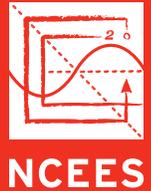


Licensure EXCHANGE

AUGUST 2017
Volume 21, Issue 4



JASON KENT, P.E.

OREGON BOARD OF EXAMINERS FOR ENGINEERING
AND LAND SURVEYING MEMBER

RON SINGH, P.L.S.

OREGON BOARD OF EXAMINERS FOR ENGINEERING
AND LAND SURVEYING PAST MEMBER

UNDERSTANDING DIGITAL SIGNATURES

NCEES MODEL LAW 140.10(C) REQUIRES DOCUMENTS to be sealed, signed, and dated. Traditional handwritten signatures on physical engineering documents worked well when documents were written or drawn by hand. They also worked reasonably well in the early days of using computers to simply speed up the document-development process, with the intent of producing final documents on paper. However, computer use has progressed into an era in which electronic documents are transmitted, reviewed and approved, used during the bidding process and for stakeless construction, and archived for future retrieval.

Applying a handwritten signature to these electronic files requires printing the document, signing it, and then scanning it back into an electronic file. This process loses the electronic file's native format and any imbedded intelligence. It is also time consuming and unnecessary.

Electronic vs. digital signatures

The terms *electronic signature* and *digital signature* are often used interchangeably. In the information security world, however, the two terms are distinctly different.

An electronic signature may include scanned images of handwritten signatures or typed notations such as “/s/ Jane Doe” without any authentication or encryption system included. For example, a drawing set that uses computer-aided drafting with a digital reproduction of an engineer's or surveyor's seal and signature across the seal is an electronic signature. This type of signature is neither a handwritten signature nor a digital signature, and it is digitally insecure. Similarly, a signature block on an email message may also be considered an electronic signature.

The term *digital signature* is more properly used to describe a signature system applied to an electronic document that uses specific technical processes to provide significant added signer authentication, document authentication, document encryption (if necessary), and efficiency. Instead of using pen and paper, a digital signature uses digital keys to attach the identity of the signer to the document and record a binding commitment to the content of the document. Digital signatures enable authentication of digital documents, assuring the recipient of the sender's identity and the document's integrity. A digital signature provides who signed the digital file. A time stamp of that digital signature provides when the digital file was signed.

Why use digital signatures?

A digital signature provides a greater degree of security than a handwritten signature does. The recipient of a digitally signed document can verify that the document originated from the person whose signature is attached and that the document has not been altered (intentionally or accidentally) since it was signed.

Digital signature technology is not an emerging technology. It has undergone thorough research and development

continued on page 2

DIGITAL SIGNATURES

continued from cover

over the past two decades. Several national and international standards allow digital signatures. These standards were developed and are accepted by many corporations, banks, and government agencies. A robust digital signature system is capable of creating a signature unique to the person using it, capable of verification, under the sole control of the person using it, and linked to the document so that the digital signature is rendered invalid if any part of the document is altered. These requirements are listed in NCEES *Model Rules* 240.20 C8. Less-robust digital signature systems that do not provide these benefits should be avoided.

What is needed to create a digital signature?

Creating a digital signature requires software, a signing certificate, and optionally, hardware to provide further security with a signer's private key. Creating the signing certificate involves making a public-private digital key pair and, optionally, obtaining the services of a certificate authority.

The public key certificate creates proof of the signer's identity and is made available to anyone who needs to verify the signature. Also called a signer's certificate, the public key certificate is created by the combination of the public key and proof of identity.

The document is signed with the private key, which is kept by only the signer. The public and private keys are related mathematically. Knowing the public key allows a signature to be verified but does not allow new signatures to be created. If the private key is not kept private, someone could create the original signer's signature on a document without consent. It is critical to keep the private key secret.

To verify a digital signature, the verifier must have access to the signer's public key and have assurance that it corresponds to the signer's private key. This assurance can be provided by using a trusted third party to associate an identified signer with a specific public key. That trusted third party is known as a certification authority.

To associate a key pair with a prospective signer, the certification authority issues a certificate—an electronic record that lists a public key as the subject of the certificate—and

confirms that the prospective signer identified in the certificate holds the corresponding private key. The certification authority performs a background check on each person who is assigned a signing certificate.

A self-signed certificate is one that is created by the individual signer without the services of a certification authority. It should be avoided. Digital IDs provided by third parties are generally considered more secure because an independent certification authority has ratified them. A signature applied using a self-signed certificate signature tells document recipients, "This document is valid, and I am authorized to sign it," while a signature applied using a third-party digital ID tells them, "This document is valid, I am authorized to sign it, and [certification authority] verifies my identity." This additional assurance can make a big difference when it comes to legal documents or documents sent out to a wide audience.

Security of digital signatures

Digital signatures provide a secure, efficient, and convenient process for sealing a document pursuant to NCEES *Model Law* 140.10 C. For recipients of digitally signed documents, they also provide assurance that a document is authentic and original. Digital signature technology is well established and accepted in a multitude of settings. In addition, certification authorities have developed technologies that can evolve to meet the scenarios set forth in *Model Rules* 240.20 C.

Member boards should recognize that digital signature technology is not universally understood, and the terms *digital signature* and *electronic signature* are commonly confused. Boards and licensees should be aware of the distinctions between these strategies and recognize the insecurities of using electronic signatures as well as the robustness and security afforded by digital signature technology.

FROM THE PRESIDENT



DANIEL TURNER, PH.D., P.E., P.L.S.
NCEES PRESIDENT

Looking back on a wonderful year

THANK YOU FOR A YEAR RICH IN GOOD EXPERIENCES. My wife, Linda, and I had opportunities to meet many of you. We learned how seriously you take your commitment to NCEES and how you love your jobs, your profession, and NCEES. We enjoyed these experiences and gleaned wonderful memories and new friends.

