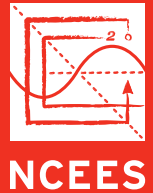


Licensure EXCHANGE

DECEMBER 2017
Volume 21, Issue 6



PATTY MAMOLA, P.E.

NEVADA STATE BOARD OF
PROFESSIONAL ENGINEERS
AND LAND SURVEYORS
EXECUTIVE DIRECTOR



MEMBER BOARD BRIEF

THE FUTURE OF ENGINEERING

THIS AUGUST, 48 PEOPLE ATTENDED THE FUTURE OF Engineering Summit in Omaha, Nebraska. Hosted by a group of concerned engineering consulting businesses, the event included attendees from all parts of the United States as well as a variety of national professional society representatives. Attendees were required to commit to having an open mind, being willing to think big, and, most importantly, getting out of their own way while participating.

Prior to attending the summit, attendees were encouraged to read four books:

- *The Future of the Professions*, Richard Susskind and Daniel Susskind, Oxford University Press
- *The Fourth Industrial Revolution*, Klaus Schwab, Crown Business
- *A Whole New Engineer: The Coming Revolution in Engineering Education*, David E. Goldberg and Mark Somerville, Threejoy Associates
- *Leaders Make the Future*, Bob Johansen, Berrett-Kohler Publishers

The books were thought provoking, fueling discussions during the two-day meeting.

Despite the demand for engineers, the United States is not currently producing enough of them. One reason that *A Whole New Engineer* cites for this lack of engineers is that not enough students succeed in getting engineering degrees. Preparation and encouragement of high school students is a major cause of the lack of interest and success in the engineering-related careers. This is especially true for women and minorities.

New approaches to education

Olin College has piloted a new approach to engineering education. Teachers collaborate with students to create innovative ideas. Students build and make things prior to being taught the math and science. Creativity is encouraged, successes are celebrated, and failures are valued as opportunities for improving the engineering process.

The University of Illinois was unable to toss out its engineering education to create a new program but knew changes were needed to improve engineering education. It, therefore, adopted much of the Olin model on a voluntary basis and has seen 100 percent participation by staff and students.

Instead of asking students to look to the right and left to see who won't make it, these programs encourage them to look around at the classmates who will be helping them succeed. With this optimistic approach, both programs have diverse student populations and impressive retention rates.

FROM THE PRESIDENT



PATRICK TAMI, P.L.S.
NCEES PRESIDENT

Preparing for change: CEO Carter announces 2018 retirement

AT THE NOVEMBER BOARD OF DIRECTORS MEETING, Jerry Carter, our chief executive officer, announced he will retire at the end of 2018. Jerry has given us more than 16 years of outstanding leadership, initially as director of corporate affairs and, eventually, as CEO.

Since Jerry stepped into the role of CEO in 2007, we have reaffirmed our commitment to our mission, expanded and sharpened our strategies and tactics, and demonstrated our ability to learn and improve. The day-to-day operations and financial stability of the Council have improved immensely under Jerry's leadership.

Thanks to Jerry and his staff, we are on strong financial footing and have one of the most respected organizations in the engineering and surveying professions. We on the board of directors will miss his inspiration and his friendship.

The board has appointed a search committee to find Jerry's successor. We are indebted to him for greatly improving our ability to achieve our mission by bringing about a significant evolution for the Council's services and governance. Our mission hasn't changed—and won't change with the coming leadership transition.

Weather effects on exams

While the 2017 exam administrations were administered mostly without incident, unfortunately, devastating weather impacted several locations this year. Some Pearson VUE test centers in Florida, Puerto Rico, Texas, and the U.S. Virgin Islands were completely shut down for days or weeks, and, at the request of the Puerto Rico board, the October pencil-and-paper exam administration was cancelled for the territory. Additionally, from building damage to loss of electricity and phone service, the Puerto Rico and U.S. Virgin Islands board offices faced significant challenges with returning to regular service.

Thanks to Jerry and his staff, we are on strong financial footing and have one of the most respected organizations in the engineering and surveying professions.

Due to the flexibility of CBT, interruptions to computer-based exams were minimal. All impacted examinees were offered options on taking the exams in a different location or time. All pencil-and-paper examinees in Puerto Rico were moved to the April 2018 administration; examinees have the option to request a refund instead.

The board of directors sends our best wishes and prayers to the impacted member boards and offers continued help in any way that we are able.

Committee efforts

Fulfilling the NCEES mission relies on the support of its member boards, board of directors, staff, board administrators, and volunteers. This includes the time and expertise that members, emeritus members, and associate members volunteer to serve on NCEES standing committees and task forces.

The committees and task forces for 2017–18 are working on more than 80 charges this year, including committee descriptions and membership, video conferencing, the Continuing Professional Competency Registry, structural engineering, and exam length. Many of these groups have already met, and the rest have been working via email and conference calls.



Members of the 2016–17 Committee on Examinations for Professional Surveyors meet outside NCEES headquarters ahead of their January 2017 meeting. More than 100 member board members, emeritus members, and associate members volunteer each year to serve on NCEES standing committees and task forces.

While the 2017–18 committees and task forces continue to work diligently to address their charges, it is now time to solicit volunteers for 2018–19. If you are interested in serving on an NCEES committee or task force, please be sure that your contact information is correct in the NCEES database. President-Elect James Purcell, P.E., will send out a link to the committee preference survey in January. You can read more about the work that each committee does in this issue (see page 4) or on the NCEES website (in the About section). Simply respond to the survey with your choices of committees that you are interested in being appointed to.

The decision to volunteer for an NCEES committee has benefited me personally and allowed me to give back to my profession in a unique way. Working with various committees

and task forces since 2007 has given me the opportunity to work with new people and learn new things. It has allowed me to look at the organization and the issues it deals with from new angles. I've worked on a variety of issues with a variety of people, but what stays the same is the dedication of these groups. Each is committed to helping NCEES fulfill its mission.

