

Defining the future of engineering licensure

Change can be slow, especially when it involves issues fundamental to the future of licensure. Additional engineering education requirements, a new professional practice exam, an expanded licensure model—these are not new Council concerns. They have been studied, debated, and grappled with for many years. During the past four, though, leaders and stakeholders of the entire engineering profession have intensified the focus on these issues. The resulting initiatives will be presented as motions at this year's Annual Meeting. If the Council approves them, they will define a system of licensure for the future.

Historical overview

In 2001, the Engineering Licensure Qualifications Task Force (ELQTF) was created to evaluate our current licensure system. In addition to 20 members from NCEES, this group included a large cross section of the engineering profession—representing professional practice, government, industry, and education.

The 10 member organizations of ELQTF were the National Society of Professional Engineers; American Society for Engineering Education; ABET; American Society of Civil Engineers; American Society of Mechanical Engineers; Institute of Electrical and Electronics Engineers; American Consulting Engineers Council; American Academy of Environmental Engineers; Canadian Engineering Qualifications Board; and American Society of Heating, Refrigerating and Air-Conditioning Engineers. In addition, 11 consulting organizations represented many areas of the profession.

After two years of extensive study, this group provided conclusions and recommendations in a comprehensive report that was received at the 2003 Annual Meeting. The next year, the Licensure Qualifications Oversight Group (LQOG) was

created to further study the findings of ELQTF. Unlike ELQTF, LQOG is made up of only NCEES Member Board members—including public members, emeritus members, and administrators—from all zones.

One of LQOG's most significant charges this year has been to continue researching the ELQTF conclusions and to provide recommendations for the Council's consideration. LQOG was also charged with recommending revisions to the *Model Law* to require additional engineering

education for licensure. The impetus for this second charge was a motion passed by the Council at the 2004 Annual Meeting. The motion directed the NCEES president to initiate a process to determine specific recommendations for additional engineering education for the purpose of licensure and to prepare and implement a plan.

At this year's Annual Meeting, LQOG will present

recommendations involving the following areas:

- ◆ Additional engineering education
- ◆ Professional practice examination
- ◆ Proposed licensure model

Additional engineering education

A bachelor's degree in engineering is not what it used to be. At one time, the engineering profession was a leader, requiring more formal education than other professions such as medicine and architecture. But while other professions have added requirements over the years, engineering has not. In fact, engineering education requirements have remained stagnant and even been cut. The number of credits required to graduate has decreased over the years, and curriculum emphasis has shifted. The impact of these changes has typically been a decrease in core engineering

These initiatives are not about the past. They are about the future of engineering licensure. The proposed changes represent four years of work by the entire engineering profession, not just NCEES.



Monte L. Phillips, Ph.D., P.E.
 Chair,
 Licensure Qualifications
 Oversight Group

UPDATE



Betsy Browne
NCEES Executive Director

Meetings set the stage for Council actions in August

Almost 120 representatives from 62 of the 70 Member Boards attended the Board Presidents' Assembly on February 10–12 in Kansas City, Mo. The meeting provided an opportunity to exchange information, ask questions, and learn about action items that will be presented at this year's Annual Meeting in Memphis, Tenn.

NCEES funds the travel of the board chairs/presidents and the Member Board administrators to attend the meeting, which takes place every two years. The Council also funded several chairs to attend this year so that they could present updates about their committee activities. You can read about these committee activities in the articles beginning on pages 1, 5, and 7.

Zone Finances

To protect its nonprofit 501(c) status, NCEES must maintain close scrutiny over all financial transactions. During the November meeting of the NCEES Board of Directors, a concern was raised by a vice president who had been asked to approve payment for zone expenses when there was no documentation to substantiate the claim. Each zone is a subsidiary operation of NCEES, and separate bank checking accounts are currently maintained by NCEES for the benefit and use of each zone.

Board Presidents' Assembly attendees discussed a couple of options for ensuring proper accountability. One is for the Council to take over all financial transactions for the zones. The other is to expand the Zone Continuity Guidelines so that they include procedural requirements for finances. The zones will discuss these options at their respective meetings.