NCEES volunteers

NCEES is fueled by the dedicated efforts of a large number of volunteer professionals: 596 on 70 state boards, 772 on 28 exam development committees, 117 on 13 NCEES standing committees and task forces, and 8 on the board of directors. Almost 1,500 people invest their time and hearts in the future of the profession they love. Many of you are top-level leaders, owners, managers, and visionaries for your companies, allowing you to make major contributions to our current and future strategies and programs.

The constant I saw everywhere was your goodness and dedication as volunteers. You worked professionally and unselfishly to deliver high-quality NCEES processes and products. Your skills and attitudes allowed NCEES to accomplish more than most volunteer organizations. And always, you worked to protect the health, safety, and welfare of the public while undergirding the engineering and surveying professions. Thank you, volunteers, for what you have done and what you will continue to do for NCEES.

NCEES staff

NCEES is served by 73 staff members, and my dad would have said with a big old grin on his face, "They are all keepers!" They are talented and knowledgeable in their fields, interested in helping volunteers, and cross trained to help with almost anything that might pop up at a conference, committee meeting, or workshop. They know ongoing activities, are prepared for meetings, and have the meeting rooms and materials ready. They make it easy for us volunteers to be productive and have a great time doing so. And they certainly

Thank you, volunteers, for what you have done and what you will continue to do for NCEES.

know how to feed volunteers to keep us happy. Credit goes to CEO Jerry Carter, his directors, and all staff for their professional approach, positive attitudes, and commitment to the volunteer work force. Thank you, NCEES staff, for what you do to make volunteers' lives easier and for your continuing devotion to your jobs.

Respect from peer organizations

Presidential officers and senior staff members meet with peer organizations to stay abreast of ongoing activities and to identify good opportunities for NCEES. This provides a coalition of organizations with interests in licensure. One result is that NCEES cosponsored with ABET the annual meeting of the International Engineering Alliance (IEA) in Anchorage, Alaska, in June. The announcement, literature, and event program illustrated the stature in which NCEES is held around the world. In particular, CEO Jerry Carter is well known for his work with IEA. I hope that you recognize the significance of NCEES and ABET cosponsoring a meeting of international engineering organizations. It is a prestigious occasion.

In closing, I express appreciation to my precious (and patient) wife, Linda, who has become an NCEES trooper. I deeply appreciate and support NCEES volunteers and staff. Please keep doing what you are doing, because it is wonderful. Thank you to committee and task force members who worked so hard and so well. Thank you to Past President Michael Conzett, P.E., who mentored and encouraged me, and to Patrick Tami, P.L.S., our incoming 2017–18 president, who is already "in the harness and pulling hard." Good luck, Pat; you are about to enjoy a great year.

Nominees for president-elect and treasurer, incoming vice presidents discuss vision for NCEES

NCEES WILL ELECT A NEW PRESIDENT-elect and treasurer at its 2017 annual meeting, which will be held August 23–26. Nominees for president-elect rotate among the four NCEES geographical zones. The 2017–18 president-elect will be from the Northeast Zone. At its 2017 interim meeting, the zone selected James Purcell, P.E., to be its nominee. Nominations for treasurer are open across the zones. There are three candidates: Shelley Macy, P.E.; David Mongan, P.E.; and Timothy Rickborn, P.E.

Two new vice presidents will join the 2017–18 board of directors, which will be installed at a banquet on August 25: Christopher Knotts, P.E., representing the Southern Zone, and Paul Tyrell, P.E., P.L.S., representing the Northeast Zone.



Nominee for President-Elect James Purcell, P.E., New Jersey State Board of Professional Engineers and Land Surveyors

NCEES Experience: Committee on Uniform Procedures and Legislative Guidelines Chair (2016–17); Northeast Zone Vice President (2013–15); Committee on Law Enforcement Board Liaison (2013–15); Financial Reserves Task Force Member (2015–16); Computer-Based Testing Implementation Task Force Member (2012–13); Special Committee on Bylaws Chair (2012–13); Engineering Education Award Jury Member (2012);

Leadership Task Force Member (2011–12); Committee on Law Enforcement Chair (2010–12), Member (2009–10)

Purcell has been a member of the New Jersey board since 2005. He is technical director of the New Jersey Asphalt Pavement Association.

How has your past experience prepared you for this office?

I have been engaged in the profession and, more broadly, in my community for as long as I can remember. As a student, I was the founder and first president of the University of Connecticut’s chapter of the National Society of Professional Engineers (NSPE). Early in my career, I continued my involvement with NSPE and also joined the American Society of Civil Engineers and the American Society of Highway Engineers, serving each in a variety of roles.

In my community, I’ve held leadership positions in different organizations. Sitting on the stewardship committee for the Tannersville Cranberry Bog, a Nature Conservancy property, I helped protect this environmentally critical gem in the heart of the Poconos. Becoming involved in Habitat for Humanity, I founded the Monroe County (PA) chapter and served several years as its president. At the same time, I served on my community’s architectural review board and then on its property owners association, eventually being elected president for two terms. I now serve as chair of my county workforce development board and was just reelected for a fourth term.

As I’ve served my profession, I’ve gained significant insight into the issues facing professional engineers and surveyors. In serving NCEES on various committees and as vice president, I’ve gained further insight into how we can address these, working together as member boards and with other organizations.

What are the key issues that you want to focus on as president in 2018-19?

Professional licensure has faced a number of challenges in recent years, questioning its necessity, confusing the public, and placing doubts about the importance of licensure in the minds of our youth.