If you are interested in volunteering or have questions about the work or time involved, I urge you to speak with your board administrator, fellow board members, or NCEES leadership for your zone about serving on a committee or task force. It's a unique experience that benefits you, your board, and NCEES.

COMMITTEE FOCUS

NCEES committees and task forces begin work on 2017-18 agenda

WITH ITS COMMITTEES AND TASK forces addressing more than 80 charges this year, NCEES has a full range of issues to consider in 2017-18. President Patrick Tami, P.L.S., has assigned the 11 standing committees charges that focus on education, exams, enforcement, and other issues. He has appointed task forces to study the use of building information modeling in professional practice for engineering and surveying and the need for separate modules for the Principles and Practice of Surveying (PS) exam. He also formed a Special Committee on Bylaws to propose changes to the document that outlines the structure of the organization.

The following highlights the issues these groups will address this year. A full list of charges and the membership of each group is available in Board Resources, part of the members-only section of the NCEES website. The committees and task forces will present their preliminary findings at the zone interim meetings this spring and get feedback from NCEES delegates. They will submit their final reports for publication in the annual meeting *Action Items and Conference Reports*. The Council will vote on any resulting motions at the annual meeting in August 2018.

Advisory Committee on Council Activities

Chair: Dale Jans, P.E.

Board of directors liaison:

Patrick Tami, P.L.S.

Staff liaison: Donna Moss, SHRM-CP, PHR

ACCA makes recommendations on policy issues that are not assigned to another standing committee or that involve several committees. It also reviews the NCEES *Manual of Policy and Position Statements* and recommends revisions.

The committee will consider if a term limit should be placed on how long an individual may serve as an NCEES emeritus member. It will review the current NCEES Strategic Plan and recommend revisions, as appropriate, to further the mission and vision of NCEES. It will review the NCEES manuals, such as the *Manual on Policy and Position Statements, Bylaws, and Zone Meeting and Continuity Guidelines*, and recommend revisions, as needed, regarding who may attend zone interim meetings and annual meetings. It will also consider if member board administrators should be named as funded delegates to attend NCEES zone and annual meetings.

Committee on Awards

Chair: Harold Snead Jr., P.E.

Board of directors liaison:

Daniel Turner, Ph.D., P.E., P.L.S.

Staff liaison: Sherrie Saunders

The Committee on Awards will collect nominations for NCEES service awards to be presented during the 2018 annual meeting and recommend recipients to the board of directors. Nomination materials are available on ncees.org under Board Resources. Nominations are due by January 31, 2018.

Committee on Education

Chair: Brian Robertson, P.E.

Board of directors liaison:

Brian Hanson, P.E.

Staff liaison: Davy McDowell, P.E.

The Committee on Education serves in an advisory role for education issues related to ABET, requirements prior to initial licensure, continuing professional competency (CPC), and foreign degree or unaccredited program evaluation.

This year, the committee will evaluate the use of the NCEES CPC Registry and assist staff in developing a plan to encourage member boards and individual licensees to use it. It will evaluate the NCEES Engineering Education and Surveying Education standards to ensure that they are consistent with ABET accreditation policies where possible. It will also continue to refine Position Statement 35, Future Requirements for Engineering Licensure.

Committee on Examination Audit

Chair: Laura Sievers, P.E.

Board of directors liaison:

Christopher Knotts, P.E.

Staff liaison: Lehmon Dekle, P.E.

The Committee on Examination Audit conducts regular audits of the NCEES exam program. This year, it will audit the most recent administrations of the Fundamentals of Engineering (FE) exam and the Principles and Practice of Engineering (PE) Mechanical exam. It will review audit findings of the following

PE exams to ensure that all items were addressed: Electrical and Computer, Naval Architecture and Marine, Nuclear, Mining and Mineral Processing, and Fire Protection. It will also audit standard-setting studies for the following PE exams: Architectural, Electrical and Computer, Environmental, and Structural Engineering.

Committee on Examination Policy and Procedures

Chair: Lisa Hanni, L.S.

Board of directors liaison:

Maurice Bowersox, P.E.

Staff liaison: Timothy Miller, P.E.

The EPP Committee reviews the effectiveness of the NCEES exam process and recommends revisions to exam policies and procedures when needed.

This year, the committee's charges include considering the value in providing computer-based testing (CBT) exam results to examinees immediately upon completion of the exam, in a manner similar to that of other occupational licensing organizations. The committee will work with the Committee on Examinations for Professional Engineers to consider if there is value in allowing exams that are longer than 8 hours of seat time to be administered over a two-day period rather than in one day. It will also work with the Committee on Examinations for Professional Engineers and the Committee on Examinations for Professional Surveyors to evaluate appropriate ways to increase member board member and administrator participation in exam development committees.

Committee on Examinations for Professional Engineers

Chair: George Murgel, Ph.D., P.E.

Board of directors liaison:

James Purcell, P.E.

Staff liaison: Timothy Miller, P.E.

The EPE Committee oversees the development and scoring of the FE and PE exams. Its recurring charges include conducting content reviews to update exam specifications, monitoring the training of exam development volunteers, and recommending changes to exam policies and procedures as needed.

The committee's charges for 2017–18 include considering if the diversity on NCEES exam committees should reflect student, licensee, or U.S. population. The committee will also recommend ways to promote the PE Software Engineering exam, which has a low number of examinees.

Committee on Examinations for Professional Surveyors

Chair: Joseph Flynn, L.S.

Board of directors liaison:

Paul Tyrell, P.E., P.L.S.

Staff liaison: Timothy Miller, P.E.