JPEC negotiations

Another topic introduced at the assembly concerns negotiations between NCEES and the Japan PE/FE Examiners Council (JPEC). Since 1994, the

Oregon Board has offered the FE exam to candidates of JPEC, with the exam being administered in Tokyo. This was accomplished under the provisions of NCEES Exam Policy 5 (now Exam Administration Policy 5). EAP 5 authorizes Member Boards to offer NCEES exams at a university or a foreign country site provided that the Member Board makes suitable

arrangements to protect the confidentiality and security of the exams within NCEES-prescribed guidelines.

In late 2004, the Oregon Board entered into a contract with ELSEES to provide exam administration services to all domestic candidates of the Oregon Board and to candidates who are members of the U.S. Military stationed in the Pacific Rim. ELSEES will administer the exams beginning in October 2005.

NCEES was asked to consider negotiating directly with JPEC

to allow its candidates to have continued access to NCEES exams. When the NCEES Board of Directors considered this matter at its November 2004 meeting, it was noted that there is precedence for such action. At the 2002 Annual Meeting, the Council voted to authorize the negotiation of a contract for exams and exam services between NCEES and any Canadian provincial or territorial authority based on the authority of EP 10 (now EAP 10). This policy authorizes NCEES, with Council approval, to contract to provide NCEES exams or assistance in preparing exams to an appropriately sanctioned licensing body of a foreign government. As a result of the 2002 vote, NCEES exams have been offered to candidates of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta (APEGGA) for the past two years.

The Board of Directors voted to endorse the concept of negotiating with JPEC to administer NCEES exams to JPEC candidates, subject to final

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approval by the Council. Council staff will continue to work with JPEC officials during the coming months to address issues related to this process. The results of these discussions will be presented to the full Council during the 2005 Annual Meeting for any action that may be appropriate.

Upcoming meetings

Additional topics discussed at the assembly included security audit updates, licensure

promotion by Member Boards, the new Surveying Speaker's Kit, and potential revisions to the continuing professional competency guidelines. The upcoming zone meetings offer Member Boards another opportunity to become familiar with these issues as well as actions that the Council will vote on this August. Here are dates of these events over the next few months.

Betsy Browne
NCEES Executive Director

April 7–9	Joint Central/Northeast Zone Meeting	Washington, D.C.
May 5–7	Southern Zone Meeting	Oklahoma City, Okla.
May 17–19	Board of Directors' Meeting	Anchorage, Alaska
May 19–21	Western Zone Meeting	Anchorage, Alaska
August 23	Board of Directors' Meeting	Memphis, Tenn.
August 24–27	NCEES Annual Meeting	Memphis, Tenn.

NCEES OPERATING SUMMARY For the Five Months Ended February 28, 2005

	<u>Actuals</u> <u>Year-to-date</u>	<u>Budget</u> <u>Year-to-date</u>	<u>Budget</u> <u>Variance</u>	<u>2004–2005</u> <u>Total Budget</u>
INCOME				
Member Board Revenue	\$ 160,256	\$ 175,624	–8.75%	\$ 717,100
Examination Revenue	3,021,529	3,127,125	–3.38%	6,570,200
Study Materials Revenue	284,237	295,760	–3.90%	738,900
Records Revenue	494,810	546,229	–9.41%	1,310,950
ELSES Revenue	<u>1,014,089</u>	<u>1,008,270</u>	<u>0.58%</u>	<u>2,813,000</u>
Total Income	\$ 4,974,921	\$ 5,153,008	–3.46%	\$ 12,150,150
EXPENSES				
Member Board Expenses	\$ 643,132	\$ 907,748	–29.15%	\$ 2,281,030
Examination Expenses	2,178,008	2,623,360	–16.98%	5,888,766
Study Materials Expenses	206,118	279,358	–26.22%	677,584
Records Expenses	279,379	343,510	–18.67%	792,725
ELSES Expenses	<u>567,060</u>	<u>745,573</u>	<u>–23.94%</u>	<u>2,593,145</u>
Total Expense	\$ 3,873,697	\$ 4,899,549	–20.94%	\$ 12,233,250
NET OPERATING INCOME (DEFICIT)	\$ 1,101,224	\$ 253,459	334.48%	\$ (83,100)

