EFx” In-Person -Milwaukee WI, April 21-22, 2023, Pomona, CA April 29, 2023
- ASME Annual Meeting, June 3-6, 2023, St. Louis, MO
- International Mechanical Engineering Congress & Exposition (IMECE), October 28-November 1, New Orleans, LA

Vision 2030 Project Survey

- From the *ASME Vision 2030* project survey involving over 2,500 experienced mechanical engineers and engineering managers in practice in the U.S.:
 - *51% of the respondents were Licensed Professional Engineers*
 - *79% 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% did not agree and another 22% 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 five high-level recommendations have officially become part of the ASME Engineering Education advocacy strategy:
 - Richer and more extensive practice-based engineering experience for students
 - New balance of faculty research/practice skills in mechanical engineering programs
 - Greater cultivation of collaborative inclusion, diversity, creativity and innovation among students and faculty

- Development of students' professional and communication skills to a higher standard
- Increased flexibility in mechanical engineering programs

Licensing That Works (LTW) Coalition

As reported at POLC meetings annually since 2008, ASME and several other professional societies remain unconvinced that a master's degree or equivalent (MOE) 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 Coalition, called Licensing That Works, is pleased that the concept of MOE was removed from the current Position Statement 33 at the 2022 NCEES Annual Meeting.

The Coalition will continue to monitor the developments in this area. The societies in the Coalition are:

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

In addition,

- ASEE Engineering Deans Council's Executive Board endorsed the Position Statement
- IEEE-USA and the American Council of Engineering Companies have taken similar positions against MOE.

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

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

Codes and Standards

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

Continuing Education

ASME training complies with International Association for Continuing Education and Training (IACET) standards. Through IACET, ASME can offer CEUs that qualify under ANSI/IACET standards. There are over 200 different courses and over 120 eLearning courses. Over 5,000 individuals are trained annually.

Examinations

- The NCEES Mechanical Engineering FE exam development committee has consistently prepared exams with high psychometric measures. Historically, the FE exam has had pass rates ranging from 70%-85% for first-time takers. The last full-year data in NCESS Squared showed a total of 11,608 individuals took the exam.
- The last full-year data in NCESS Squared showed a total of 3,364 individuals took one of the three mechanical PE exams. The pass rates for the exams for first-time takers ranged from 67% to 71% and for repeat takers, 50% to 55%.
- We have been working with our standards and certification staff to allow more excerpts from ASME standards to be included in the reference documents for both the FE and PE exams, including the Metallurgical and Materials PE exam.
- ASME is evaluating the possibility of offering low-cost study groups for individuals preparing to take the FE and PE exams in mechanical engineering.
- A podcast featuring ASME Executive Director Tom Costabile and Managing Director, Governance Dave Soukup on licensing for mechanical engineers is available at <https://podcasts.apple.com/us/podcast/episode-27-education-experience-examination-importance/id1455242683?i=1000491239895>
- NCEES is conducting a PAKS study for the PE Mechanical exams. Articles were published in the November 1, 2022, and January 17, 2023, issues of ASME NEWS asking licensed mechanical engineers to participate in the study.

Committee Assignments

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

University Initiatives

- In alignment with its goal of empowering and growing a more diverse, equitable, and inclusive technical workforce, ASME launched Community College Engineering Pathways (CCEP), a pilot program with at least six community colleges and three Historically Black Colleges and Universities (HBCU). Research indicates that 3.4 million technical positions will be open in STEM-related fields in the U.S. in the next couple years, and ASME's CCEP initiative is designed to create alternative pathways to rewarding technical careers for those with relevant two-year degrees, as well as other certifications.

ASME Scholarships hit a record milestone for giving in Academic Year 2022-2023 with \$586,850 in total giving to 163 awardees representing 115 different schools. (Average award of \$3,600 per student.)

ASME Scholarships continue to attract a diverse cohort of engineering students.
35% of the scholarships were awarded to female engineers.
47% of the scholarships were awarded ethnic minorities
56% of the scholarships were awarded to groups historically underrepresented in engineering.

K through 12 STEM Programs

- ASME programs have provided curricula and STEM-aligned content to over 635,000 students within the U.S. and Canada—including 1,130 Title 1 schools; 22,835 teachers; and 64,000 students through the Engineering Dreams platform.
- ASME provides 12 \$7,000 scholarships to graduating high school students who were involved in the FIRST Robotics Program for their freshman year in any mechanical engineering undergraduate program. Nominations must come from an ASME Member or Student Member. ASME also awarded 28 \$2,000 scholarships to graduating high school students who planned to enroll in a mechanical engineering program.

Threats to Licensure

ASME does not have a specific initiative dealing with threats to licensure. However, ASME's local sections stand ready to assist if legislation is proposed in this area.



THE AUTHORITY IN PLUMBING ENGINEERING AND DESIGN

ASPE 2023 Report to the NCEES POLC

Submitted by David D. Dexter, PE, FNSPE, FASPE, CPD, CPI, LEED BD+C and Billy Smith, FASPE – Executive Director/CEO

The American Society of Plumbing Engineers (ASPE) is the international organization for professionals skilled in the engineering, design, specification, installation and inspection of systems in support of plumbing and piping infrastructure. ASPE is dedicated to the advancement of engineering in support of the science of plumbing, to the professional growth and advancement of its members and the health, welfare, and safety of the general public. ASPE views its engagement with the National Council of Examiners for Engineering and Surveying (NCEES) and its participation in POLC as an opportunity to interact with NCEES and other engineering societies to advance professional engineering licensure. ASPE continues to appreciate the dedicated staff at NCEES for all its hard work in supporting the continued development of professional registration throughout the various State and Territorial Boards. Over the last year, ASPE has completed the following activities designed to promote licensure and the profession of engineering:

ASPE Supports Plumbing Engineering's Roles to our Membership & Industry

The Society continues to disseminate technical data and information, sponsors activities that facilitate interaction with fellow professionals, and, through research and education, expands the base of knowledge of the plumbing engineering profession. ASPE members are leaders in innovative plumbing engineering design, effective utilization of materials and energy, and the application of advanced plumbing engineering techniques throughout the world.

Worldwide Membership - ASPE was founded in 1964 and currently has over 6800 members. Internationally, ASPE members are located in the United States, Canada, Asia, Mexico, South and Central America, the South Pacific, Australia, Europe, Africa, Caribbean and the Middle East. They represent an extensive network of experienced engineers, designers, contractors, code officials, manufacturers, and manufacturers' representatives interested in advancing, their profession, the industry, and their careers. ASPE is at the forefront of technology. In addition, ASPE represents members and promotes the profession among all segments of the construction industry.

ASPE provides to approximately 18,000 industry contacts the ASPE Pipeline which maintains consistent and updated communications' to our membership and the industry at large with monthly columns such as "Professional Engineer's Perspective" along with a quarterly column titled "Engineer's Notebook." This is augmented by the information disseminated to the membership through monthly Chapter meetings and newsletters.

6400 Shafer Court, Suite 350 | Rosemont, IL 60018

847.296.0002

aspe.org

Continuing Education Participation

ASPE provides Educational opportunities for our membership and industry via Technical sessions as part of our annual events such as our even year Convention & Expo and off year Technical Symposium as well as an extensive library of technical webinars housed on ASPE's Education Learning Management System which part of our Society website, providing the needed continuing education to maintain professional development of our members.

ASPE continuously develops and updates the volumes that make-up the "Plumbing Engineering Design Handbooks" relative to all areas of commercial and healthcare facilities that are provided for purchase to assist our members and industry professionals with the latest criteria. ASPE has developed and maintains the latest in credentialing and study materials as part of ASPE's certification programs for its members.

ASPE provides online and in-person educational sessions to our members and industry via 64 ASPE Chapter monthly technical meetings to gain continuing education credits. ASPE feels it is important to advance educational process to the industry through its resources. While the concerns for COVID-19 restrictions and protocols have lessened, ASPE continues to work with its Chapters to encourage the sharing and use of virtual meetings as appropriate for the area in which the Chapter is located.

An exciting and new Educational opportunity that ASPE has developed and implemented since the 2022 report, the addition of our Medical Gas Workshop that is being held quarterly. Two were completed in 2022 and our next Medical Gas Workshop will be held in Irvine, CA. This Workshop contains 32-hours of extensive training over 4-days, gaining a certificate of participation which confirms the opportunity for any of the participants to then plan to sit for a Medical Gas credential.

Industry Advocacy Efforts

ASPE is extensively involved in the Codes & Standards development process as an ANSI-accredited SDO (Standards Development Organization) which is most helpful relative to some of the hot button issues today such as Legionella, COVID-19, and biofilms in potable water systems along with the processes required in reopening commercial buildings or offices after long periods of closure. Accordingly, ASPE is involved as a participating organization on multiple "Pandemic or Epidemic Task Forces" that have been established recently to help analyze all aspects of the built environment and assist in finding solutions to reduce the risks posed by pandemics to support public health guidance. ASPE is preparing to issue a "Legionella Design Guide" for public review to assist our membership and industry relative to our mission statement of protecting the health, safety, and welfare of the public.

ASPE serves as a Co-Convener of the Emerging Water Technology Symposium (EWTS) and the Plumbing Industry Leadership Council (PILC). As a Co-Convener, ASPE feels both these initiatives are important to our

membership and industry to ensure the industry has a voice in the most important issues facing the plumbing engineering profession; therefore the needed educational opportunities are relevant.

Promoting P.E. Licensure

ASPE strives to represent our members and to promote the profession among all segments of the industry. ASPE wholeheartedly understands and supports the protection and advancement of licensure of the Professional Engineer while supporting and encouraging the PE registration and applicable processes, promoting ethics, continuing education, and the advancement of the role of the professional engineer. ASPE's PEWG (Professional Engineering Working Group), continues to work with NCEES through the PAKS (Professional Activities and Knowledge Study) process to develop a "Plumbing/Piping" module exam within the Mechanical Engineering suites of exams. Through these efforts NCEES is currently seeking responses to the PAKS Survey. The survey is to be completed by March 15, 2023.