The EPS Committee oversees the development and scoring of the FS and PS exams. It reviews item performance, monitors the training of exam development volunteers, and recommends changes to exam policies and procedures.

Like the EPE Committee, the EPS Committee will consider if the diversity on NCEES exam committees should reflect student, licensee, or U.S. population. It will also consider whether there is a need to increase the number of items on the PS exam to allow for additional pretest items.

Committee on Finances

Chair: Kelly Fedele, P.E., P.S.

Board of directors liaison:

Timothy Rickborn, P.E.

Staff liaison: Betsy Pearson, CPA

The Committee on Finances studies the financial needs of NCEES and recommends

sources of income and ways and means of securing adequate funds for the Council's operation. The committee will review the results of the 2016–17 audit and the current financial condition of NCEES. It will work with NCEES leadership to recommend an income and expense budget for 2018–19.

Its other charges for the year include considering if fees for the professional exams should be increased to prevent future budget deficits.

Committee on Law Enforcement

Chair: Bruce Pitts, P.L.S.

Board of directors liaison:

Maurice Bowersox, P.E.

Staff liaison: Bob Whorton, P.E.

The Committee on Law Enforcement promotes greater uniformity and cooperation between member boards in the enforcement of licensure laws. The committee maintains the NCEES *Investigation and Enforcement Guidelines* and *Investigative Training Manual*, best practice manuals for enforcement activities and training. It also conducts a law enforcement program at the NCEES annual meeting and writes the column "Enforcement Beat" for *Licensure Exchange*.

This year, the committee's other charges include developing recommendations that member boards can use when considering what level of criminal behavior constitutes an impediment to licensure and what rehabilitation is sufficient to allow for licensure or reinstatement. It will also evaluate if the practice of member boards taking disciplinary action against a licensee due to a violation in another NCEES member jurisdiction should be cause for similar action without further due process.

continued on page 6

COMMITTEE FOCUS

continued from page 5

A full list of charges and the membership of each group is available in Board Resources, part of the members-only section of the NCEES website.

Committee on Member Board Administrators

Chair: Richard (Ric) Moore, P.L.S.

Board of directors liaison:

Christopher Knotts, P.E.

Staff liaison: Steven Matthews

The MBA Committee is responsible for coordinating meetings for MBAs at the NCEES annual meeting and interim zone meetings. The committee facilitates cooperation between MBAs and assists with any member board efforts to address licensure processes and practices. It also writes a *Licensure Exchange* column, “Member Board Brief.”

The committee’s charges for 2017–18 include working with NCEES staff to develop a communications plan and long-term strategy to promote actions to increase licensure mobility and reduce barriers to licensure. It will also assist NCEES staff in developing a program of regular MBA video conferences or virtual MBA meetings to replace the biennial face-to-face MBA meeting.

Committee on Uniform Procedures and Legislative Guidelines

Chair: Shannon Stanfill

Board of directors liaison:

Brian Hanson, P.E.

Staff liaison: Keri Anderson

Each year, the UPLG Committee looks for ways to strengthen the licensure process and proposes any necessary changes to the *Model Law* and *Model Rules*, the documents that provide member boards with models for their own practice laws to regulate the engineering and surveying professions.

The committee charges include reviewing the *Model Law* and *Model Rules* to determine if the structural engineering definitions and references should be moved to the appendices to eliminate potential conflicts with language in the *Manual of Policy and Position Statements*. It is also charged with proposing amendments to the *Model Law* to state that members of a member board are immune from liability for any action taken or omission in the discharge of the member board’s responsibility.

Special Committee on Bylaws

Chair: William Karr, P.S.

Board of directors liaison:

Patrick Tami, P.L.S.

Staff liaison: Davy McDowell, P.E.

President Tami convened the Special Committee on Bylaws to amend the *Bylaws* to incorporate several changes concerning NCEES officers, which were approved at the 2017 annual meeting. The committee will propose amendments to the *Bylaws* to require the president-elect and zone vice presidents to be licensed engineers or surveyors. It will also propose amendments to limit the term for treasurer to three years and to prohibit non-consecutive terms.

Surveying Exam Module Task Force

Chair: William Karr, P.S.

Board of directors liaison:

Patrick Tami, P.L.S.

Staff liaison: Davy McDowell, P.E.

President Tami formed the Surveying Exam Module Task Force to work on issues related to a motion passed at the

2017 annual meeting concerning new depth modules for the PS exam. The task force will evaluate the current PS exam specifications to determine if they sufficiently cover the proposed content related to the U.S. Public Lands Survey System (PLSS) and the Metes and Bounds system. It will evaluate current methods of testing PLSS and Metes and Bounds content on state-specific exams. It will evaluate the need for restructuring exams for surveying licensure, including the effects on mobility and the ability to protect the public. The task force will also determine exam volumes needed to sustain psychometric viability and economic feasibility.

Technology Task Force

Chair: Karen Purcell, P.E.

Board of directors liaison:

Paul Tyrell, P.E., P.L.S.

Staff liaison: Stef Goodenow

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

MEMBER BOARD BRIEF

continued from cover

As engineers, we often talk about concerns with engineering education. We may agree that changes are needed, but we passionately disagree on the fix. It is exciting to watch Olin College lead the way in radically changing engineering education. Rather than working within the confines of current engineering education delivery systems, Olin has transformed delivery. It has no departments or tenured staff. Staff lead classes and collaborate with students to explore the boundaries of knowledge and innovation by working on research projects in addition to pursuing new ideas born by each student's passionate pursuits. Olin has caught the attention of others and is collaborating with them, serving as a beacon for the future of engineering education in the world.