MESSAGE



Jon D. Nelson, P.E.
NCEES President

Relationship between ABET and NCEES improving

For the past several decades, state boards have relied on ABET to maintain a standard of quality for education as a qualification for licensure. In the mid-1990s, ABET implemented a new approach to the accreditation process. Embodied in the new approach were new criteria generally referred to as Engineering Criteria 2000 (EC2000). The new approach moved from a very prescriptive, input-controlled system to a less prescriptive, output-focused (outcomes-based) system. EC2000 also included provisions that foster continuous program improvement. It was a significant change that ABET believed was necessary to accommodate the changing nature of engineering education and the profession itself.

Over the past few years, the relationship between ABET and NCEES has been somewhat strained. The difficulties seemed to begin during the first few years of the implementation of the new accreditation process. There were concerns about the strength of the outcomes-assessment mechanisms typically used by programs and concerns about the lack of a clear and sufficient standard from which the programs should build.

The difficulties intensified when, in 2002, NCEES determined that a number of ABET-accredited programs were producing graduates who routinely had disturbingly low FE examination pass rates. This “disparity” between accreditation and the FE exam pass rate was of great concern to the leadership of NCEES because it suggested that there was a problem with the educational standard used by licensure. Initially, ABET did not seem to be greatly concerned about the issue. After a year or so of discussion that resulted in little progress, NCEES developed a new position statement on education and sent a white paper to Congress expressing its concerns. It was at this point that I think the difficulties between the two organizations reached their peak.

At the 2003 NCEES Annual Meeting in Baltimore, ABET President Larry Nixon addressed NCEES about the white paper and the situation in general. His speech was pointed, but he acknowledged that there would be opportunities to address the difficulties. He ended his speech by expressing hope for a “renewal” of collaboration and cooperation between the organizations. Since that morning, I think

cooperation between the organizations has increased and the relationship has continued to improve.

This is evidenced in several ways. Shortly after the Baltimore, Md., meeting, President Nixon created a task force to consider the disparity issue and invited participation by NCEES. About the same time, NCEES formed the Education/Accreditation Task Force and included representatives from ABET. This resulted in constructive dialogue, and although the issue remains, it is much better understood today. Perhaps a more important result, however, was that the ABET task force acknowledged that graduates of EAC/ABET-accredited programs should be capable of passing the FE examination with a reasonable pass rate. In my opinion, this was a critical first step to addressing the concern.

In February 2004, the leadership of both organizations met in Clemson, S.C. NCEES leadership and staff were able to make presentations about a number of NCEES processes, programs, and initiatives to the corresponding members of ABET. It proved to be a productive meeting. In February 2005, another leadership meeting was conducted, this time at ABET headquarters in Baltimore. Again, the exchange was productive. Both meetings improved the understanding of each organization of the factors behind their respective directions and concerns. I hope meetings such as these will continue in the future.

Both ABET and NCEES almost simultaneously decided that something needs to be done to increase the value of the state board observer's role in the accreditation process. Ideas are being discussed, and I am optimistic that a joint initiative will result.

NCEES leadership has attended ABET annual meetings, board meetings, and evaluator-training sessions in a concerted effort to improve our understanding of not only what ABET does but how and why. I think ABET has been making a similar effort to improve their understanding of the stake that licensure has in accreditation. As leadership in each organization changes with time, maintaining a clear and complete understanding of one another will be extremely important.

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Investigating the disparity issue

56. 50. 13. Explaining these three numbers has been at the heart of Education/Accreditation Task Force's investigations this year. Why did 56 EAC/ABET-accredited programs have an average pass rate below 50 percent over 13 consecutive administrations of the FE exam?

Problem

The first step to licensure is to graduate from an EAC/ABET-accredited engineering program and pass the FE exam. The FE exam evaluates performance in basic, core curriculum. If ABET is our standard, then shouldn't EAC/ABET engineering programs be producing graduates who pass the FE? Yet these three numbers reveal a disparity between the accreditation of engineering programs and the performance of their graduates.