Based on the results of this survey, the final specifications for the Plumbing/Piping module can be developed; initiating the development of exam questions for use in future exams.

Report to the NCEES Participating Organizations Liaison Council

**From: American Society for Photogrammetry and Remote Sensing (ASPRS)
Frank Taylor, CP, RPS; POLC Representative
Karen Schuckman, PLS, CP, CMS, Executive Director**

Date: 02/17/2023

Established in 1934, the American Society for Photogrammetry and Remote Sensing (ASPRS) is a scientific association serving over 2,000 professional members around the world, providing its members professional development through education and networking experiences, professional certification, publications, scholarships, and other services. ASPRS advances the knowledge and improves understanding of mapping sciences to promote the responsible applications of photogrammetry, remote sensing, geographic information systems (GIS) and supporting technologies.

ASPRS Office
8550 United Plaza BLVD
Suite 1001
Baton Rouge, LA 70809
Office: 301-493-0290, office@asprs.org

Geo Week 2023

The annual Geo Week conference was held in person February 13th-15th at the Colorado Convention Center in Denver, CO. Geo Week is a combination of the ASPRS, ISPRS (International Society for Photogrammetry and Remote Sensing), AEC Next Technology Expo, USIBD (US Institute of Building Documentation) and WGIC (World Geospatial Industry Council). The conference had 189 vendors in the exhibit hall and over 2500 attendees representing 49 states and 48 countries. The conference had over 140 speakers including keynote presentations from ESRI and others.

2023 ASPRS International Technical Symposium

ASPRS will be hosting an International Technical Symposium as a virtual event from June 12-16, 2023. The symposium will consist of 15-minute oral presentations, 5-minute Ignite-style presentations, a poster gallery, sustaining member Vendor spotlights and ASPRS Society highlights.

ASPRS Standards Revision

ASPRS is in the process of revising the ASPRS Positional Accuracy Standards for Digital Geospatial Data (current version: Edition 1, Version 1.0., November 2014).

The standards revision working group is tasked with the following:

- Investigate other standards used around the world.
- Spelling and grammatical corrections of the current document
- Revisiting and correcting the way, we report products accuracy by factoring in errors of the survey network.
- Revising the number of check points required for accuracy verification.
- Revising the formula for estimating horizontal accuracy of lidar data
- Introducing the new accuracy term “three-dimensional positional accuracy” to deal with 3D modeling and digital twin.
- Adding addendums on best practices and guidelines in:
 - Photogrammetric Mapping
 - Lidar Mapping
 - UAS-based Mapping
 - Field surveying techniques
- Revising statements for reporting product accuracy
 - Adding section on recommended notes for various types of deliverables

AGREED UPON CHANGES

1. Easing the accuracy requirement for ground control and check points

Reason for the change: As demand for higher accuracy geospatial products increase, the accuracy requirements for the surveyed ground control and check points increase accordingly. With the current ground control accuracy requirement for photogrammetric work four-times better than the produced products and check point accuracy requirement of three-times better than the assessed product, it becomes difficult if not impossible to use RTK-based surveying techniques for this type of surveying.

Justification for the change: Two main reasons justified the change:

- a) Experience taught us that the requirements of four-times and three-times adopted in edition 1 of the standards are excessive and restrictive, partly due to the reason outlined in (b) below.
- b) Today’s sensors, software, and processing methodology create more accurate products; therefore, we are no longer need a 3 or 4 times “safety factor” to ensure the desired final accuracy of delivered products.

The suggested new accuracy requirements:

GCPs: Photogrammetry and Lidar Processing:

*GCP accuracies should be **twice as accurate** as the final desired product accuracy.*

Check Points: Photogrammetry and Lidar Product Accuracy Verification:

*Check points should be **twice as accurate** as the final desired product accuracy.*

2. Factoring in the accuracy of the surveyed check points when computing product accuracy

Reason for the change: As we are producing more accurate products, errors in surveying techniques of the checkpoints used to assess product accuracy, although it is small, can no longer be neglected and it should be represented in computing the product accuracy.

Justification for the change: As product accuracy increases, the impact of the error in check points on the computed product accuracy increases.

3. Removing the fail/pass requirement for the Vegetated Vertical Accuracy (VVA)

Reason for the change: Accuracy of lidar data under trees is mainly influenced by the quality of the GPS-based surveying practice in restricted satellite visibility and the decreased point density. It has little to do with the overall accuracy of the lidar system and its products.

Justification for the change: In many projects, data providers and data users are finding themselves trapped by the fact that the Non-vegetated Vertical Accuracy (NVA) is well within the promised specifications while the VVA fails to meet the stated specifications. As there is no good solution for this situation, the NVA should be used in the pass/fail decision on the product data regardless of the VVA value. However, the VVA should be reported as is.

4. Revise the minimum number of checks required for product accuracy assessment.

Reason for the change: The current minimum requirement of 20 checkpoints for NVA and 5 checkpoints for VVA does not rely on a scientific or statistical method or recommendation. In this edition of the standards, a minimum of 30 checkpoints is required for any NVA or VVA verification.

Justification for the change: Using a minimum of 20 checkpoints for NVA and VVA assessment is not based on any well-known statistically or scientifically sound method. In this edition of the standards, the use of the Central Limit Theorem is used to determine the minimum number of checkpoints required for any accuracy assessment. The Central Limit Theorem calls for using 30 checkpoints to conduct an accuracy assessment. According to the **Central Limit Theorem**, no matter what the distribution of the population is, as long as the sample is “large”, meaning of size 30 or more, the sample mean is approximately normally distributed.

5. Revise the formula for estimating horizontal accuracy of lidar data.

Reason for the change: Old formula factors in one accuracy for roll, pitch, and heading.

Justification for the change: All IMUs results in different accuracy for roll and pitch versus heading.

Old:
$$\text{Lidar Horizontal Error (RMSE}_r) \approx (\text{GNSS positional error})^2 + \left(\frac{\tan(\text{IMU error})}{0.55894170} \times \text{flying altitude} \right)^2$$

New:
$$\text{Lidar Horizontal Error (RMSE}_r) = \sqrt{(\text{GNSS positional error})^2 + \left(\frac{\tan(\text{IMU roll or pitch accuracy}) + \tan(\text{IMU heading accuracy})}{1.47800114} \times \text{flying altitude} \right)^2}$$

6. **Introducing a new accuracy term “The Three-Dimensional Positional Accuracy”, with this we have three accuracy terms:**
 - a) Horizontal positional accuracy
 - b) Vertical positional accuracy
 - c) Three-dimensional positional accuracy

7. **Eliminating the use of 95% accuracy measure and use only RMSE for all accuracies.**

8. **To add addendums for best practices and guidelines for:**
 - I. General Guidelines and Best Practices
 - II. Field Surveying of Ground Control and Checkpoints
 - III. Mapping with Photogrammetry
 - IV. Mapping with Lidar
 - V. Mapping with UAS

The final draft is currently in the “Open Public Comments” phase through March 15, 2023. The draft will be revised based on public comments and feedback. The final document will be sent to the ASPRS Board of Directors for spring of 2023.

Certification News

The PPD (Professional Practice Division) Committee is assisting in the search for credentialed volunteers to retake their respective examinations to validate the cut scores on all exams.

Once a complete list of volunteers is finalized, the committee will coordinate with Prometric to establish online accounts to support the retaking of exams online. Examinees will be able to take the exams at home through an online testing portal without the need for a remote proctor or going to a Prometric Testing Facility.

Additionally, the PPD Certification Working Group will be doing the following:

- Establish/review the body of knowledge required for each of the ASPRS certifications (informed by the Geospatial Technology Competency Model)
- Identify pathways to attaining the required knowledge (informed by DACUM activities)*.
- Evaluate the current exam question bank to determine whether the questions appropriately address the body of knowledge.
- Establish protocols and resources for further exam question development including reaching out to academia for assistance with this effort.

****DACUM Workshop***

At the Geo Week 2023 conference a select group of ASPRS professionals participated in a DACUM (Developing a Curriculum) workshop. This in conjunction with the on-going efforts of the PPD Certification working group was done by ASPRS to help in the analysis of the certification program.

CESB Program Recertification

- ASPRS Certifications were not re-accredited in 2023.
- The Certification Program does not currently meet the requirements for CESB re-accreditation.
 - This is because of the new CESB requirements for documentation of procedures utilized to create exams and establish cut-scores.
- Documentation of cut score procedures are required to be prepared to allow for CESB rectification of all programs and were due by the end of 2022 and we did not have the data to support this requirement. This is primarily due to the volume of exams for our various certifications is low compared to other industries such as the certifications required for Firefighters.
- ASPRS is working to develop tools to produce this data. ASPRS is taking the steps listed above, the PPD Certification Working Group and the DACUM workshop as well as data from provided by the Prometric group. Prometric can provide guidance to ASPRS on how to establish cut scores per industry standards and provide the reports required to properly establish cut scores. All of this combined data will help ASPRS determine the path forward regarding CESB accreditation.

COUNCIL OF ENGINEERING AND SCIENTIFIC SPECIALTY BOARDS

2023 CESB Report to POLC

CESB Status

CESB membership includes 12 member boards and two associate member organizations. These boards operate a total of 58 accredited programs.



Accreditation activities

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

CESB accredits certification programs in four categories: licensed engineers, graduate engineers, scientific specialties related to engineering, and engineering technicians. Accreditation is granted for periods of two to five years maximum. The 58 accredited certification programs, according to their categories, consist of:

Licensed engineers 8

Graduate engineers 1

Engineering-related specialties 24

Engineering technicians 25

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

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

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

Member Services

CESB updates CESB Members on organization activities and the credentialing industry through quarterly newsletters sent via email.