Challenges to licensure

Technology is rapidly changing our world. *The Future of the Professions* describes how a number of professions have already been irrevocably changed by technology. Rather than seeking a certified public accountant for tax preparation, taxpayers can simply use TurboTax, an online tax preparation software program. The June issue of *Builder* magazine, which is the magazine for the National Association of Home Builders, included an article on artificial intelligence-based design. The article stated, "Currently, only professional designers know design rules and techniques. Our vision is to empower everyone to become interior designers with an app that combines AI with virtual reality." It's not a stretch to imagine that artificial intelligence will eventually percolate into engineering design practice. The market will no doubt demand it. A business owner of a major engineering firm attending the Future of Engineering Summit commented that there is no reason why engineering designs cannot live in the public domain. Owners currently demand ownership of engineered drawings, wanting the ability to reuse them. When the demand exists, it becomes only a matter of time before the competitive free market meets the demand.

Uber is a great example of the market meeting demand. There are cars on roads everywhere, and people ride in cars to get places. By employing new technologies and innovative business models, Uber became a ride-sharing service, sidestepping the regulation of the taxi industry. Uber is thriving as an

NCEES and its member boards must be willing to commit to having an open mind, be willing to think big, and—most importantly—get out of our own way to meet the future of engineering licensure.

unregulated service, while the highly regulated taxi industry is steadily declining. This very well could be the beginning of the end for the taxi industry. When considering the future of engineering and that just 20 percent of graduate engineers become licensed, regulators and licensed professional engineers could easily find themselves in a similar position to that of the taxi industry.

As board members and executive directors of engineering regulatory boards, we should not be naïve or arrogant to believe that status quo will continue to be acceptable. This last year, we have experienced increased challenges to licensure. And these challenges do not appear to be abating. Recently, the National Conference of State Legislatures commissioned an occupational licensing study in 11 states to identify current regulatory policies that create unnecessary barriers. Similar to the Future of Engineering Summit attendees, NCEES and its members must be willing to commit to having an open mind, be willing to think big, and—most importantly—get out of our own way to meet the future of engineering licensure.

Mamola is the executive director and a past member of the Nevada board and a member of the 2017–18 NCEES Committee on Member Board Administrators. She is also a past president of NCEES.



RICK HUETT

ALABAMA BOARD FOR PROFESSIONAL ENGINEERS
AND LAND SURVEYORS EXECUTIVE DIRECTOR

Complaint intake, evaluation, and processing

THE ALABAMA BOARD OCCASIONALLY RECEIVES complaints that are outside of its jurisdiction, and therefore cannot be investigated. Historically, these complaints have not concerned issues that would or could put the public at risk, so fortunately, the board has not had to address that issue yet.

The general requirements for the submission of complaints in Alabama include

- It must be in writing.
- It must contain the name and address of the complaining party and the name and address of the individual or entity against which it is filed.
- It must contain a statement of facts that indicates a law or rule has been violated.
- It must contain the signature of the complainant.

The Alabama board does not accept anonymous complaints, but if correspondence indicated there was a risk to public health, safety, and welfare, the board would initiate a complaint to begin the investigative process.

Alabama has additional complaint requirements related to when the violation occurred. The board requires complaints to be filed within two years of the date the violation occurred or within two years of the date of the discovery of the violation, but no later than 10 years from the date of the violation. Violations that were caused by fraud, deceit, or concealment are not subject to this 10-year limitation.

A great resource for boards reviewing their process for the intake, processing, evaluation, and investigation of complaints is the NCEES *Investigation and Enforcement Guidelines*, which can be found on the NCEES website.

The second chapter of the *Investigation and Enforcement Guidelines* includes a section on complaints that can be easily

A great resource for boards reviewing their process for the intake, processing, evaluation, and investigation of complaints is the NCEES *Investigation and Enforcement Guidelines*, which can be found on the NCEES website.

adjusted to fit your board's needs. It includes guidance regarding the source, form, processing, and evaluation of complaints.

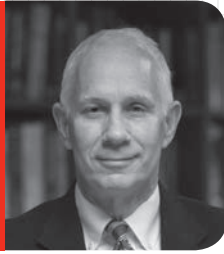
The Source section lists the multiple ways a complaint may originate. These include not only the public but also newspaper articles, advertising, referrals from other licensing boards, or other licensees (to list a few).

The Form section includes the information typically required on a complaint form. The NCEES *Model Law*, as well as many state laws, allow any person or entity—including a board or board staff—to file a complaint against a licensee concerning violations of the board's laws or statutes. The guidelines recommend that this complaint be in writing and sworn to by the person making it.

The Processing and Evaluation section explains the method a board would use to determine if an investigation is required. This includes deciding whether a complaint requires investigative attention and the steps for administrative or investigative staff to prepare a file to present to the board for consideration.

continued on page 11

HEADQUARTERS UPDATE



JERRY CARTER
NCEES CHIEF EXECUTIVE OFFICER

NCEES international leadership key to strategic goals

ONE OF THE FIVE GOALS THAT CONSTITUTE THE NCEES strategic plan provides that NCEES will represent the interest of the member boards in matters relating to determining minimum competence and the adoption of appropriate standards as they relate to licensure. One strategy the board of directors set for attaining this goal is to increase NCEES participation in the activities of internationally based engineering licensure organizations.

NCEES is a signatory to the Asia-Pacific Economic Cooperation (APEC) Engineer Agreement and the International Professional Engineers Agreement (IPEA). These agreements represent two mobility accords that have a common mission to create and maintain an international benchmark for engineering competency standards for the recognition of experienced engineers via registration or licensing and to eliminate artificial barriers to the mobility and practice of professional engineers.