The Education/Accreditation Task Force, chaired by Melvin Anderson, Ph.D., P.E., was charged this year with continuing to investigate why this disparity exists.

Hypotheses

The group began with theories. What potentially significant factors could have affected the pass rates? Do these programs with low pass rates share a unique commonality that programs with high pass rates do not? Maybe the SAT or ACT scores of incoming freshmen would reveal the pattern. Or maybe it would be the GPA of incoming freshmen. Or the college GPA of students who sit for the FE exam. Or the number of credit hours. The task force developed a list of about 20 possibilities.

A statistical analysis for some of these factors was then run on 20 programs with 5.9–43.5 percent pass rates, 10 programs with 96–99.5 percent pass rates, and 10 programs with 80–83.4 percent pass rates. Because the institutions' identities are anonymous and have never been disclosed to task

force members, select NCEES staff gathered the information used in the statistical analysis.

The task force then began a process of elimination.

Observation and testing

Initially, task force members thought that the commonality among the institutions with low pass rates would clearly be credit hours. Many universities have reduced the number of credit hours required to graduate. The result is that engineering programs have had to cut courses. They obviously wouldn't eliminate specialty courses specific to their field. Higher mathematics classes are still needed. And a certain number of liberal arts credits are often mandated by state legislatures. What's left to cut? Fundamental engineering courses. Task force members theorized that the students failing the FE exam must not have the high numbers of credit hours—that the programs with few fundamental courses would have the low pass rates. This proved to be untrue.

The data shows credit hours to have had no effect on pass rates. In fact, the committee discovered that some electrical engineering programs that have dropped the fundamental course requirements altogether are experiencing very high pass rates.

Data observations also revealed either weak or nonexistent correlations between pass rates and high school math and science by college admission, percent of FE morning subjects required as

program courses, and percent of FE afternoon subjects required as program courses.

There is evidence of a strong correlation between pass rates and the school's Carnegie classification. Students in the Carnegie I schools (large research universities that award at least 50 Ph.D.'s annually) tended to have high pass rates. However, 13 of the 20 schools with low pass rates were classified as

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PURPOSE

The purpose of this Council shall be to provide an organization through which state boards may act and counsel together to better discharge their responsibilities in regulating the practice of engineering and land surveying as it relates to the welfare of the public in safeguarding life, health, and property. The Council also provides such services as may be required by the boards in their mandate to protect the public.

Constitution Article 2 Section 201

Carnegie III or Carnegie IV (teaching-focused colleges that offer the master's but not doctoral degrees). There is also an apparent correlation between high pass rates and SAT or ACT scores of incoming freshmen.

Another finding is that multiple programs with low pass rates were found in certain institutions: 11 colleges had 2 programs with low pass rates; 6 colleges had 3; 2 colleges had 4; and 1 college had 5.

For further investigation, the NCEES staff with knowledge of the schools' identities contacted representatives and requested additional information. In some cases, little or no data was provided. However, 8 of the 20 programs with low pass rates and 15 of the 20 programs with high pass rates did provide information. Although sufficient data was not obtained to do a valid statistical analysis, some trends and patterns did become apparent from this additional data.

- ◆ The percentage of faculty who were licensed does not seem to be a factor. The percentage of licensed faculty in programs with high pass rates ranged from 11 to 90 percent, while at programs with low pass rates it varied between 40 and 80 percent.
- ◆ For five schools with high pass rates, the FE exam was required for all engineering students; none of the schools with low pass rates required students to take the FE exam.
- ◆ All but one program from each group had a voluntary or a required FE prep course for students.

- ◆ All programs with high pass rates used FE results as a part of Outcomes Assessment for ABET; five of the programs with low pass rates did too.

Increasing Member Board involvement

Another finding of the task force concerns board awareness of pass rates within their jurisdictions. Every board receives a detailed report (Report 5) from NCEES after each FE exam administration. This report lists the pass rates for every program in every institution in their jurisdiction. Yet when the task force conducted a phone survey of the chair/president of each board to determine the awareness of this information, it found that many state boards do not read the report. One reason, the task force concluded, is that Report 5 is too in-depth to be read quickly, especially for the larger states.