In 2022, CESB underwent a strategic planning session. The member boards met with the facilitators to develop the 2022-2023 strategic plan. The Executive Committee and CESB Office are working together to fulfil the tactics and goals.

CESB also hired a psychometrician to review the 4e and 4g standards. After several meetings, CESB developed new standards and is presenting those at their upcoming meeting to be incorporated into their Standards.. The CESB office also hosted a webinar where the psychometrician presented their research and recommendations.

COUNCIL OF ENGINEERING AND SCIENTIFIC SPECIALTY BOARDS

Future members

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

CALIFORNIA LAND SURVEYORS ASSOCIATION

clsa@californiasurveyors.org

CLSA NCEES-POLC REPORT



Date: February 27th, 2023
 To: National Council of Examiners for Engineers and Surveyors
 Subject: CLSA NCEES-POLC Report for March 11th, 2023 POLC
 From: Robert M. McMillan, PLS, EIT, RobPLSCA@gmail.com

The California Land Surveyors Association (CLSA) mission statement:

The California Land Surveyors Association advances the interests of the land surveying profession by advocating for the membership, promoting education, and increasing awareness of the profession's value.

CLSA 2023 Officers

President: Kevin Hills
 President-elect: Kevin Nehring
 Secretary: Joe Padilla
 Treasurer: Kristie Achee
 Immediate Past-President: Warren Smith

Our Board of Directors holds four meetings per year. Between 2015 and 2019, we have held two meetings in person and two via the Zoom virtual platform annually. During the pandemic, we transitioned to all virtual Board meetings. We have finally returned to mostly normal operations, with our February and July meetings being a hybrid in-person/virtual format.

Licensure/Certification of California Candidates unless noted (All)

Exam Cycle	California PLS Exam			NCEES Practice of Surveying (PS) Exam			NCEES Fundamentals of Surveying (FS) Exam		
	Tested	Passed	Pass %	Tested	Passed	Pass %	Tested	Passed	Pass %
Jan-Jun 2021	85	30	35%	81	43	53%	163	72	44%
Jul-Dec 2021	88	27	31%	84	40	48%	156	57	37%
Total 2021	173	57	33%	165 CA 824 (All)	83 CA 498 (All)	50% CA 60% (All)	319 CA 1629 (All)	129 CA 668 (All)	40% CA 41% (All)
Jan-Jun 2022	107	48	45%	102 CA 550 (All)	48 CA 342 (All)	47% CA 62% (All)	189 CA 928 (All)	77 CA 479 (All)	41% CA 52% (All)
Jul-Dec 2022	148	40	27%	89 CA 504 (All)	38 CA 297 (All)	43% CA 59% (All)	132 CA 880 (All)	53 CA 465 (All)	40% CA 53% (All)
Total 2022	255	88	35%	191 CA 1054 (All)	86 CA 639 (All)	45% CA 61% (All)	321 CA 1808 (All)	130 CA 944 (All)	40% CA 52% (All)

California has lower experience requirements (6 years) to sit for the CA State Specific PLS exam and for the Fundamentals of Surveying exam (2 years) than most other states (and *NCEES Model Law*). Additionally, a Bachelor's degree is not required for licensure as a PLS in California.

An interesting situation with respect to land surveying in California is that Civil Engineers licensed by the state prior to January 1, 1982, have the same privileges to conduct land survey practices as California licensed Land Surveyors. Those engineers are referred to as Pre-82 Civils. These privileges were extended to the Pre-82 Civils due to the educational requirements and typical practical experience most gained as a matter of advancement at the time. Civil Engineers licensed after 1981 only have additional practice authority to perform limited surveying activities as described in the California Professional Engineers Act §6731.1 (https://www.bpelsq.ca.gov/laws/pe_act.pdf), namely topography, construction staking, preparation of electronic or computerized data related to topography or construction staking, and making an accuracy statement regarding topography, construction staking or electronic/computerized data.

CLSA membership (as of 2/1/2023):

Corporate PLS	526	California Licensed Professional Land Surveyors (PLS)
Corporate CE	7	California Pre-82 Licensed Professional Civil Engineers
Retired PLS	12	Retired California Licensed Professional Land Surveyors (PLS)
Associate	75	California Land Surveyor-In-Training
Affiliate	56	A person who relies upon the fundamentals of land surveying in their work
Student	25	Student in a college or university actively pursuing a surveying education
Out of State	37	California Licensed PLS who resides in a state other than California
Life	48	Typically California PLS who served CLSA (i.e. Past-President)
Honorary	4	Typically non-licensed persons who serve/have served CLSA (Ex-Officio)
Sustaining	5	Individual, company or corporation supporting CLSA

Publications

The *CLSA eNews* newsletter (<https://www.californiasurveyors.org/news.aspx>) is emailed monthly to our membership and other interested parties. The *California Surveyor* magazine (<https://www.californiasurveyors.org/CalSurv.aspx>) is published twice per year.

Current Issues, Activities and Initiatives

CLSA has faced many of the same challenges over the last two years as the other POLC organizations. We have twenty Chapters throughout the state. Some transitioned quickly and easily to holding meetings via an online/virtual format while others struggled a bit. Attendance has been generally low in the virtual Chapter meetings with most only seeing 8 to 12 members in attendance each month, rather than the typical 20 or more for in-person meetings depending on the Chapter and topic. Most Chapters are returning to in-person meetings.

There seems to be a general shortage of talent for both field and office positions at all levels. Most concerning is the lack of young people (18 to 30) entering the land surveying profession.

CLSA is now in partnership with the National Society of Professional Surveyors (NSPS). NSPS membership is now a CLSA member benefit for PLS and Pre-82CE licensed CLSA members.

In 2021, CLSA established a Young Surveyors Network (YSN) for California. Another program launched in 2021 was the *Service to Surveying* program to help military service members transition to civilian sector land surveying careers. Our committee has identified different pathways into the civilian sector depending on experience, as well the various Military Occupational Specialties (MOS) that are directly related to land surveying. A key point we are emphasizing is self-preparation while in the service for the NCEES FS exam. Additionally, we have identified points of contact within several of California's military bases, and CLSA members willing to present at those bases and mentor veterans through the various paths.

PHONE: (760) 846-4491

CLSA has an active Legislative Committee, and a legislative advocate who monitor new state legislation for impacts to the profession as well as providing proposals to clarify existing law.

CLSA worked closely with our National Geodetic Survey (NGS) Regional Advisor to develop and submit the National Spatial Reference System (NSRS) proposal which will incorporate the existing six Lambert Conformal Conic state plane coordinate system zones, two oblique Mercator low distortion projection coordinate systems, and a single statewide oblique Mercator projection. Individual members and some Chapters are performing “GPS on Benchmarks” observations. Chapter led efforts contribute specifically to their local area, as well as improve cooperation, coordination, communication and relationships between firms and local agencies. All of these efforts enhance the NSRS and provide data to improve transformation tool development. See the NGS website (<https://geodesy.noaa.gov/GPSonBM/index.shtml>) for details.

State of the Profession Survey

CLSA conducted the annual on-line survey in June and July of 2022. This survey is intended to identify general land surveyor demographics, specific issues and concerns, as well as plot trends within the industry. The 2022 survey had 352 responses – not everyone answered every question, but most did. Observation: The survey is statistically reasonable as a sample of the population.

0-5 years experience 1% 6-10 3% 11-20 17% 21-30 27% > 30 years 52%

79% of respondents had over 21 years’ experience.

96% of respondents had over 11 years’ experience. Observation: We are highly experienced.

67% of respondents were in the private sector. 27% were in public agency employment.

81% of respondents practice exclusively in California.

60% of respondents are full-time employees.

24% of respondents are full time self employed.

80% have medical benefits. 65% have vision insurance. 12% have no benefits

86% gross income over \$80,000 per year

76% gross income over \$100,000 per year

56% gross income over \$125,000 per year

30% gross income over \$150,000 per year Observation: We are fairly well-compensated at the top.

Only 3% of respondents expected to reduce staffing in 2022

49% of respondents expected to stay the same size with respect to staffing

48% of respondents expected to increase staffing. Observation: We were resilient through COVID.

What are the biggest challenges for the upcoming year?

71% Difficulty finding qualified staff 48% Succession Planning/finding/training next generation

47% Too much work 38% Ability to retain qualified staff

21% Schedule challenges/changes 12% Agency budget issues 11% Regulatory compl.

Only 11% say 50% or more of their survey technicians have formal land surveying education

Only 20% say more than half of their staff will attempt to become professional land surveyors

Only 31% required an LSIT for higher level positions i.e. party chief or the office equivalent

Observation: If we are not requiring an LSIT to move up, then how are we addressing Succession Planning and finding & training the next generation?

38% of respondents had ZERO LSITs in their office

70% of respondents typically deploy 2 person crews. 26% typically deploy 1 person crews

71% of respondents run 1 person survey party at least some of the time. How does training happen?

The top four challenges listed above, and responses to other questions, indicate we are not bringing enough of the right candidates into the profession. We need to bring in those who are willing to work hard but who also have the mental capacity to understand the high-level concepts with which land surveyors frequently work. I am aware of one firm deploying a Boston Dynamics robotic “dog” (<https://www.bostondynamics.com/products/spot>) as part of their field equipment and the HoloLens2 (<https://www.microsoft.com/en-us/hololens>) as an office tool, particularly for client interaction.

The survey will be repeated annually to identify trends and areas requiring future improvement.