The general public’s lack of understanding about the professions has been an issue since the earliest days of licensure. I believe that NCEES can have a greater role in advancing the importance of licensure, educating the public and our elected officials on the role licensure plays, and helping stem the tide of deregulation.

NCEES is continuing to make strides in reducing barriers to license mobility, but additional efforts are needed. The NCEES E3 system has gone a long way to facilitate mobility, with the centralized repository of examination, education, and experience records that are available to all member boards. As the examination process becomes even more decoupled from the application process, boards will be more incentivized to ease restrictions that limit mobility. We can and should do more, and

successes like the upcoming changes to New Jersey regulations that will align my state more closely with NCEES models can be duplicated.

NCEES has developed great speaker's kits for explaining the importance of licensure to college students. Recently, I worked with staff to modify a presentation to young engineers in government. NCEES staff are working on materials and hands-on activities to help elementary, middle, and high school students understand what engineering and surveying are all about and why careers in the licensed professions are so important. I believe this is critical to the continued health of our professions and will encourage all of our members to become more engaged with the public.

What longer-term issues do you think will be important for NCEES to address in the future?

Continued pressures from outside to reduce regulatory burdens are a threat to licensure and a danger to the public. NCEES should be on the forefront to resist this as it pertains to surveying and engineering.

The continual increase in the body of knowledge and specialization of disciplines will be ongoing issues for NCEES. Working with the Participating Organizations Liaison Council and with academia, NCEES can play a significant role in establishing the minimum competency requirements for engineers and surveyors.



**Incoming
Northeast Zone
Vice President
Paul Tyrell,
P.E., P.L.S.,
Massachusetts
Board of
Registration
of Professional
Engineers and Professional Land Surveyors**

Engineers and Professional Land Surveyors

NCEES Experience: Committee on Examinations for Professional Engineers Member (2016–17, 2012–14); Committee on Examination Policy and Procedures Chair (2014–16); Committee on Nominations Member (2015–16), Alternate (2014–15); Definition of Engineering Task Force Member 2013–14

Tyrell has been a member of the Massachusetts board since 2011. He is the chief civil engineer at STV's Boston office.

How has your past experience prepared you for this office?

I've had the opportunity to become familiar with the NCEES organization slowly and steadily over the past six years. I was fortunate to get an assignment and serve on the EPE Committee during my first year on the Massachusetts board. From there, I served as chair of the EPP Committee and as a member of the Definition of Engineering Task Force. Each of these assignments has afforded me the chance to work with extremely talented and committed people. These folks have set the bar high and challenged me to bring my best to any and all assignments in NCEES, including my new position as Northeast Zone vice president.

What are the key issues that you want to focus on as Northeast Zone vice president?

I find my involvement with NCEES extremely rewarding; but when I discuss the exciting things being done by the organization with my peers in the engineering community, I'm surprised how little is known about the hundreds of people involved in exam development, committee, and task force work. I'd like to focus my time as Northeast Zone vice president on creating greater awareness of NCEES and the many important activities that the organization is involved in outside exam development.

What longer-term issues do you think will be important for NCEES to address in the future?

It's clear that the surveying profession is struggling with the numbers required to meet the demands of the public. I'm thrilled that NCEES has recognized this issue as well and has a number of programs in place to increase awareness and support the need for education, with the overriding goal of increasing licensure. I would like to continue the focus on increasing these numbers.



**Incoming
Southern Zone
Vice President
Christopher
Knotts, P.E.,
Louisiana
Professional
Engineering
and Land
Surveying Board**

NCEES Experience: Committee on Finances Member (2016–17); Southern Zone Secretary-Treasurer (2015–17); PE Civil Exam Development Committee Volunteer (2014)

Knotts has been a member of the Louisiana board since 2013. He is the deputy assistant secretary for public works and water resources at the Louisiana Department of Transportation and Development.

How has your past experience prepared you for this office?

I have had the privilege of serving on local and state boards for the American Society of Civil Engineers and the Louisiana Engineering Society and on various church committees. My NCEES service includes the PE Civil Exam Development and Finance committees, in addition to serving as Southern Zone secretary-treasurer

continued on page 6

OFFICER Q & A

continued from page 5

since 2015. In my position with the Louisiana Department of Transportation and Development, I serve on multiple boards and commissions related to water resources.

My NCEES service allowed me to gain valuable insight into the organization, its mission, and its people in a relatively short time frame. Service on the various boards and committees taught me how to motivate volunteer members, manage members who may have different agendas and values, and overall be an effective team member who adds value to the group.

What are the key issues that you want to focus on as Southern Zone vice president?

I would like to focus on a few issues during my term as vice president. The first issue is state-specific exams and education for surveyors. We must strive to gain consistency or at least regional uniformity to assist surveyors with mobility. Second, we must encourage and support fair, consistent discipline of licensees and proactive enforcement of licensure rules and laws. The NCEES Enforcement Exchange is an extremely valuable tool to assist in achieving this goal, but more member boards must input their data to make the tool more effective. I would like to work to identify and remove the barriers that keep boards from entering their law enforcement data.

What longer-term issues do you think will be important for NCEES to address in the future?

There are two long-term issues I believe to be important to NCEES. The first is technology. As technological advances

continue to change our professional landscape, we must ensure that our *Bylaws* and procedures are updated to reflect those changes so that we remain relevant. Second, as the assaults on professional licensure continue, NCEES must be proactive and work diligently with other organizations to protect our licensure process, as this ultimately protects public health, safety, and welfare.