In 2015, NCEES Past President Patty Mamola, P.E., was elected deputy chair of APEC and was reelected to a second two-year term at the 2017 International Engineering Alliance (IEA) annual conference. In September of this year, I was elected to a two-year term as the deputy chair of the IPEA. As officers of the two mobility agreements, Past President Mamola and I serve on the Executive Committee of IEA, a global nonprofit comprised of 36 jurisdictions within 27 countries. It oversees the two mobility agreements as well as various education accords, such as the Washington Accord. Like the NCEES board of directors, the IEA Executive Committee manages the operations of the organization between meetings, determines locations for future meetings of the IEA members, and sets agendas for these meetings.

As a signatory to APEC agreement and IPEA, NCEES is required to have a registry of interested individuals who wish to have their credentials evaluated against a known standard

Both Past President Mamola and I hope that the APEC and IPEA registries will continue to grow and that the value of NCEES membership and participation in IEA will be clearly demonstrated.

and, once vetted, transmit a portfolio to another member of APEC or IPEA if requested by the individual. This process should sound familiar since it mimics the NCEES Records program. Actually, the first step in getting listed on the NCEES International Registry is to establish an NCEES Record.

Two significant differences between the two programs are that inclusion on the NCEES International Registry requires a total of seven years of qualifying experience, two of which are in responsible charge of significant engineering projects, whereas the NCEES Record only requires four years of progressive engineering experience. Also, the NCEES International Registry requires individuals to meet annual continuing professional competency (CPC) requirements; there are no mandatory CPC requirements for a Record.

Currently, 652 individuals have been vetted against the APEC and IPEA standards and are currently listed on the NCEES International Registry.

My purpose in writing this article is to note that NCEES has taken a leadership role in IEA and both mobility accords and to stress that mobility of the P.E. license is important not only

continued on page 13

NCEES announces price reduction for FE, FS exams in 2018

BEGINNING JANUARY 1, 2018, NCEES IS REDUCING THE Fundamentals of Engineering (FE) and Fundamentals of Surveying (FS) exam registration fees by \$50 to \$175. The reduced fee will apply to registrations completed on or after this date; the new price will not be honored for registrations completed before January 1, 2018.

NCEES member boards voted to lower the price of these exams at the organization's 95th annual meeting in August 2016.

The FE exam is the first of two exams required for professional engineering licensure; it is designed to test knowledge of concepts learned while earning an accredited bachelor's degree in an engineering discipline. The FS exam is a similar exam designed for surveying licensure candidates. These exams are currently taken by nearly 47,000 examinees throughout the United States and 15 foreign locations annually. They are computer-based exams administered throughout the year at approved Pearson VUE test centers.

"NCEES and its member boards are committed to reducing barriers to licensure," NCEES Chief Executive Officer Jerry Carter explained. "Moving to year-round computer-based testing for these exams, which gives candidates greater scheduling flexibility, was an important part of those measures. The organization is taking the additional step of lowering the price of the fundamentals exams to ensure that cost is not a prohibitive factor in starting on the path to licensure."

PE Chemical exam

Licensed chemical engineers are needed to participate in a professional activities and knowledge study, or PAKS, for the Principles and Practice of Engineering (PE) Chemical exam. The results of this online survey will be used to update specifications for the exam. The survey can be completed in about 40 minutes. It is scheduled to open December 7 and close February 27. For access to the survey, visit ncees.org/PEChemical.

The PE Chemical exam will usher in a new era for NCEES in January: the exam will complete its transition to computer-based testing (CBT), the first PE exam to be offered in CBT

format. Appointments are available at Pearson VUE test centers year-round beginning January 2, 2018.

The remaining PE exams are scheduled to follow the PE Chemical exam, with each following its own transition timetable.

2017-18 approved calculator list

The NCEES board of directors recently approved the calculator models that can be used on NCEES computer-based and pencil-and-paper exams in 2018:

- Casio: All fx-115 and fx-991 models (Any Casio calculator must have "fx-115" or "fx-991" in its model name.)
- Hewlett Packard: The HP 33s and HP 35s models, but no others
- Texas Instruments: All TI-30X and TI-36X models (Any Texas Instruments calculator must have "TI-30X" or "TI-36X" in its model name.)

Limiting the types of calculators allowed in the exam room is one of the measures NCEES takes to protect the integrity of its exams.

2017-18 exam item costs

The NCEES board of directors also recently approved values for each exam item for fiscal year 2017–18, which began October 1. The values are calculated in three groups: multiple-choice items for all exams administered via CBT, which include the FE, FS, Principles and Practice of Surveying (PS), and PE Chemical exams; multiple-choice items for pencil-and-paper exams, which include all other PE exams and the breadth portion on the Structural Engineering (SE) exam; and constructed response, or essay, questions for pencil-and-paper exams, which include the depth portion of the SE exam.

The following are the exam item costs for 2017–18:

- CBT exam item cost: \$1,840
- Pencil-and-paper exam item cost for multiple-choice items: \$1,778
- Pencil-and-paper exam constructed response: \$18,558

Each year, NCEES assesses the potential financial damages associated with an exam breach and sets a cost to replace an exam item, or question, if it can no longer be used. NCEES considers travel expenses, subject-matter experts' time, psychometric costs, and office and personnel costs when establishing the dollar value of each exam item.

New exam development engineer



NCEES recently welcomed a new member of the Exam Services team. Sonya Dawson, P.E., joined NCEES in September to oversee the development of the following PE exams: Architectural Engineering, Civil, Industrial and Systems, and Mining and Mineral Processing. She is a graduate of the Georgia Institute of Technology, where

she received a bachelor's degree in civil engineering. Prior to joining NCEES, Dawson was the stormwater services supervisor for the city of Asheville, North Carolina.

She replaces Susan Cline, P.E., who has moved to a new role as technical editor. Cline is replacing Tom King, Ph.D., P.E., who is retiring after 32 years with NCEES. He is temporarily continuing to assist with technical editing part time.

Puerto Rico exam administration

At the request of the Puerto Rico board, the October 2017 exam administration in the territory was cancelled due to hurricane damage. Examinees were rescheduled for the April 2018 administration; NCEES will refund the exam fees for any examinee if requested.