Education

CLSA has an active Education Committee and maintains a presence on Advisory Boards for the two Universities (California State University Fresno and California Polytechnic University Pomona) and several of the Community Colleges (College of the Canyons, Cuyamaca College, East LA College, Santiago Canyon College and Santa Rosa Junior college) providing land surveying education in California. CLSA even has a liaison to the Oregon Institute of Technology, which is about 19 miles north of California’s northerly border. CLSA holds monthly webinars which are free to members on a variety of topics. Many CLSA members also participate in the CLSA Education Foundation (501.c3), which is a separate entity from CLSA. The CLSA Education Foundation awarded \$46,250 in scholarships in January 2023 to students pursuing land surveying education throughout California.

Conferences

The 2022 conference was a *Western Regional Survey Conference* held March 30 - April 2, 2022 at the Luxor Hotel in Las Vegas, Nevada. The Arizona Professional Land Surveyors (APLS), California Land Surveyors Association (CLSA), Nevada Association of Land Surveyors (NALS), Utah Council of Land Surveyors (UCLS), and the Western Federation of Professional Surveyors (WFPS) partnered to hold the event, themed “*Mapping the Path for the Next Generation.*” In addition to four concurrent tracks for licensed professionals, there was a “technician track” specifically covering topics related to licensure and advancement. Fun events included a live auction and a bowling tournament – both scholarship fundraisers. It was great to gather in-person again.

The 2023 conference will be a joint event with California Land Surveyors Association (CLSA), Nevada Association of Land Surveyors (NALS). Conference dates are March 25 - 28, 2023 at the Silver Legacy Hotel in Reno, Nevada. For information about CLSA, please visit

<https://www.californiasurveyors.org/>

Keep yourself and your people safe.

Robert M. McMillan,

Robert M. McMillan, PLS, EiT



February 28, 2023

President Christopher Duhamel, P.E., P.L.S
National Council of Examiners for Engineering and Surveying
200 Verdae Boulevard
Greenville, SC 29607

Re: IEEE-USA 2023 Report to the NCEES Participating Organizations Liaison Council (“POLC”)

Dear President Robertson:

IEEE-USA, created in 1973, advances the public good and promotes the careers and public policy interests of the over 150,000 engineering, computing and allied professionals who are U.S. members of the IEEE. IEEE-USA continued its strong support for NCEES in 2022 by providing item writers and subject matter experts for the Fundamentals of Engineering (FE) and Principles and Practices of Engineering (PE) examination programs and volunteer leaders for related NCEES policy committees. Key events and developments of special interest to IEEE’s U.S. members include the following:

NCEES Annual Meeting

IEEE-USA President Eduardo Palacio is unsure if he will be able to attend the NCEES Annual Meeting.

Participating Organizations Liaison Council (POLC)

One member of the IEEE-USA Licensing and Registration Committee (“LRC”) continues to attend the annual POLC meetings. John W. Steadman, Ph.D., P.E. will represent IEEE-USA at the March 2023 POLC meeting.

Examinations for Professional Engineers (“EPE”) Committee

Electrical and Computer PE Exam Committee (“ECE”) Chair:
EPE Committee IEEE-USA Representative:
Electrical Power Exam Committee Chair:
Fundamentals of Engineering (“FE”) Committee Chair:

Ray Heintal, P.E/ RCDD, PSP
Ademola (Peter) Adejokun, P.E.
Gabriel Fleck, P.E.
Anne Clark, P.E.

A two-day EPE meeting was held in Greenville, SC on February 11-12 of 2023. This was the first meeting of EPE this year.

Electrical and Computer Engineering (ECE) Committee:

The ECE Committee oversees three PE exams that all run in a computer-based testing mode at Pearson Vue testing centers. The ECE Power Exam is available for testing year-round at Pearson Vue testing centers. The ECE Computer Engineering Exam is available one day a year, in October. The ECE Electronics, Controls, and Communications Exam has been offered once a year in October, but will move to once a year in April beginning in April 2024. This will assist scheduling and workloads for both Pearson Vue and NCEES publications and staff. The ECE Committee met in person in January and June of 2022, and online in January 2023.

Fundamentals of Engineering (“FE”) Committee:

IEEE-USA continued to provide volunteers to develop items for the Electrical & Computer module of the Fundamentals of Engineering (FE) Exam. The committee returned to in-person meetings in 2022, holding item writing and review sessions in January, April, August, and November at the NCEES Greenville office. The committee will meet quarterly in 2023, as well, with a virtual meeting scheduled for March and three in-person meetings to be held in January, August, and November at the Greenville office. Anne Clark remains as Electrical & Computer Module Chair until the end of 2023, and David Whitman’s term as FE Committee Chair ends in July.

Position on Educational Requirements for Licensure

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

Education and Outreach Initiatives

The IEEE-USA Licensing and Registration Committee continues to write and publish articles informing IEEE members and other interested professionals on current issues concerning licensure on an approximately quarterly basis in the online publication

<https://insight.ieeeusa.org/articles/category/careers/licensure-registration>

However, only two articles were posted in 2022:

- Licensure of Electronic, Computer and Software Engineers– 26 July 2022
- OP ED: Get Software Right: License Software Engineers – 24 March 2022

IEEE-USA Position Statement – The use of the title “ENGINEER”

On 18th November 2022, IEEE-USA Board of directors adopted and issued the position statement on The Use of the title “Engineer”. The position statement can be found using the following link:

<https://ieeusa.org/assets/public-policy/positions/workforce/EngineerTitle1122.pdf>

IEEE-USA Position Statement – Educational Requirements for Engineering Licensure

On 22nd November 2019, IEEE-USA Board of directors approved and issued the position statement on educational requirements for engineering licensure. This position statement is due to be reauthorized at the February 2023 IEEE-USA Board of Directors meeting. The position statement can be found using the following link: <https://ieeusa.org/wp-content/uploads/2019/11/LicensureEducation1119.pdf>

IEEE-USA Position Statement – Engineering Licensure

On 3rd October 2018, IEEE-USA Board of directors approved and issued the position statement on Engineering Licensure. This position statement is due to be reauthorized at the February 2023 IEEE-USA Board of Directors meeting. The position statement can be found using the following link:

<https://ieeusa.org/wp-content/uploads/2018/10/EngineeringLicensure1018.pdf>

IEEE-USA Position Statement – Continued Professional Competence of IEEE’s U.S. Members

On 22nd November 2019, IEEE-USA Board of directors adopted and issued the position statement on Continued Professional Competence of IEEE’s U.S. Members. This position statement is due to be reauthorized at the February 2023 IEEE-USA Board of Directors meeting. The position statement can be found using the following link:

<https://ieeusa.org/wp-content/uploads/2019/11/ProfessionalCompetence1119.pdf>

Next IEEE-USA L&R Committee meeting:

IEEE-USA L&R committee meets in person annually supplemented by meeting virtually at times based on the availability of members.

Sincerely,



Eduardo Palacio
2023 IEEE-USA President

cc:

B. David Cox, Chief Executive Officer, NCEES
Brendan Godfrey, Vice President, Career and Member Services
David Cotton, Jr., P.E., Chair, IEEE-USA Licensure & Registration Committee
John Steadman, Ph.D., P.E., IEEE-USA POLC Representative

The Institute of Industrial and Systems Engineers is the world's largest professional society dedicated solely to the support of the industrial and systems engineering profession and individuals involved with improving quality and productivity. Founded in 1948, this year, 2023, is the 75th anniversary of the founding of IISE with the first chapter formed in Columbus, Ohio. Today, there are 51 professional chapters of IISE, 256 student chapters in addition to chapters in Africa, Arabian Peninsula, ASIA, Canada, Central/South America, Middle East and North America. IISE is an international, nonprofit association that provides leadership for the application, education, training, research, and development of industrial engineering. ISEs figure out a better way to do things and work in a wide array of professional areas, including management, manufacturing, logistics, health systems, financial services, 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, the analysis of systems, and the management of people.

The Institute has over 20,000 members comprising students, practicing professionals, academics as well as retired members. Institute members and customers come from over 124 countries throughout the world.

COMMITTEE LEADERSHIP

The Professional Engineering (PE) Examination development committee is chaired Joe Michels, Ph.D., P.E., C.P.L. Dr. Michels has served on the committee for 10 years and was the previous vice co-chair. Dr. Michels is a former college Dean and is currently the managing principal in an international consulting practice. He is assisted by co-vice chairs Peter Brust, PhD, P.E. and Chris Masek, P.E. Dr. Brust is in private practice as an engineering consultant in the manufacturing sector. Mr. Masek is currently employed by the United States Veterans Administration in the Omaha, Nebraska office. Dr. Brust has served on the committee for the past 7 years, while Mr. Masek has been a committee member for the past 4 years.

Our committee elected to have 2 vice co-chairs to better serve the profession, licensing committee as well as the engineering industry.

COMMITTEE MEETINGS

The PE examination development committee has met twice in 2022. One meeting was held virtually in February and an in residence meeting held at NCEES HQ in Greenville, South Carolina was held in August 2022. There were approximately 16 members attending and participating in each meeting.

Committee members made a strong, concerted effort to enhance and enrich committee membership of diverse individuals of color, gender and national origin. Although some progress was accomplished in this regard, the committee is still not as diverse ethnically as we would desire. Part of the challenge achieving this goal is that the pool of diverse Industrial and Systems Engineers fail to possess professional engineering licensure. Committee members continue to work on outreach in this area, however, we have not yet achieved our goal of a totally diverse licensing committee.

The committee continued to work diligently on the development of a computer based Professional Engineers reference manual for the Industrial/Systems PE examination. After 3 years of development, V1.0 has been published for examination candidates to review and use for the October 2020 examination. There was little feedback on the contents of the reference manual by the candidates of the October 2022 examination administration. Most comments received by the committee related to a candidate not understanding the material contained within the handbook, not the design or material composition of the handbook. As with all other licensing committees, this task is currently on-going. The committee received laudatory comments from the NCEES publications staff on the quality and caliber of the initial reference manual V1.0. The committee's intent is to continue to refine, enrich and enhance the manual in the upcoming year.