**Treasurer
Nominee
Shelley Macy,
P.E., Wyoming
Board of
Professional
Engineers and
Professional
Land Surveyors**

NCEES Experience: Committee on Finances Chair (2016–17); Committee on Finances Member (2013–16); PE Mechanical Exam Development Committee Volunteer (2015)

Macy has been a member of the Wyoming board since 2011. She is president of Macy Engineering, PC, and provides consulting mechanical engineering design services for commercial projects.

How has your past experience prepared you for this office?

I have been in private practice, in regulatory positions, a developer, and owner and operator of multiple small businesses. I understand the difference between the leadership approaches depending on the needs of the position, based upon the organization and its stakeholders.

My education includes a bachelor of science degree in mechanical engineering and a master of business administration. I value and work hard to remain current in an ever-changing professional workplace. This is demonstrated by these two achievements being spaced apart by 20 years and bridged with additional academic work and continuing education.

What are the key issues that you want to focus on if elected treasurer?

In my opinion, the treasurer for NCEES should perform the duties as directed by its members and board. It is important to remember that NCEES is a nonprofit organization dedicated to advancing licensure for engineers and surveyors. Being comprised of licensing boards, the body is made up of highly intelligent and respected professionals with diverse backgrounds and opinions. I believe everyone has a voice that should be heard, with access to clear answers regarding financial questions and a vote that matters in this organization.

I would strive to be transparent and work diligently to answer any questions to assist with educated decision making. It is important for the treasurer to be unbiased and responsive to the needs of the organization. I am capable from a technical perspective, and I have the emotional intelligence to work in a team format and access the tremendous resources available within the Finance Committee and NCEES staff for top-notch work production. Every issue presented, whether in the form of a formal charge or an individual's question, would be thoroughly vetted and addressed. I would strive to continue the historical integrity of the position.

What longer-term issues do you think will be important for NCEES to address in the future?

It is important to be mindful of the financial policies of NCEES. Financial Policy 1 addresses Council funds, including the maintenance of operating accounts and operating reserve accounts, long- and short-term investments, and reserve funds.

As treasurer, I would perform the duties of the position and keep its members and governing board aware of the financial health of the organization with real data compared against budgeted. I would also be very aware of maintaining the reserve funds as directed by Financial Policy 1. NCEES is strictly mandated on its revenue stream, as are the individual member boards. On a long-term basis, NCEES needs to keep its finger on the pulse of the market and change as required to remain relevant.

A Chinese proverb says, “When the winds of change blow, some people build walls and others build windmills.” As technical people, we can’t help but solve problems and build what we believe is right. I enjoy change, and I enjoy building windmills. I would appreciate your vote in August and look forward to the opportunity to serve in a larger capacity.



**Treasurer
Nominee
David Mongan,
P.E., Maryland
State Board for
Professional
Engineers**

NCEES Experience:

Advisory Committee on Council Activities Chair (2016–17), Member (2015–16); Committee on Finances Member (2011–2014)

Mongan has been a member of the Maryland engineering board since 2010. He is the retired

president of Whitney, Bailey, Cox, and Magnani, an A/E firm headquartered in Baltimore.

How has your past experience prepared you for this office?

My specific experience in a treasurer/finance capacity includes 14 years as president of a \$20 million A/E firm and two years each as treasurer and assistant treasurer of the American Society of Civil Engineers (ASCE), where I helped develop and oversee a budget of more than \$50 million annually. I also provided oversight for the ASCE investment fund of over \$25 million. When I was assistant treasurer, ASCE was in financial difficulty and was using its reserves for day-to-day operations. When I completed my term as treasurer, we had rebuilt the reserves to more than 30 percent.

I served for three years on the Finance Committee of Engineers Without Borders and three years on the Finance Committee of the American Association of Engineering Societies. I also served for two years on the NCEES Finance Committee and hence am very familiar with the details of the financial situation of NCEES. From these experiences, I have gained a firsthand understanding of the role of treasurer in a professional society and the financial acumen that is required to hold that position.

What are the key issues that you want to focus on if elected treasurer?

My goal as treasurer will be to work with the board of directors, NCEES staff, and the Committee on Finances to maintain NCEES’ strong financial position for years to come. I will endeavor through the Finance Committee to have the fee for all exams more accurately reflect the actual cost of the exam. I will conduct an in-depth review with NCEES’ auditing firm to ensure that the established operating procedures and processes are adequate.

I also want to fully implement the new computerized reimbursement system. I have worked with this type of system at ASCE and found it to be efficient and provide for a much quicker reimbursement process. I believe that NCEES should more closely adhere to the principles of the Sarbanes/Oxley Act. As more exams transition to computer-based testing, the amount required for an exam breach will continually be reduced. We need to examine our reserves to see if they are at the appropriate levels.

What longer-term issues do you think will be important for NCEES to address in the future?

Unless the budget is neutral or negative, reserves will increase. We need to responsibly reduce the reserves, possibly by having a Finance subcommittee or other committee annually recommend to the board various organizations or programs to fund. As more boards adopt early exam taking, NCEES will take a greater role in the licensing process. At some point, the boards may only be responsible for reviewing complaints and other infractions. This could be construed as a step toward national licensure. Is this what NCEES and the member boards want? A current but increasing threat to licensure is the attempt in many states to remove the requirement for engineering registration and licensure. NCEES must work with other organizations to keep licensure intact in order to continue to protect the public. Also, the North Carolina court decision will have continuing impacts on NCEES and member boards for years to come. Lastly, while a part of NCEES’ near-term strategic plan is to engage younger professionals in NCEES and board activities, the process for selecting board members will make this an ever longer and more complex endeavor.

continued on page 8

OFFICER Q & A

continued from page 7

Treasurer Nominee



Timothy Rickborn, P.E., South Carolina Board of Registration for Professional Engineers and Surveyors

NCEES Experience: Committee on Finances Member (2012–16); Structural Engineering Exam Development Committee Member (2002–present)

Rickborn has been a member of the South Carolina board since 2012. He is a structural engineer and owner of Rickborn & Associates, LLC.