For more information on NCEES exams, visit ncees.org/exams.

ENFORCEMENT BEAT

continued from page 8

The Alabama board is slightly different in the evaluation of complaints. When a complaint is received, it is submitted to the board's Investigative Committee for review. If an investigation is required, the committee reviews all of the material obtained in the investigative case file and determines what recommendation it will make to the board. The full board is not involved in the initial determination of whether an investigation should be conducted.

The *Investigation and Enforcement Guidelines* also contains an appendix with numerous examples of documents related to all aspects of the investigative process. Two documents related

to the intake of complaints include a standard complaint form and an example of a form for a sworn statement of a complainant.

The guidelines, and a multitude of other enforcement resources, are available by visiting the Member Resources section of ncees.org.

Huett is the executive director of the Alabama board and a member of the 2017–18 NCEES Committee on Law Enforcement.

KENNETH TODD, P.E.
FLORIDA BOARD
OF PROFESSIONAL
ENGINEERS MEMBER



Centennial celebration: Early history of the Florida Board of Professional Engineers

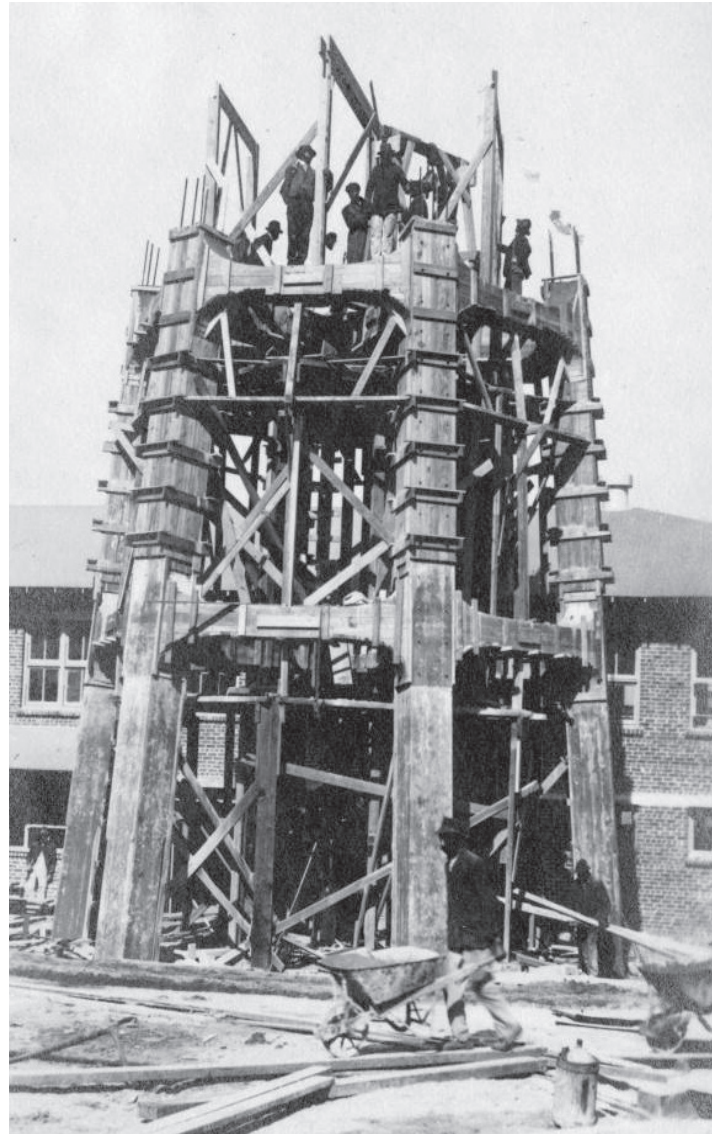
THIS YEAR—2017—IS THE CENTENNIAL OF THE CREATION of the Florida Board of Professional Engineers by the Florida Legislature. In celebration of this milestone, a brief synopsis of the history of its beginnings and the initial actions of the first Board is presented.

After the Civil War, this nation experienced a major expansion in growth and development. Achieving this growth meant the construction of many engineering works, including numerous railway bridges and dams. Many of these failed. Although a number of prominent engineers of that era acknowledged the need for policing unqualified practitioners, they resisted the enactment of laws that would regulate the profession. They recognized that such legislation would involve the political spectrum, which could possibly result in the loss of control of the engineering profession by qualified engineers who had the appropriate education and experience to practice engineering. As the 19th century gave way to the 20th century, the situation was rapidly becoming worse.

In 1907, Clarence Johnston, state engineer of Wyoming, voiced his concern that lawyers, notaries, and others were making maps for state water-use permits and signing them as surveyors and engineers. Working with other engineers, he drafted a bill, and the Wyoming legislature enacted the legislation later that year. Wyoming thereby became the first state in the nation to license engineers. In 1908, Louisiana became the second state to enact similar legislation; however, both of these acts regulated only certain areas of the engineering practice.

Just a few years later in 1916, G.R. Ramsey, city engineer of Orlando, wrote to J.R. Benton, dean of the University of Florida College of Engineering, advocating for the formation of an engineering society. At that time, the state of Florida had relatively few engineers, and those engineers did not have high-profile visibility. For instance, Duval County did not have a full-time engineer, and the cities of Tampa and Miami had no engineering employees to plan or design engineering facilities.

Many of the engineers within the state recognized the importance of forming an engineering society to help remedy



Workers construct a water tower at the Merrill-Stevens shipyard in Jacksonville, Florida, in 1918. Photo courtesy of State Archives of Florida/Bruce

situations like these and many others around the state. Benton undertook the task of forming such a society. In December 1916, the Florida Engineering Society held its first meeting in Jacksonville.