COMPUTER BASED TESTING (CBT)

The Industrial and Systems Engineering Professional Engineering examination was administered for the third time in the computer based format in the October 2022 examination. Approximately 124 licensing candidates signed up for the October 2022 CBT examination. The number of candidates first time passing rate for the third CBT administration of the

ISE examination was 54%. This score is decreased somewhat with previous administrations of the ISE paper and pencil test administration, exclusive of the October 2019 test administration. Analysis by the examination committee determined that the questions are of equal caliber of difficulty of previous examinations, however, the committee believes that the candidates failed to prepare in a manner and fashion consistent with the new computer based testing protocol. With computer-based testing, the committee is better able to develop examination questions that require a candidate to analyze a problem and then work a solution. This is, of course, different than a 4 answer multiple choice answer where the candidate has a 25% chance of guessing the correct answer. The committee is working hard, with NCEES direction, to develop more Alternative Item (AIT) test items, which require a test candidate to possess a more robust degree of analysis and principle understanding in order to solve the test question. This method ensures that only those candidates that do possess minimal engineering competency in the Industrial and Systems discipline will become licensed professional engineers.

EXAMINATION COMMITTEE PARTICIPATION IN LICENSING ADVOCACY

The ISE/PE examination committee held a worldwide webinar, hosted by IISE and attended by approximately 104 individuals in October 2022 to address the value and benefits of professional engineering licensure. The increased interest in ISE engineers becoming licensed is strong. The webinar had participants who were practicing industrial engineers and current students from throughout the United States, Canada and Asia. One of the reasons we believe that this increase in interest in licensure is the fact that many millennial age individuals are very concerned about licenses and certificates as contrasted with degrees.

NCEES reported that the number of candidates taking and successfully passing the ISE Fundamentals of Engineering (FE) examination has grown about 8% per year, for the past three (3) years. The examination committee uses this data as a "marker" for the future ISE professional engineering candidates. The committee's expectation is that more candidates will attempt and successfully complete the PE examination.

The training division of the Institute of Industrial and Systems Engineers hosts both a live in-person and an online on demand review course for the PE examination each year. The live in-person course was held July 25-29, 2022 at IISE HQ in suburban Atlanta, Georgia. The live in-person course had 4 participants while the online on-demand course had 5 participants. There have been 35 online candidates to take the course to date since the course went live in September 2020. This course is part of the extensive training suite that IISE provides to engineers worldwide.

ISE committee members conducted and participated in a panel discussion on professional engineering licensure at the IISE annual conference held in May 2022 in Seattle, Washington. 5 PE's served on a panel, attended by over 50 conference attendees. Interestingly, we found that many "senior" industrial and systems engineers have recognized the benefits of professional registration and have elected to become licensed after practicing in the profession for many years.

The ISE magazine, a monthly publication of the Institute of Industrial and Systems engineers, continues addressing the benefits of becoming a licensed industrial engineer. The ISE magazine, published monthly by the society runs a column every other month on professional engineering licensure. This column is written by an examination development committee member and features professional engineers who have become licensed. These featured individuals cite the benefits to possessing a professional engineering license, the benefits that each licensee has achieved and why a non licensed candidate should strongly consider professional engineering licensure.

The IISE Board of Directors and the IE/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 engineer candidate in the industrial and systems engineering field of practice.

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

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

Participating Organizations Liaison Council

ISA – International Society of Automation

Annual Report – March 11, 2023

By Gerald Wilbanks, P.E.

The **International Society of Automation (ISA)** is the primary technical association for professionals involved with the automation, instrumentation and control fields of work. With over 20,000 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 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. The ISA Control Systems PE Exam Committee conducts an annual meeting of practicing engineers to develop new exam items and review the testing procedure and results. The content of each exam is audited for quality purposes and has shown steady improvement over the past four years. This was a major transition year, as the control systems exam moved to a computer based test (CBT). **The control systems professional engineer exam is one of the most popular of the Group II exams offered by NCEES based on the 2022 statistics, with 241 test takers and a 49% pass rate for the examinees, who were all first time takers.**

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

The **Control Systems PE Exam committee** will conduct an item writing session, in preparation for the October 2023 administration. The October 18, 2022 administration was the first computer based test (CBT) for the control systems professional engineer exam. 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 completed and issued the furnished reference document for the computer based testing for the control systems professional engineer exam.**

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, as well as, digital badges. Additionally, another certification is offered to practicing technicians in the automation field and it is called the Certified Control System Technician (CCST). This is also a computer-based test that is administered at various test centers located throughout the world, as well as, online.

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. The pandemic experienced in 2020 and 2021 has accelerated the growth in ISA's online self-study virtual training offerings. 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 Control Systems PE Exam is supported with various training and educational endeavors by ISA. A Study Guide has been developed, published, and was updated for use in preparing for the CBT exam. This study guide provides information and practice problems for those preparing for the exam. **The revised Study Guide was developed by the Exam Committee of ISA to reflect the conversion to a computer based test (CBT) in 2022.** The Publications Department of ISA has several books that are designed to provide assistance to prospective registrants. In addition, the three-day Control Systems PE Exam Review Course was offered in 2022 as a live virtual instructor led (VILT) class, consisting of six sessions, four hours each.

Also, an 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 twelve week period and includes five teleconference sessions with the instructor and the participants. ***This was a major step in the distance learning initiative and the course was offered two times in 2022 with good reviews and excellent participation.***

All of the training classes and courses have been revised to reflect the changeover to CBT, and were available this past year. The training and education plans for 2023 essentially remain the same as 2022 with offerings of the three-day face to face class two times, and the VILT six day (four hour sessions) instructor led review class. The online, instructor assisted course is being offered two

times in 2023, starting in April and June. This is a 12 week course with 5 call-in sessions for problem solving and discussions among the participants.

The new test process with closed book, furnished reference manual, and 85 problems resulted in some complaints and concern from the test takers. ISA feels that the current practice of having a "limited number" of test items included for quality checking was not communicated effectively. The limited number was actually 15 exam items, with 70 items graded for the final result. The passing per cent of 49 is quite a bit lower than prior pen and paper exams.

The practical work experience, gained by an engineer during the first four years of involvement in the control systems field, is more necessary than additional educational hours for successful completion of the exam and to assure competent practice for the professional engineer candidate in the control systems engineering field of practice. For that reason, ISA does not favor or encourage individuals to take the professional engineer exam until the four years of experience has been obtained.



Advance the Surveying Profession Through Leadership, Education, Advocacy and Outreach

MI-SPS Annual Meeting

This year's MI-SPS Annual Meeting will be held Feb. 21-24 at the Grand Traverse Resort, in Traverse City Michigan.

Scout Merit Badge

On May 4th and 5th in Howell, The Operating Engineers hosted over 4,400 students from 115 schools participating across the State at their annual Michigan Construction Career Days. This is a sizable event featuring contractors, labor unions, and special interest groups related to construction and infrastructure.

Bylaws Committee

The Bylaws Committee is nearly complete with revising the Bylaws. A draft was sent over to the Past Presidents Committee to review and comment. MI-SPS President Brett Hollandsworth stated, "The review was very enlightening as the Past Presidents were able to provide unique insight and perspective into the current Bylaws and encouraging comments for many of the suggested changes".

Legislation

Michigan's Remonumentation Act Sunset Date

The State Survey and Remonumentation Act (Act 345 of 1990) is tied to the judicature act of 1961, which provides funding for the Remonumentation programs throughout the State. The judicature act of 1961 requires that \$4 be collected for each recorded instrument at the Register of Deed Office. The current law, was to sunset on January 1, 2023. After January 1, 2023, the fee would drop to \$2 per recorded instrument. MI-SPS worked with its Lobbyist and on the last day the legislators met MI-SPS received word the legislation passed and the Remonumentation Act sunset was extend another 20 years.

Michigan-Indiana Border

In September of 2021 Senate Bills 627 & 628 were introduced. These Bills focused on the joint effort for remonumentation of the Michigan-Indiana state line. They initially had a speedy start but slowed down at the end of November. With the work of our joint AESLC Lobbyist, SB 627 & 628 were voted out of the Senate unanimously in April, the House in May, and signed by the Governor before the end of May becoming Public Act 81 of 2022.

Young Surveyors Network

The Committee has begun working with Stacey Fenn, who reached out and wanted to get involved with the YSN Committee. Stacey has some fresh ideas on targeting and coordinating efforts with other surveying related organizations and improving our social media presence for marketing the group and

ensuring we reach an appropriate audience. MSPS hopes to kick off the group with a special YSN event at the Convention in February.

Ethics Convention and Seminar

MI-SPS Convention and Seminar Committee launched an on-demand webinar that will allow you to earn 2 CEU's and satisfy the Continuing Education requirement for Professional Ethics. The webinar features Joseph D. Fenicle, PS of the University of Akron, Ohio. This is a great opportunity that we hope to expand in the years to come by allowing our members to earn CEU's they may need for upcoming license renewals while being able to complete the videos on their own time and schedule as is convenient.

Membership Committee

The Membership Committee has been exploring new ways to provide value added benefits for members. A "Trusted Advisor" campaign for Professional Surveyors is being pursued to enhance the recognition of the profession within and around the industry. MI-SPS is working on ways to develop the Young Surveyors Network in Michigan and the share resources it has available to young members or technicians as they prepare to take exams. The goal is to engage surveying students before they graduate and continue to keep them engaged with the Young Surveyors Network, their local Chapters, and MI-SPS after graduation.