How has your past experience prepared you for this office?

First, I have developed good financial management skills through the leadership roles that I have held in various community and professional organizations, as structural department head at a previous employer, as treasurer of one organization for 8 years, and by operating my own business for 16 years. I have been intimately involved in the development and management of budgets, development of policies and procedures, and long-range planning. My involvement in these organizations has reinforced the importance of responsibility, accountability, and good financial stewardship.

Second, I served on the Finance Committee for four years. This provided me with an understanding of the Council's finances and goals. It also provided me the opportunity to work with members from different zones, past treasurers, and NCEES staff.

Third, I have been an active volunteer on the SE Exam Development Committee since 2002. I have served as chair of the multiple-choice portions of the vertical and lateral exam components since 2010. During this time, I have learned much about the exam development process. I understand the challenges that come with converting the professional exams to computer-based testing (CBT), including allocation of time and resources to exam bank conversion, preparation of supplied reference manuals, and formulation of new innovative exam items. As conversion of the professional exams to CBT continues during the next few years, the knowledge I have gained as an exam volunteer would be beneficial in the role of treasurer.

What are the key issues that you want to focus on if elected treasurer?

As a member-driven organization, we must be ever vigilant to monitor income and expenses in order to maintain our strong financial position. This stability will allow NCEES to continue its proven leadership in exam development and to continue providing support services that benefit member boards, licensees, and students.

The CBT conversion process and NCEES assuming full responsibility for exam development activities for all Group II exams will increase demand for additional meeting space at NCEES headquarters. Both will require careful monitoring of the financial impacts and liabilities.

If elected treasurer, I would concentrate on improving communications between the board of directors, committees, and

members to ensure that our financial matters remain transparent and understandable. I would monitor our financial resources to ensure that they are used wisely in furtherance of the NCEES mission.

What longer-term issues do you think will be important for NCEES to address in the future?

NCEES has many important issues to address as we continue to pursue the goals and objectives outlined in the NCEES Strategic Plan. These include items in the areas of advocacy for member boards; education, examination, and experience; public awareness and growth of licensure; and continued monitoring of NCEES' governance systems, processes, and structure. Efforts to address these items will require evaluation of the financial impacts to NCEES and the long-term benefits for engineering and surveying.

Many jurisdictions will face or already have faced efforts to reduce licensure regulations that are considered burdensome. Additional outreach efforts will be needed to better educate the public and legislative bodies regarding the importance of engineering and surveying licensure regulations in protecting the health, safety, and welfare of the public.

Mobility remains an important issue requiring further understanding of each jurisdiction's laws, rules, and administrative processes. NCEES should provide additional efforts to foster better understanding amongst jurisdictions and streamline comity licensure.

BRIAN HANSON, P.E.
 NCEES WESTERN ZONE
 VICE PRESIDENT



Proposing a revised NCEES voting structure

OUR MISSION AS REGULATORY boards is to safeguard the health, safety, and welfare of the public that we serve. As part of our efforts to fulfill that mission, we represent our state, district, or territory at the national level through participation in NCEES. The Western Zone is proposing a change to the NCEES voting structure that could better reflect our constituents.

NCEES is made up of 70 member boards, which represent a total of 55 states (in the NCEES *Bylaws*, “state” refers to any state, territory, or political subdivision of the United States). Under the current *Bylaws*, each member board is given one vote. Forty-one states have one member board that represents both engineering and surveying. Thirteen states have two member boards—one representing engineering and one representing surveying. One state has three member boards—representing engineering, surveying, and structural engineering, respectively. This means that 14 states have more than one vote on matters before the Council.

Legislators decide whether a state has one or more boards for regulating engineering and surveying, and the number of boards does not always reflect the overall population or the number of professionals in that state. A state with a thousand professional engineers and fewer than a million residents could have separate boards for engineering and surveying (and two Council votes), while a state with tens of thousands of professional engineers and many millions of residents could have a combined board (and one Council vote).

Representation before the Council should reflect the constituents served by the member boards. As shown in the table below, the current model does not reflect the number of licensees or the overall populations that member boards serve.

The Western Zone is proposing to revise the voting structure so that boards representing both the engineering and surveying professions will have two votes. Boards representing only one of these professions will continue to have one vote. The zone will present a motion for Council vote at the 2017 annual meeting in August.

Impact on member boards

The proposed change would not affect the 14 states that have separate boards representing engineering and surveying.

The 41 states that currently have one board representing both engineering and surveying would add one vote so that the two professions would be represented in that state. The new vote totals would be more in line with the percentage of licensees and population for each state.

This proposal would not change the current member board fee structure nor change the number of delegates that NCEES funds to attend the zone or annual meetings.

The Western Zone recognizes that NCEES is a federation of regulatory boards and agrees that having a voting model based on licensees or population is not appropriate for NCEES. However, the data for licensees and populations does show an inequity in the current voting structure. This is why the zone is proposing a model where each state gets an equal number of votes for each profession that NCEES represents.

The Western Zone motion and its full rationale for proposing the change are included in the *Action Items and Conference Reports*. The Council will discuss the motion at the annual meeting. If you have any questions before the meeting, please let me know so that you can have the information you need to make an informed decision.