The engineering leadership in Florida recognized early the natural attractions of the area and envisioned the state's

enormous potential for rapid growth, a process that was then underway as a prelude to the booming 1920s. In 1916, Florida's infrastructure was in its infancy and in many instances being carried out by unqualified individuals. As mentioned above, licensing of engineers was taking place elsewhere in the country. Therefore, it was generally considered that regulation of the engineering practice was highly desirable in both the interest of the public and the profession.

The pragmatic element of the leadership group of the newly formed Florida Engineering Society recognized that the nature of legislative politics would make it difficult to pass an effective statute regulating the engineering practice without the backing of a statewide organization of experienced practitioners. It was therefore no coincidence that during the first Florida Engineering Society annual meeting in 1917, a legislative committee was appointed to draft a bill to create a State Board of Engineering Examiners. This legislation was introduced in the state legislature. In May 1917, it was enacted into law as Chapter 7404 of the Florida Statutes, thus becoming the first all-inclusive engineering licensing law in the nation.

The new law regulating the practice of engineering in Florida required that after January 1, 1918, no engineer should practice professional engineering within the state, as defined in the new law, unless he or she had been licensed by the board as a professional engineer. Once an applicant passed an examination conducted by the board, the board issued a certificate authorizing that individual to practice professional engineering.

Governor Sidney Catts appointed the first registration board, consisting of five members, on July 17, 1917. The board met for the first time on September 11, 1917, in Jacksonville and elected their first officers.

A century later, the board—as well as its fellow engineering boards across the United States—remains committed to protecting the interest of public health and safety by regulating the practice of engineering.

Adapted with permission from the July 2017 issue of the Florida Board of Professional Engineers Connection newsletter

HEADQUARTERS UPDATE

continued from page 9

among the members of NCEES but also among members of the international community. Regarding the licensure of engineers, the United States is unique among countries, and therefore NCEES is unique among international organizations. The United States has no system of national licensure of engineers, and a mainstay of the licensure process is the successful completion of technical exams. We are constantly called on at IEA meetings to explain the role that NCEES plays in the process and to affirm that, as an organization, NCEES provides best-practice guidelines for member boards but that NCEES does not mandate standards and that the licensure of an individual is solely within the authority and purview of each individual member board.

Aside from these differences, all member jurisdictions of APEC and IPEA are dedicated to the development and recognition of internationally benchmarked standards to recognize engineering competence. We share a common goal to provide an agreed-to standard that ensures that individuals who are allowed to offer engineering services have the education, experience, and character required to ensure that the welfare of the public is protected.

Both Past President Mamola and I hope that the APEC and IPEA registries will continue to grow and that the value of NCEES membership and participation in IEA will be clearly demonstrated. Unless you have been a member of NCEES leadership, this might be the first time that you have heard about IEA or either mobility agreement. We plan to remedy this in the future by additional communication about IEA and the mobility agreements and potentially hold a workshop at the 2018 annual meeting to discuss the international registries.

It has been and will remain imperative for NCEES to remain an engaged member of the international community and take on leadership roles when possible. Mobility of the license is why NCEES was created. It is our obligation to continue to strive to improve the portability of engineering professionals both domestically and internationally.

For more information on the NCEES International Registry, visit ncees.org/international.

NCEES publishes 2017 Engineering Education Award Book, opens 2018 competition

New award cycle introduces award categories and increases prizes



Daniel Turner, Ph.D., P.E., P.L.S. (right), 2016–17 NCEES president, presents the 2017 NCEES Engineering Education Award grand prize to representatives from the Dordt College Engineering Department at the 2017 NCEES annual meeting. The 2018 award cycle will feature new categories and prizes.

NCEES HAS PUBLISHED THE 2017 NCEES ENGINEERING Education Award Book to celebrate this year’s winners and show how each winner is engaging, enriching, and inspiring the next generation of P.E.s. The award promotes understanding of the value of licensure and encourages partnerships between students and the engineering profession. The latest NCEES publication features the six engineering programs recognized this year for excellence in connecting professional practice and education.

The book showcases each winning project, which involved collaborations with students, faculty, and professional engineers. The book includes interviews with the Dordt College Engineering Department, which won the \$25,000 grand prize for its project, *Liberia Farm Bridge*.

When asked what value a real-world project brings to students, Dordt College faculty advisor Justin Vander Werff, Ph.D., P.E., stated, “A real-world project focuses students on serving others. The challenge and value of the project is that it requires that students empathize and see things from the perspective of those they are serving rather than their own particular viewpoint.”

New categories, prizes for 2018

As it celebrates the 2017 winners, NCEES invites EAC/ABET-accredited programs from all engineering disciplines to compete for the 2018 NCEES Engineering Education Awards.

The organization is introducing new award categories and prize amounts for this year’s competition to encourage a broad spectrum of engineering programs to enter.

The 2018 NCEES Engineering Education Award categories are

- International projects
- Community enhancement projects
- Public welfare and health services/care projects
- Energy and sustainability projects
- Device/design/prototype projects
- Freshman/sophomore design projects
- Innovation projects

Programs entering the competition will select the category that best fits the intent and spirit of their project.

In addition to launching new award categories, NCEES is introducing new award amounts and increasing the number of possible winners. Award amounts include one \$25,000 grand prize winner and seven \$10,000 prize winners.

For the 2018 cycle, projects must be in progress or completed by March 12, 2018. The entry deadline is May 1, 2018.

Detailed entry information and a downloadable PDF of the NCEES Engineering Education Award Book are available at ncees.org/award. All promotional materials are available to download online, and printed copies are available by request.