Surveyor Technicians Seminar

The MI-SPS Membership Committee, the Convention and Education Committee prepared a Technician Training Program. The program is a mix of on-demand online videos, live webinars, and in-person field work sessions. The goal is to provide attendees the knowledge and expertise to take the CST Level 1 and 2 exams. This would provide Michigan Surveying firms the unique opportunity to provide industry standard training for Technicians and Field Staff with little or no experience to start.

Michigan Rules welcomed are Welcoming Canada Surveyors as Michigan Professional Surveyors

Michigan will allow experience obtained while working under the supervision of a Professional Surveyor licensed or registered in a province of Canada. In the past rules, the applicant would have to obtain experience in the States, so this expands this to Canada and ultimately would allow those who are licensed in Canada to apply for reciprocity if they meet all the other requirements for licensure in the State of Michigan.

MI-SPS Congratulated Ferris State University Students

MI-SPS is proud of Ferris State University students as they took First Place at NSPS Student Competition. The competition was held March 30th through April 1st NSPS at the spring Business Meeting. During the meeting the NSPS Young Surveyors Network hosted the 21st Annual Student Competition where the Ferris State University, Burt and Mullet Student Chapter team took First Place!

Trig-Star

This year's Trig-Star program included 6 sponsors and 6 high schools. There were a total of 104 students. The first place was Lucas Stiver from Tecumseh High School with a score of 100% in 13 min and 13 seconds. His math teacher is William Ramsell from Tecumseh High School and Michael Bartolo, PS was the sponsor. Second place is Haiden Onstott from Beal City High School with a score of 94% in 23 minutes and 27 seconds. Jan Fokens, PS was the sponsor at Beal City High School. Third place is Emily Haselschwerdt from Clinton High School with a score of 94% in 32 minutes and 16 seconds. Paul Funk, PS, PE was the sponsor at Clinton High School.

Michigan – Indiana Border

The Michigan House of Representatives passed [SB 627 and 628 earlier this year](#). The Bills will help to solidify Michigan's border with Indiana. The Bill would provide Michigan's share of the funding to mark the state line with something more permanent than the original wood posts.

"This is great news for Southwest Michigan and for residents of Indiana as well," state Senator Kim LaSata (R-Niles) said in a press release. "Once completed, a formal survey along with updated, clearly identifiable monuments will finally establish a clear border between the two states." The legislation would also create the new Michigan-Indiana State Line Commission to coordinate that study with its our Indiana counterpart. Indiana passed legislation funding its part of the survey and re-creating the Indiana-Michigan boundary commission back in 2019.

MI-SPS Foundation sold its Building

The MI-SPS Foundation Building in Lansing worked out the sale of its building to neighbor Impression Five Science Center of Lansing. The Foundation has entered into a Buy and Sell Agreement with Impression Five with the closing date at the end of October. The Foundation Board is starting the process of organizing the equipment and getting it ready to put into storage.

Outreach

On May 4th and 5th in Howell, The Operating Engineers hosted over 4,400 students from 115 schools participating across the State at their annual Michigan Construction Career Days. This is a sizable event featuring contractors, labor unions, and special interest groups related to construction and infrastructure.

MICareerQuests have been a focus for the Society as it offers direct outreach to students, teachers, and school counselors. On May 12th members attended the first 2022 MICareerQuest in Traverse City event. Additional events took place on May 17th in Kalamazoo and May 24th in Onaway.

Scholarship Committee

The Committee is responsible for recommendations of future Scholarship offerings, sources of funding, and administering the Scholarship Application and selection process. Currently MSPS offers two annual scholarships: one for Michigan Technological University and one for Ferris State University. With much success in fundraising over the recent years, the Scholarship Committee sought to award all student

applicants a scholarship this year, which was approved by the Board of Directors in December. They will be awarding nearly \$10,000 to the nine student applicants. In addition to the MSPS Scholarship, applications are eligible for Chapter Scholarship awarded by the various Chapters based on their criteria. The Committee is still seeking to add additional Scholarship for non-four year degree surveying students in the State of Michigan.

Respectfully Submitted,

James D. Hollandsworth, PS, PE
MI-SPS NCEES POLC Representative



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**Annual Report of the National Academy of Forensic Engineers (NAFE)
to the NCEES Participating Organizations Liaison Council
February 2023**

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

The National Academy of Forensic Engineers and its members are committed to:

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

Among the programs and activities of NAFE include the following:

- Twice each year, NAFE members meet in different locations around the United States for two full days of Forensic Engineering seminars. Sixteen hours of technical and professional continuing education credits are available, along with the opportunity to network with others in the field of forensic engineering.
- *The 2022 NAFE Winter Conference was held at the Hilton El Conquistador, Tucson, Arizona, on January 7-9, 2022.*
- *The 2022 NAFE Summer Conference was held at the Hyatt Regency Toronto, Ontario, Canada, on July 22-24, 2022.*
- *The 2023 NAFE Winter Conference was held at the Hotel Contessa, San Antonio Texas, on January 6-8, 2023.*
- *The 2023 NAFE Summer Conference will tentatively be held in the summer of 2023. Program location, dates and focus will be announced in the near future;*

- ***The 2024 NAFE Winter Conference will tentatively be held in the winter of 2024. Program location, dates and focus will be announced in the near future;***
- NAFE is a member of the Council of Engineering and Scientific Specialty Boards (CESB). NAFE’s Diplomat Forensic Engineer (DFE) certification program is accredited by the CESB in the Professional Engineering Program category.
- Since its establishment in 1982, NAFE has published the NAFE Journal, a compilation of papers presented by NAFE members of technical as well as professional issues relating forensic engineering practice. The NAFE Journal is available online by visiting www.nafe.org.
- Most NAFE members are licensed as professional engineers in multiple jurisdictions in addition to their state of residence or employment. On occasion, some NAFE members are offered opportunities to conduct forensic investigations and testify in courts in jurisdictions in which they may not be currently licensed. Because of the unique role forensic engineers play within the nation’s judicial system, NAFE advocates for enhanced comity/reciprocity flexibility for forensic engineers performing these functions.
- NAFE currently has the following Position Statement:
 - ***It is the position of the National Academy of Forensic Engineers (NAFE) that (1) the practice of forensic engineering constitutes the “practice of engineering” under state laws and regulations, and that (2) professional engineers performing forensic engineering services should fully comply with state engineering licensing laws and board rules and regulations.***
- The global pandemic provided the push needed to launch our virtual courses and develop remote networking breaks for our membership. We understand many in the Academy count on the NAFE conferences for continuing education, particularly in Engineering Ethics, and networking opportunities. NAFE is committed to providing quality content whether participants are in-person or distance learners.
- NAFE continues to act on the recommendations provided through an extensive 2019 membership audit with the assistance of Mark Levin, B.A.I., Incorporated. NAFE will continue to focus on policies and services in the following areas:
 - a. New Member Recruitment
 - b. Intake/On boarding of New Members
 - c. Member Engagement
 - d. Retention
 - e. Marketing/Branding
 - f. Administration
 - g. Website coordination

- For more information about NAFE membership, conferences, publications, or other information, please visit www.nafe.org.

Please contact me with any questions.

Joseph Leane, P.E., D.F.E.
2023 President
National Academy of Forensic Engineers
president@nafe.org

National Council of Structural Engineers Associations

Mission

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

Vision

The National Council of Structural Engineers Associations will be recognized as the leading advocate for the practice of structural engineering.

NCSEA is the parent organization and coordinating council for 44 state structural engineering associations. The activities of these member organizations are coordinated and represented by NCSEA in activities such as building code development and simplification, continuing education, licensure, participation in the structural engineering emergency response program, and promotion of the structural engineering profession to students as well as the public-at-large.

NCSEA continues to actively:

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

- Participate in the development of revisions to the International Building Code (IBC), International Residential Code (IRC) and International Existing Building Code (IEBC)
- Provide online review/refresher courses, specifically designed for the NCEES Structural Engineering (SE) examination.

NCSEA Licensure Committee

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

NCSEA held a Summit in New York City In February of 2022. This Summit was originally scheduled to take place in the fall of 2021 but was delayed due to the Covid pandemic. In November of 2022 the customary NCSEA Summit was held in Chicago. At this conference the SE Committee convened to provide updates and exchange ideas about the current state of SE licensure. This session fostered many meaningful discussions about current licensure activities. Among the issues discussed was the upcoming transition to Computer Based Testing. NCSEA has been working with NCEES and, in particular, Jason Gamble to understand how the transition will affect structural engineering licensure. Although several members of NCSEA are directly involved with NCEES and are knowledgeable about the transition, Mr. Gamble provided an informative presentation at the Summit. His presentation was well attended and attendees were given an opportunity to ask questions and provide feedback.

Other issues discussed at The Summit included:

- Committee successes in 2022
- Structural Licensure trends in various states
- Licensure presentations that could benefit diverse audiences

Momentum from the Summit is helping to shape our priorities for 2023. Since the committee continues to have deep knowledge in issues that relate to structural licensure, we endeavor to share the objectives of structural licensure with all stakeholders, including outside organizations. Although our primary goal is to continue helping states who are pursuing Structural Licensure, three other goals have been established for the coming year. Our first goal is to investigate the composition of state engineering boards to better understand how they are formed and what kind of members populate the board positions. Boards which do not have at least one structural engineer may not fully understand the current issues surrounding structural licensure, and educating these boards will require a unique approach. Our second goal is to document existing structural licensure laws and how they were passed. The committee's objective with this goal is to provide a historical context of licensure successes for future committee members to use and reference. Finally, the committee's third goal is to develop

helpful ways young engineers can better understand structural licensure, especially with the new CBT format.