ZONE DATA FOR VOTES AND LICENSEE POPULATIONS

Zone	Licensees	Population	Current Votes	Proposed Votes
Central	179,373 (19%)	67,941,429 (21%)	17 (24%)	25 (23%)
Northeast	179,421 (19%)	65,690,294 (21%)	20 (29%)	26 (23%)
Southern	305,758 (33%)	106,727,311 (34%)	18 (26%)	30 (27%)
Western	275,351 (29%)	76,882,561 (24%)	15 (21%)	30 (27%)
Total	939,903	317,241,595	70	111

Dordt College wins 2017 NCEES Engineering Education Award

NCEES IS PLEASED TO ANNOUNCE THE WINNERS OF THE organization's Engineering Education Award. The grand prize was awarded to the Dordt College Engineering Department. The award jury met June 6, 2017, in Clemson, South Carolina, to select the \$25,000 grand prize winner.

The department received the top prize for its submission *Liberia Farm Bridge*. For the project, undergraduate civil engineering students worked closely with professional engineers, construction management professionals, and other consultants to design a bridge to connect a farm and three communities to healthcare, food, and markets. The design team also performed the construction in Harbel, Liberia, assisted by others from the school with construction management experience and 30 local Liberians. To ensure that the bridge remains functional long into the future, the design team also created a regular maintenance schedule.

The jury praised the project for incorporating both the design and build to respond to the true needs of the local Liberians.

"This project provided a sustainable solution to needed infrastructure and contributed to the economic vitality of rural communities in Harbel, Liberia," said NCEES Engineering Education Award Juror Sallye Perrin, P.E. "The collaboration between the students and P.E.s is commendable."

The jury selected five additional winners to receive awards of \$7,500 each:

- George Mason University
Sid and Reva Dewberry Department of Civil, Environmental, and Infrastructure Engineering
Design and Construction of a Reliable Drinking Water System for an Orphanage in Central America
- Marquette University
Department of Civil, Construction, and Environmental Engineering
El Bosque Pedestrian Bridge
- North Carolina State University
UNC/NCSU Joint Department of Biomedical Engineering
Belltower Medical—Urinary Catheter Solutions
- Seattle University
Department of Civil and Environmental Engineering
Design of a Care Facility for Young Mothers in Uganda



Construction workers for the Liberia Farm Bridge project take a break on their completed bridge. The Engineering Department of Dordt College in Sioux Center, Iowa, won the \$25,000 NCEES Engineering Education Award grand prize for the design and construction project.

- Seattle University
Department of Civil and Environmental Engineering
Restoration and Replacement Options for Utility Company Bridge

The NCEES Engineering Education Award recognizes engineering programs that encourage collaboration between students and professional engineers. EAC/ABET-accredited programs from all engineering disciplines were invited to submit projects that integrate professional practice and education.

A jury of NCEES members and representatives from academic institutions and professional engineering organizations selected the winners. The jury members considered criteria such as

- Successful collaboration of faculty, students, and licensed professional engineers
- Protection of public health, safety, and welfare
- Multidiscipline or allied profession participation
- Knowledge or skills gained
- Effectiveness of display board, abstract, and project description

Award presentation

Dordt College will be honored at the upcoming NCEES annual meeting. Representatives from the winning project will receive the award on behalf of the university's engineering department at a luncheon on August 25.

2018 competition

NCEES is currently preparing for the 2018 award cycle, and entry information will be available in October. The 2017 NCEES Engineering Award Book will also be released this fall. Profiles of the winning submissions are available online at ncees.org/award.

University of Maine wins 2017 NCEES Surveying Education Award grand prize

NCEES IS PLEASED TO ANNOUNCE THE WINNERS OF THE 2017 NCEES Surveying Education Award. The grand prize went to the University of Maine Surveying and Engineering Technology program. The award jury met June 15, 2017, in Clemson, South Carolina, to select this year's honorees, including the \$25,000 grand prize winner.

Six additional prizes were awarded to qualifying programs to assist with each program's continued efforts to promote the importance and value of surveying licensure. The award jury considered criteria such as student outcomes and involvement, outreach and recruitment, and the promotion of licensure.

"The University of Maine's surveying and engineering technology program is impressive because it fosters the surveying profession in-state, regionally, and nationally," Joseph Paiva, Ph.D., P.E., P.S., award juror and president-elect of the Surveyors and Geomatics Educators Society, said.

The jury selected six additional programs to receive 2017 awards:

\$15,000 winners

- Oregon Institute of Technology
College of Engineering, Technology, and Management
Geomatics program
- Nicholls State University
Department of Applied Sciences
Geomatics program
- University of Florida
School of Forest Resources and Conservation
Geomatics program

\$10,000 winners

- New Mexico State University
Department of Engineering Technology and Surveying
Engineering
Surveying Engineering program
- Santiago Canyon College
Business and Career Technical Education Division
Surveying/Mapping Sciences program
- The University of Akron
College of Applied Science and Technology
Surveying and Mapping program



Members of the NCEES Surveying Education Award jury review the entries for 2017. Surveying and geomatics programs from across the country competed for the \$25,000 grand prize and six additional cash prizes.

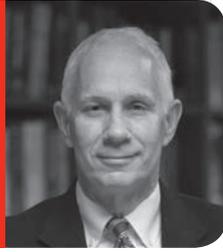
The NCEES Surveying Education Award recognizes surveying programs that have a broad and robust curriculum and best reflect the organization's mission to advance licensure for surveyors in order to safeguard the health, safety, and welfare of the public. All surveying/geomatics programs are encouraged to submit applications.

Presenting the award

The University of Maine will be honored at a luncheon in August at the NCEES annual meeting. Representatives from the winning school will receive the award on behalf of the university's surveying and engineering technology program at that time.

Preparing for 2018 competition

NCEES is currently preparing for the 2018 award cycle. More information will be posted at ncees.org/surveying when available.