UPCOMING EVENTS

December 1-2

UPLG Committee Meeting
San Diego, California

December 4-5

ACCA Meeting
Charleston, South Carolina

December 8-9

Surveying Exam Module
Task Force
Oklahoma City, Oklahoma

December 11-12

Law Enforcement
Committee Meeting and
MBA Committee Meeting
San Diego, California

January 4-6

PE Electrical and Computer
Exam Meeting
Clemson, South Carolina

January 5-6

EPE Committee Meeting
Clemson, South Carolina

January 8-9

EPP Committee Meeting
Nashville, Tennessee

January 10-11

Education Committee Meeting
Nashville, Tennessee

January 12-13

FE Exam Committee Meeting
Clemson, South Carolina

January 18-20

EPS Committee Meeting
Clemson, South Carolina

January 19-20

FS/PS Exam Meeting
Clemson, South Carolina

Technology Task Force Meeting
San Diego, California

January 26-27

PE Civil Exam Meeting
Clemson, South Carolina

PE Control Systems Exam
Meeting
Houston, Texas

January 29-30

PE Petroleum Exam Meeting
Clemson, South Carolina

MEMBER BOARD NEWS

CONNECTICUT

The board's new address is Department of Consumer Affairs, Board of Examiners for Professional Engineering and Land Surveying, 450 Columbus Boulevard, Suite 901, Hartford, CT, 06103-1840.

KENTUCKY

Member Steven Gardner has been nominated to serve as director of the Office of Surface Mining Reclamation and Enforcement. The office is the Interior Department's top regulator of the coal mining industry.

ILLINOIS PE, PS, AND SE

Kyle Lazell is now the member board administrator for the three boards.

NEBRASKA PE

Tom Laging is no longer a member.

NEVADA

Tracy Larkin-Thomason and Brent Wright are new appointees. Randall Long and Chris Roper are no longer members.

PENNSYLVANIA

Jeannie Bronshtein is the new board administrator. She replaces Robin Shearer, who has retired.

VIRGINIA

Mel Price is a new appointee. Corey Clayborne is no longer a member.

WEST VIRGINIA PS

Douglas McElwee is a new appointee. Paul Hill is no longer a member.

EMERITUS

The board of directors approved the following emeritus members at its October 2017 meeting.
Florida PE: John Burke; **South Carolina:** Nancy Cottingham.

CORRECTIONS

The NCEES *Bylaws* has been reprinted due to an editing error in Section 4.04, Elections and Terms of Office. The updated version is posted at ncees.org/publications.

The table on height limitations by jurisdiction in "What is a significant structure?: A look at different S.E. licensing systems" in the June 2017 issue contains an error. The Oregon entry should read, "Over four stories or 45 feet above average ground level." The article has been corrected online.

Patrick J. Tami, P.L.S.
President
California

James J. Purcell, P.E.
President-Elect
New Jersey

Daniel S. Turner, Ph.D., P.E., P.L.S.
Past President
Alabama

Timothy W. Rickborn, P.E.
Treasurer
South Carolina

Maurice L. Bowersox, P.E.
Central Zone Vice President
Kansas

Paul J. Tyrell, P.E., P.L.S.
Northeast Zone Vice President
Massachusetts

Christopher P. Knotts, P.E.
Southern Zone Vice President
Louisiana

Brian R. Hanson, P.E.
Western Zone Vice President
Alaska

Jerry T. Carter
Chief Executive Officer
South Carolina



NCEES

P.O. Box 1686
(280 Seneca Creek Rd)
Clemson, SC 29633 USA
864-654-6824

PERIODICALS
POSTAGE PAID
CLEMSON, SC
29633

Licensure EXCHANGE

A publication of the National Council of
Examiners for Engineering and Surveying

Comments or questions can be directed to
editor@ncees.org.

Jerry T. Carter, Chief Executive Officer
and Publisher

Keri B. Anderson, Manager of
Corporate Communications

Jennifer L. Williams, Senior Editor

Brittany D. Wilson, Graphic Designer

ISSN NO. 1093-541X

VOLUME 21, ISSUE 6

All articles within *Licensure Exchange*
may be reprinted with credit given to this
newsletter and to NCEES, excluding those
articles reproduced in *Licensure Exchange*
with permission from an original source.

The ideas and opinions expressed in *Licensure
Exchange* do not necessarily reflect the policies
and opinions held by NCEES, its board of
directors, or staff.

POSTAL NOTICE

Licensure Exchange is published bimonthly by
NCEES, 280 Seneca Creek Road, Seneca, SC
29678-9214.

Periodicals postage paid at Clemson, SC 29633

Postmaster: Send address changes to
Licensure Exchange, P.O. Box 1686,
Clemson, SC 29633-1686



The teacher of the winning team of the 2017 Best Land Surveying Practices award for Florida Tampa Bay Region congratulates her students. NCEES offers the special award at the Future City Competition regionals and national final.

Judges for Future City regionals surveying award needed

As part of its longstanding support of DiscoverE Engineers Week, NCEES is continuing its sponsorship of the Best Land Surveying Practices special award at the regional and national levels of the Future City Competition. NCEES is seeking judges for this award for the regional competitions that will take place across the country in January 2018.

The award recognizes the design that employs the best land surveying practices, taking into consideration the high standards used by surveyors to safeguard the public health, safety, and welfare. Teams should demonstrate the skills and resources surveyors provide in the design, development, and maintenance of their future city.

NCEES has sponsored this award at the national competition for more than 10 years, and this is its seventh year offering it at the regional level. By expanding into the regional competitions, NCEES has introduced approximately 40,000 middle-school students from 1,350 schools in over 40 national regions to the surveying profession each year.

If you would like to share your enthusiasm for the surveying profession by serving as a judge at a regional competition, contact Christian Cernauskas, NCEES marketing and outreach associate, at cernauskas@ncees.org.

For a list of regional competition locations and dates, visit futurecity.org/regions.