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



NATIONAL SOCIETY OF
PROFESSIONAL ENGINEERS



**REPORT TO THE NCEES
PARTICIPATING ORGANIZATIONS
LIAISON COMMITTEE**

MARCH 2023

NSPE.ORG



While NSPE has continued to work towards its Strategic Plan goals in the past year, the organization’s vision has remained the same:

A world where the public can be confident that engineering decisions affecting their lives are made by qualified and ethically accountable professionals

Throughout 2022, NSPE continued to focus on the four key areas of its Strategic Plan – champion, guide, advance, and unite. These key areas continue to provide the structure for NSPE’s planning and activities, both day-to-day and long-term.

Key areas of NSPE focus are summarized below.

CHAMPION (protecting the PE License)

NSPE’s highest priority is protecting the PE license, and threats to licensure come in many forms.

These included “consumer choice” and “right to earn a living” legislation (although we saw far fewer of these bills than in previous years), “military spouse” bills, “board composition” and “Board Authority” legislation, so-called “universal licensing” policy, “Criminal Conviction” and “Private Right of Action” legislation. We continue to see attacks on licensure that treat all licenses with the same gravity.

Old Threats

“Consumer choice” and “right to earn a living” legislation is still out there, but we saw a significant drop in the number of bills, and the number of states attempting to open the floodgates by allowing unlicensed and unqualified individuals to practice highly-technical professions like engineering.

Once again, one of the most common issues professional licensing faced last year was wrapped in to improve license mobility for military families. While the specifics vary, the



premise of this legislation is to make it easier for licensed military spouses to get a reciprocal license when the family is transferred to a base in a different state. At the beginning of 2023, President Biden signed into law the Veterans Auto and Education Improvement Act of 2022 (Public Law 117-333), which includes a section on the Portability of Professional Licenses of Members of The Uniformed Services and their Spouses. NSPE will monitor state legislation to see if any states try to expand this concept to local first responders.

Another continuing threat is referred to as “universal licensing.”

Generally, a state’s licensing statute or regulation doesn’t allow a Professional Engineer who’s licensed in New York to practice in Arizona using a New York license. The New York engineer must still get separately licensed in Arizona. Many Universal Licensure bills require an expedited process, much like the military spouse bills, and the issues are often the same. Some “universal licensing” legislation includes a residency requirement or similar barrier that actually makes licensing more difficult for professions like engineering that already have a mobility system in place. As has been NSPE’s practice, the National staff worked closely with state societies to fight back against these dangerous policies anytime they arose.

New Threats/Legislation

In 2022, we saw some new threats to licensure. These threats included “Board Composition” and “Board Authority” legislation, “Private Right of Action”, and “Criminal Conviction” legislation.

“Board Composition” legislation has become more common in some states. This legislation would change the structure of state licensing boards. Some bills focus on how the licensure boards are structured, how many people are on the board, and what members can serve on the boards, while other bills have focused on how people are appointed to state licensure boards. The most dangerous version of these bills consolidates boards from several professions, which dilutes the impact of the engineer members of the board.

“Board Authority” legislation has started to become a more frequent issue. The focus of recent bills has been on the authority or responsibility the state boards have. Additionally, some bills would have added other groups/members to a state licensure board.



“Private Right of Action” legislation is a new issue that we believe will come up more often. This issue would allow an interested person to request review of a regulation issued by an occupational licensing board. An occupational licensing board must then review a regulation to ensure compliance with the least restrictive regulations. Rarely would an interested person bring a private action. However, the creation of a private right of action facilitates organizations attempting to dismantle professional licensing stepping in with funding and resources as a proxy for the “interested person.”

“Criminal Conviction” legislation has come up in states and has focused on three (3) issues. The first issue is clarifying the circumstances under which a criminal conviction triggers disciplinary action. The second issue involves prohibiting licensing boards from suspending or revoking an occupational or professional license solely for a conviction of a crime without a direct relationship to specific duties and responsibilities for which license is required. The third issue is the circumstances under which a criminal conviction can support denial of a license. The primary concern with these proposals is that criminal convictions rarely relate directly to the provision of engineering services. However, if for example, an engineer or license candidate has a conviction for accepting a bribe that would certainly indicate a willingness to subsume the engineer’s obligation to protect the public health, safety, and welfare.

GUIDE (PEs in Emerging Technologies)

NSPE continues to be a leader in Emerging Technologies. Our Software Certification Task Force aimed at evaluating the feasibility of a new certification for software professionals that would provide greater protection of public health, safety, and welfare across all emerging technologies. The recently signed White House Executive Order 14028 has put significant pressure on the software industry to find a way to authenticate the skills of those providing software to Federal agencies. The NSPE Software Certification Task Force is uniquely positioned to respond to this need.



ADVANCE (Strengthening the License)

NSPE remains committed to strengthening the PE license. Professional Engineers in responsible charge of design/build projects provide a layer of protection to the public, using technical expertise to flag potential issues and offer solutions.

One of the most concrete steps we can take to strengthen the PE license is eliminating licensing exemptions. In 2019, the National Transportation Safety Board called for the elimination of PE exemptions in the natural gas pipeline industry. In 2021, Nevada joined Virginia by ending their licensing exemption for natural gas pipeline design work. Other states are working on similar legislation but have not found success in their efforts. Projects deemed risky will be required to have a Professional Engineer in responsible charge. While it's not an outright elimination of the PE exemption, it is progress. And, importantly, it is progress that had industry support, providing us with a possible path forward in other states.

To facilitate the transition of affected groups of engineers moving from exemption to licensed-required, NSPE's working group is finalizing a Sign & Seal guide and will be releasing it soon.

UNITE (Collaborations)

NSPE continues to participate in coalitions with organizations that share our commitment to preserving the integrity of professional licensing and certifications, and pushback against reforms that put public health, safety, and welfare at risk.

The coalitions in which NSPE is most active are the previously mentioned Alliance for Responsible Professional Licensing (ARPL), the Professional Certification Coalition (PCC), and the Building Resilience Action Coalition (BRAC). Each coalition successfully amplifies NSPE messaging around the value of professional licensing and certification. NSPE also continues to collaborate with state societies and affiliates to promote licensure, and to fight against potentially dangerous threats.



National Society of Professional Surveyors

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Licensing Issues

Specialty Licensing - NSPS continues to monitor and participate in discussions on both the state and national levels regarding whether state licensing laws and procurement laws, as currently written, are appropriate for addressing the use of technological advancements for land data collection, processing, interpreting, and dissemination. This issue comes up repeatedly in legislation that is impacted using geospatial data concerning whether there should be “specialty” categories in licensure instead of the long-established overarching definitions.

Deregulation – The Government affairs committee of NSPS continues to monitor and evaluate threats to the licensed professional surveyor by states across the nation. Arguments for deregulation include barrier to entry of the profession, funding of state licensing boards, and low numbers of licensed surveyors to provide service to the public. Most efforts to eliminate are rooted in cost-cutting measures, so NSPS is providing assistance to state surveying affiliates in promoting the duty of the professional surveyor as a protector of public interests.

NSPS is urging members of Congress to sponsor a “sense of the Congress” resolution highlighting the important role licensing of surveyors, architects, and engineers play in protecting the public health, safety, and welfare.

Promotions

NSPS attended the American School Counselors Association conference, our 7th year, held in Austin, TX. We received many compliments on our booth space and the quality of the material we were handing out, which included “Getting Kids into Surveying” posters, information on Trig-Star and CST programs, as well as related stickers, coloring sheets and associated bling for the conference attendees. Several attendees, mostly Guidance Counselors, hadn’t really thought of surveying as a suggested career path for their students, asked about the availability of jobs and how much can a surveyor make.

Outreach/Collaboration

The FIG Working Week 2023 is being held in Orlando, Florida, USA from May 28th – June 1st, 2023, and will foster an environment that looks at the world we currently live in and help to create ideas and visions for detailing new strategies to align with our Working Week theme. The theme, “**Protecting Our World, Conquering New Frontiers,**” is intended to inspire surveying and geospatial professionals to seek to expand our presence through technology, experience, collaboration, and good will for a better tomorrow. As our world and climate changes around us, we aspire to leverage our knowledge base and tools for measuring, monitoring, and forecasting how to improve the outlook for our future generations. The FIG, NSPS, and local Young Surveyors Organizers have decided on a special focus of the young surveyors and to give the Young Surveyors an outstanding opportunity to participate both in the FIG Congress - with its

variety of sessions - and a special Young Surveyors Conference. The Young Surveyors Conference will include a tailor-made program aimed at young professionals.

NSPS and FIG also welcomes the National Geodetic Survey (NGS) to the Working Week 2023 event in Orlando. We are looking forward to discussions on collaboration and information on common interests, such as the 2022 datum change and how state legislation will need to be revised in some states to indicate compliance with the 2022 datum.

Education Issues

NSPS maintains a listing of schools throughout that country that provide degree programs in Land Surveying and Geomatics. We are also constantly monitoring these programs to provide support, where needed, to encourage the continuation of the program where threaten by budget cost.

NSPS continues its annual Student Competition for surveying-related programs. For 2023, the competition will be held during the NSPS Spring Business Meetings and again will consist of a monument scavenger hunt and Antique field equipment exercise format as the previous year. The competition has received rave reviews and team participation has increased from 11 in 2022 to 25 for 2023.

Our Certified Survey Technician (CST) program continues to be one of the most successful certification programs we offer. This is a four-level testing program NSPS offers to Technicians, with either on field path or an office path. We are in the process of putting together a letter which will be sent to the appropriate DOT contact in each State, to encourage those Departments to require the appropriate level of CST certification as demonstration of competence in hopes of growing the program even further.