JERRY CARTER
NCEES CHIEF EXECUTIVE OFFICER

Occupational licensing: Public protection vs. economic liberty

SINCE THE INCEPTION OF OCCUPATIONAL LICENSING requirements, the overall rationale has been that requiring a license for the practice of certain professions safeguards the health, safety, and welfare of the public. That phrase is embedded in our governance documents and in our collective psyche as the reason why we exist. Member boards test for minimum competence, ensure that a candidate for licensure has an appropriate education and progressive experience, and then regulate the profession to ensure compliance with acknowledged norms and standards.

Although NCEES member boards have set a national standard in the *Model Law* and *Model Rules*, the specific qualifications required for initial licensure and comity licensure among our 55 jurisdictions have various nuances. Due to varying state-specific requirements, member boards have denied applications for initial or comity licensure when a candidate has a degree from an unaccredited engineering program or a science-related degree. Or they have denied applications if experience was not gained working under the responsible charge of a licensee or while working in the United States. This has been the practice, but various entities throughout the United States have been challenging that practice.

By now, most of you are probably familiar with the ruling by the U.S. Supreme Court in the case of *Federal Trade Commission (FTC) versus the North Carolina Board of Dental Examiners*. The case centered on the right of the dental board to prevent non-dentists from performing teeth-whitening procedures, but the impact of the ruling is more far reaching. The case has left some questions as to the ability of members of an occupation to discipline other members of that same occupation without some defined oversight by a higher authority within that jurisdiction, such as the legislature or attorney general. It has also brought into question whether licensing board members are protected from liability when ruling in disciplinary matters.

This is by no means the only challenge to U.S. licensing laws. The National Society of Professional Engineers website chronicles opposition to current licensing requirements (search for “threats to professional licensure” on nspe.org). There is no shortage of cases. The latest is a proposed bill in Oregon that would enable commercial interior designers to engage in the practice of engineering. Other challenges in recent years include efforts to eliminate the P.E. license in Indiana and to remove FE exam requirements in Wyoming for individuals with more than 20 years of engineering experience.

On another front, the FTC announced in March the creation of the Economic Liberty Task Force, which will research impediments to job growth and the “proliferation” of occupational licensing. In its news release announcing the creation of this task force, the FTC contended, “In many situations, the expansion of occupational licensing threatens economic liberty. Unnecessary or overbroad restrictions erect significant barriers and impose costs that harm American workers, employers, consumers, and our economy as a whole, with no measurable benefits to consumers or society.”

In April 2016, the acting chair of the FTC, Maureen Ohlhausen, commented in a speech:

Licensing, of course, has its place. It can ensure minimally acceptable health and safety requirements. But in many cases, occupational licensing serves as a state-sponsored and -enforced prohibition on competition. This reduces market competition and allows incumbents to collect higher profits than they would in the absence of the licensing. I am particularly concerned that occupational licensing regimes create artificial barriers to entry for entrepreneurs seeking to take their first step on the economic ladder. This is particularly true for occupations that draw individuals who are just beginning a professional career. Licensing requirements, which often include certain educational components, can exclude lower-income workers, who may not be able to pay for additional education. Competition and competitive markets, supplemented by sound antitrust

continued on page 14

ENFORCEMENT BEAT



BRUCE PITTS, P.L.S.

COMMITTEE ON LAW ENFORCEMENT CHAIR

Need assistance with your law enforcement program? NCEES is here to help

WHAT IS THE MOST EFFICIENT AND THOROUGH MANNER for a board to investigate an engineer who is practicing outside his or her area of competence? What are the best practices for ensuring compliance with board orders? Who can assist with investigations when board resources and personnel are limited? The answer to the above questions and a lot more is NCEES. Whether it's providing low-cost training for law enforcement personnel and board members or providing step-by-step instructions for conducting investigations, NCEES has the resources your board needs to accomplish its law enforcement goals.

Networking and training

Staying connected, sharing information, and learning from each other are vital for the success of law enforcement programs.

To facilitate such collaboration, NCEES has two user-friendly platforms. Enforcement Exchange is an online database that allows member boards to enter disciplinary actions taken against violators and to review actions posted by other participating member boards. The Law Enforcement Basecamp is for instant communication between those involved with or interested in law enforcement. For access, visit the Enforcement Resources section of ncees.org/resources.

At the annual meeting, NCEES dedicates a day and a half for training and networking for law enforcement personnel and those interested in law enforcement. Friday afternoon's forum allows law enforcement personnel to share experiences, ideas, and solutions with one another. Saturday's workshop, which is always well attended by enforcement personnel, board members, and administrators, is dedicated to top-level training at very low cost to its participants. Interesting and informative speakers address current law enforcement and licensing issues important to member boards.

NCEES Law Enforcement Committee assistance

A group of experienced Law Enforcement Committee members is available to assist member boards with enforcement matters. The services will include such areas as law enforcement program development, peer review of existing programs, case-specific assistance, settlement methods, and innovative approaches to effective prosecutions. There will not be any expense to NCEES, and the members of the Law Enforcement Committee will serve without compensation unless the services are extensive and negotiated with the member board.

Enforcement resources

NCEES also provides a wealth of enforcement information in the members-only Enforcement Resources section of ncees.org. For over 25 years, members of the NCEES Law Enforcement Committee have met and shared their wisdom and experiences on the best practices for enforcing their board's laws and rules. These shared experiences have been codified in two major documents: the *Investigation and Enforcement Guidelines* and the *Investigative Training Manual*. The documents contain sample letters, forms, and guidelines that benefit any member board. The Law Enforcement Committee reviews these publications each year to ensure they are current and reflect up-to-date practices. The Enforcement Resources section of ncees.org also houses white papers that include step-by-step procedures on conducting specific types of investigations and evaluations.