Structural Engineering Institute (SEI)

SEI Annual Report to the NCEES PARTICIPATING ORGANIZATIONS LIAISON COUNCIL (POLC) MEETING

Saturday, March 11, 2023

Presented by Chun C Lau, P.E., S.E., F.SEI, F. ASCE
Chair – SEI SE Licensure Committee

The mission of the Structural Engineering Institute (SEI) is to advance and serve the structural engineering profession. This broad mission is fulfilled through the activities and projects developed by the SEI committees and chapters. More than 100 SEI committees and 50 local SEI Chapters and Grad Student Chapters support the SEI mission.

The mission of an SEI committee is to identify and accomplish projects and activities consistent with its stated purpose to improve the quality of structural engineering services, improve the quality of structural engineering practice, and advance the standing of structural engineers in society. Integral with these efforts, SEI committees are critical in identifying new developments or needs within the profession that should be considered or addressed by SEI.

SEI SE Licensure committee

The SEI SE Licensure Committee seeks to further the mission of SEI relating to licensing, regulatory issues, and professional development activities for individual structural engineers. We were able to meet in person at the SEI Structures Congress in April 2022 and had a productive meeting. It was great to be able to meet face to face after meeting virtually via Zoom, Microsoft Teams, Google Meet, and various other software packages. We are planning to meet in person again at the SEI Structures Congress in May this year.

As reported in our report last year, the Board of Directors of the Structural Engineering Certification Board (SECB) decided to cease operations as of March 31, 2022. SECB was one of the founding member organizations of the Structural Engineering Licensure Coalition (SELC) that consists of three other founding member organizations, the Structural Engineering Institute (SEI), the National Council of Structural Engineers Associations (NCSEA) and the Coalition of American Structural Engineers (CASE). With SECB's decision to disband required SELC to restructure their organization and adjust their leadership transition procedures. The restructuring of SELC was completed and now SELC consists of three member organizations, SEI, NCSEA and CASE. At their November 2022 meeting, Carl Josephson/SEI was elected Chair of SELC for this upcoming year.

SEI, NCSEA, and SELC continue to support the Structural Engineering Caucus that was held at the 2022 NCEES Annual meeting at the Omni Resort Hotel in Carlsbad, California. Last year's Caucus focused on the NCEES PE Structural exam transition to Computer-based testing (CBT). Mr. Jason Gamble, PE (Chief Officer of Examinations), provided an update on the transition at the Caucus as part of a combined session. There was much discussion, and it was concluded that a national outreach may be helpful in getting the proposed changes out to the larger audiences (potential exam takers). Mr. Gamble had since made a presentation at the NCSEA Annual Summit in Chicago in November 2022 as well as a webinar set up by SELC hosted by NCSEA on January 26, 2023, with 2012 registered and 1406 unique users attended with over 1400 questions submitted. Mr. Gamble provided an informative presentation at each of the presentations and attendees were given an opportunity to ask questions and provide feedback.

Some of our members continue to work on the NCEES SE Examination Committee on converting the "pencil and paper" exam to an exam that can be administered completely on a computer at testing sites using both multiple choice questions and alternative item types (AITs). AITs may include one or more of the following: multiple correct, point & click, drag & drop, fill in the blank. We will continue our support for standard setting (cut score) of the SE CBT exam by recruiting subject matter experts from our membership for such an important task.

One of our goals this year is to help our young engineers better understand structural licensure, especially with the new CBT format.



SFPE 2022 Report to the NCEES POLC

Submitted by Chris Jelenewicz, PE, FSPE – SFPE Chief Engineer

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

PE Exam Prep Course

SFPE continues to promote the Principles and Practice of Engineering (PE) exam in fire protection. In 2022, SFPE sponsored a web-based preparation course for the fire protection exam, as they have done for many years. Approximately 219 candidates participated in this course. Additionally, the Fire Protection Exam Committee continues to support the exam. The Committee is currently working on updating the reference manual and getting new questions into the exam bank.

Educational Programs

SFPE continues to provide robust education programs that advance the practice of fire protection engineering. At the end of 2022, there were 9,822 Active Users registered in SFPE's Learning Management System. Educational programs were provided for 595 in-person attendees. Course topics included advanced fire modeling, smoke control, human behavior in fire, flammable liquids storage, fire protection systems design, and fire safety in very tall buildings. Additionally, 200 individuals joined us for our virtual Performance-Based Design conference, and over 300 joined us in Detroit, MI for our annual conference. Additionally, over 100 engineers participated in a Storage Symposium in Chicago that featured a live fire test at the UL testing facility.

SFPE Engineering Guide to Fire Safety for Very Tall Buildings

In 2022, SFPE published the 2nd edition of its Engineering Guide to Fire Risk Assessment. This Guide provides guidance to qualified practitioners in developing, selecting, and using fire risk assessment methodologies for the design, construction, and operation of buildings, facilities, or processes. It also addresses fire risk acceptability, the role of fire risk assessment and management in the fire safety design process, and associated communication/ monitoring of fire risk.

The Guide Includes a new flow chart that outlines the risk assessment process. It also includes new information related to:

- Risk Perception
- F-N curves
- Risk communication
- Residual risk management
- Risk monitoring
- Sensitivity analysis

The Guide also provides clear guidance on conducting qualitative and quantitative analysis. It also uses examples that reinforce the topics discussed.

Supporting Higher Education

SFPE continues to remain active with fire protection engineering higher education programs. SFPE staff serves on the Industry Advisory Boards for the University of Maryland fire protection engineering, Oklahoma State University fire protection technology, and Eastern Kentucky University fire protection engineering technology programs. All three programs are accredited through ABET.

To help the next generation learn about fire protection engineering and hopefully pursue the field, SFPE has updated the career information web space and revised the handout material that gets used by members/universities in many regions.

Society for Mining, Metallurgy and Exploration Inc.

2022 Report to the Participating Liaison Council; National Council for Examining Engineers and Surveyors

Introduction

This report is submitted to the Participating Liaison Council (POLC) and the National Council for Examining Engineers and Surveyors (NCEES) for 2022 Professional Engineering activities of the Society for Mining, Metallurgy and Exploration Inc. (SME).

SME is the premier worldwide engineering society representing earth science professionals with membership over 10,000. Our core disciplines include geology, mining engineering, mineral process engineering, environmental engineering, and underground civil construction are the foundation of the Mining Mineral Processing Professional Engineers Exam (MMP). SME has members in most countries of the world.

Mission

SME serves the mining, resources, and underground construction communities for a sustainable future. This mission embraces the engineering design, construction and operations activities of the Professionals of SME at mines, plants, and support functions for the mineral industries.

Vision

SME's vision is building a better world through mining, metallurgy, and underground construction. SME has 2,500+ members who are licensed PE's. SME regards the PE as the gold standard for the holder's ability to design and build.

- Industry Innovation: SME is the venue of first choice for disseminating research leading to innovation and encouraging its applications in mining and underground construction.
- Industry Workforce: Mining, metallurgy, exploration, and underground construction are careers of choice.
- Responsible Mining & Underground Construction: The worldwide mineral industry recognizes SME as the premier resource for information on responsible mining and underground construction.
- Association Growth: SME Leads in amalgamating the community to build a better world.

Support of the Professional Engineers Program

SME supported the PE program in 2022 in many ways. The SME PE Committee began to write the SME PE Study Guide Edition 9 with the practice exam. SME publishes the Study Guide every 7-8 years beginning in the 1980's to help PE candidates prepare for the MMP exam. The committee consists of 20 members. The SME PE Committee developed and provided a presentation promoting the value of licensure. SME Committee members gave the presentation to various groups in 2022.

SME through its local chapters sponsors continuing education programs for MMP PE renewal. A 2022 venue in Kentucky had 140 engineers attend from the lower Appalachian states.

As per the January 2020 agreement between SME and NCEES, SME supplied updates to the Mining Reference Handbook (MRH), the SME publication that constitutes the single reference utilized in the MMP exam. The NCEES MMP Committee is the primary identifier for updates for the MRH. SME is the supplier of volunteer engineers for populating the NCEES MMP Committee.

SME sponsors a yearly 5-day PE Review Course given by five university Professors. The course occurred September 2022 with 33 attendees, same as in 2021. Short Course attendees for 2022 constituted 69% of first time PE test-takers. For 13 years, 70% of first time test-takers attended the Review Course.

NCEES administered the MMP exam on Oct. 23, 2022. This was the second computerized MMP PE exam. Sixty engineers took the 2022 exam, 48 for the first time and 12 repeat test takers. The overall passing rate was 57%. The 5-year average passing rate including 2022 is 56%. The average passing rate since 1990 is 56%. The 5-year average attendance including 2022 is 67. The average number of test takers since 1990 is 74.

In August 2022, the model law for PE requirements that included language requiring a “Masters or Equivalent” (MOE) degree was voted down at the national meeting of the PE’s from the States’ Boards of Registrations. SME has joined most other Engineering Societies in opposing MOE for the past 15 years. SME opposed MOE because it had the potential of discouraging PE licensure as a goal for Bachelor-degreed engineers. In addition, SME opposed the MOE because existing continuing education requirements of a PE license more than make up for the additional education implied by a Masters degree.

The SME Professional Engineer (PE) Committee genesis was in 1978. The initial charge was to bring the Mining / Mineral Processing PE Exam (MMP) from a state level to a national level. SME accomplished this charge by engaging NCEES for exam administration and by having the MMP exam recognized by 25 states through reciprocity. Milestones and major changes in the past 45 years have been:

1978	SME PE Committee formed.
1980	First MMP exam administered by NCEES, exam graded by SME PE’s, Questions written by SME PE’s.
1980-2001	Pad and pencil exam consists of both multiple-choice questions and essay questions, written and graded by SME PE Committee. Open-book exam.
2002-2020	Pad and pencil exam consists of 80 multiple-choice questions; questions written by SME PE Committee; exam graded by NCEES. Open-book exam.
2021-present	Computerized exam consists of 85 multiple choice and alternative-form questions.