The ability of member boards to discipline licensees and unlicensed practice varies greatly among our jurisdictions, although we are all guided by a common mission to safeguard the health, safety, and welfare of the public. Fortunately, helping member boards fulfill their mission is one of the primary NCEES goals. When it comes to enforcement and compliance matters, NCEES excels in providing useful training, information, and resources for all member boards.

MEMBER BOARD BRIEF



LANCE KINNEY, PH.D., P.E.

COMMITTEE ON MEMBER BOARD ADMINISTRATORS CHAIR

MBA annual meeting professional development puts public relations in the spotlight

BEING AN EFFECTIVE PRESENTER OR SPOKESPERSON is crucial to the work that we do as member board administrators (MBAs). Knowledge or enthusiasm about a topic can take you only so far; you need to be able to develop key messages and deliver them in a way that connects with your audience. The MBA Professional Development workshop at the 2017 NCEES annual meeting will help you hone the skills needed to become a confident and expert communicator in any setting.

Experts from the American Society of Civil Engineers Public Relations University will lead a workshop on August 23 from 8:00 to 11:30 a.m. to teach the following:

- How to craft and deliver compelling messages that will resonate with your audience
- What reporters are looking for in a story and interview
- Tools to deliver an effective interview on-camera, in print, or on the radio
- Tips and tricks to overcoming stage fright so that you shine during presentations and media interviews
- Techniques that will put you in charge of interviews and increase your credibility



Member board administrators and staff listen to presenters at the 2016 annual meeting. A workshop for MBA professional development is a regular feature of the NCEES annual meeting.

- The power of non-verbal communication and how to make it work for you
- Foolproof techniques to keep you on message no matter what you're asked

Following the presentation, hands-on exercises will give attendees the opportunity to practice what they have learned.

Great communicators are made, not born. Join the MBA Professional Development workshop to learn how to become one of them.

HEADQUARTERS UPDATE

continued from page 12

enforcement, where necessary—not excessive licensing—will promote entrepreneurship in this country and provide the most opportunity for the least advantaged in our economy to prosper.”

Member boards need to step back and look at the big picture. Now would be a good time to review current processes for

licensure to ensure that no artificial requirements are being placed on candidates for licensure. That would be especially true for candidates who have been licensed for years in other jurisdictions and properly vetted by other member boards.

I have heard Past President Patty Mamola, P.E., comment many times, “The boards have been legislated into power and can be easily legislated out.” The current mood is economic freedom rather than public protection, and each member board needs to be sensitive to this changing paradigm.

UPCOMING

EVENTS

August 4-5

PE Architectural Exam Meeting
Reston, Virginia
FE Exam Meeting
Clemson, South Carolina

August 10-12

SE Exam Meeting
Clemson, South Carolina

August 22

Board of Directors Meeting
Miami Beach, Florida

August 23-25

NCEES Annual Meeting
Miami Beach, Florida

August 24-25

PE Nuclear Exam Meeting
Clemson, South Carolina

August 26

NCEES Board of Directors
Informational Meeting
Miami Beach, Florida

September 14-16

PE Chemical Exam Meeting
Clemson, South Carolina

September 25-26

PS Exam Specification Meeting
Clemson, South Carolina

September 29-30

PE Civil Exam Meeting
Clemson, South Carolina

MEMBER BOARD NEWS

ILLINOIS PE, PS, AND SE

James Koehl has been named interim member board administrator.

TENNESSEE PS

Jamye Carney is the new member board administrator, replacing Cody Kemmer.

WISCONSIN

Erin Karow is the new executive director, replacing Brittany Lewin.

Remembering Past President Charles Kimberling

FORMER NCEES PRESIDENT CHARLES KIMBERLING, P.E., P.L.S., passed away June 15, 2017, at the age of 89.

Kimberling was a past chair and emeritus member of the Oklahoma State Board of Licensure for Professional Engineers and Land Surveyors.

In addition to serving as the 1988–89 NCEES president, Kimberling was the 1985–87 Southern Zone vice president. He served on a number of NCEES committees, including the Advisory Committee for Council Activities; the committees on Examination Audit, Education Assessment and Qualification, and International Relations; and the Education/Accreditation Task Force. He also served in various capacities on the Committee on Examinations for Professional Engineers for nine years.



NCEES Past President Charles Kimberling, P.E., P.L.S., at the 2012 NCEES annual meeting in St. Louis, Missouri.

NCEES awarded Kimberling the Distinguished Service Award in 1986 and the Distinguished Service Award with Special Commendation in 1992 to honor his committed service.

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

Michael J. Conzett, P.E.
Past President
Nebraska

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

Gary W. Thompson, P.L.S.
Treasurer
North Carolina

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

Roy E. Shrewsbury II, P.S.
Northeast Zone Vice President
West Virginia

Theresa Hilliard Hodge, P.E.
Southern Zone Vice President
South Carolina

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

Jerry T. Carter
Chief Executive Officer
South Carolina

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 4

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



NCEES

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

PERIODICALS
POSTAGE PAID
CLEMSON, SC
29633



NCEES app returns to help users navigate annual meeting

The mobile app for the NCEES annual meeting is back to help attendees get the most out of the 2017 event. Features of the app include

- The full event schedule
- Map of the meeting rooms
- Session enhancements, including the ability to set reminders and take notes
- Detailed information about speakers
- Links to the NCEES Facebook, Twitter, YouTube, and LinkedIn pages
- The ability to build a profile and easily share contact information with other app users
- Photo scavenger hunt competition

To download and install the app, go to ncees.org/mobile from a mobile device. Or download the app directly from iTunes or Google Play by searching for "NCEES meetings." All registered annual meeting attendees will receive an email with download and login instructions during the week of August 14.