The committee felt that a less extensive report would be more readily examined, and it recommended that NCEES create a summary report showing only the FE exam pass rate for each EAC/ABET accredited program in a specific jurisdiction. This would be sent after each administration along with Report 5.

The new report was introduced at the Board Presidents' Assembly in February. It and other task force recommendations resulting from this year's investigations will be detailed again at the upcoming zone meetings.

NCEES staff

Exam committees make progress on charges

At the Board Presidents' Assembly, four exam committees made presentations about progress on their charges. Here are highlights.

Committee on Examination Policy and Procedures (EPP)

Chair L. "Larry" Robert Smith, P.E., discussed two of EPP's major charges—to recommend a process for conducting a cheating analysis after each exam administration and to better define minimum competency.

EPP recommends that a cheating investigation begin with an Incidence Report of possible cheating. The next step would be to check for cheating by using a statistical analysis and by looking at the candidate's calculations to see if they support their answers. The final step would be to inform the Member Board that there is evidence of cheating. The EPP Committee will recommend that Member Boards be required to retain seating charts for future use in case they are needed for a cheating investigation.

EPP was also charged with evaluating the difficulty and complexity of exam questions and to provide a definition of the term "minimum competency." To help determine if someone is minimally competent, the committee is recommending that 20 questions be added to each exam.

"There are certain easy questions within a discipline that if the examinees don't get right, you don't want them to pass," says Smith. "By adding these easier questions, minimum competency can be better calibrated. Cut scores have dropped so much in recent years that some random guessers may have been able to beat the system and pass when they are not minimally competent. These questions will help prevent that from happening. Even though there will be these easier questions, the exam will not be easier to pass. The cut score will increase in direct correlation to the change in difficulty of the exam. The difficulty level of the rest of the exam will be unchanged."

Committee on Examinations for Professional Engineers (EPE)

One of EPE's charges is to recommend how to use codes and standards in exam problems.

"The codes are important to test in the exam because of the exam specifications," says A.J.P. "Sonny" Launey, P.E., chair of the committee. "Unless code information is placed in the item's stem, applicants need to have that code with them in the exam. One of the biggest upcoming challenges is how to deal with the codes that in the future will be available only on CDs and not in print form."

In addition, the EPE Committee is investigating how to define the term "practice-related question." The committee supports a body of knowledge survey to be done in this area, which will be a motion presented by LQOG (see article on page 1). EPE will also recommend to the Board of Directors to charge a committee or create a task force to review the cut-score process.

Committee on Examinations for Professional Surveyors (EPS)

EPS was charged with making recommendations on the feasibility of using a PS reference handbook with the goal of standardizing information used by examinees and enhancing of examination security. Chair Rita Lumos, P.L.S., reported that the EPS Committee feels that there are still a number of concerns about whether a closed-book PS exam is feasible. To prepare a supplied reference book would be extremely time-consuming and expensive. The committee prefers to limit the number of reference books allowed in the exam room rather than supply one.

Lumos also discussed the committee's charge to examine the feasibility of offering exams that can be solved without the use of a calculator. She pointed out that the survey exams already have a low percentage of items that require a calculator. However, the committee recommends using survey exams as a pilot for computer-based testing and as a pilot for supplied calculators rather than eliminating the use of a calculator altogether.

Examination Administration Task Force

Committee member Kathy Hart gave the task force presentation on behalf of Chair Rosemary Brister. One charge was to revise exam policies to minimize objects (including books) allowed in the exam room to maximize security. The task force recommends that the Council move toward a system of supplied reference handbooks by 2010, that the Council publish discipline-specific lists of noncommercial reference materials to guide examinees by 2007, and that reference materials that an examinee may bring to the exam site be limited to those that will fit into a 3 cubic foot container.

The task force has also concluded that a centralized registration system would benefit the Council for the purposes of exam security, retake identification, and eventually gathering licensee demographics. It will present a motion at the Annual Meeting for a pilot registration system to be started with current ELSES state boards.

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courses, decreases in technical breadth and depth, and an increase in general studies.

At the same time, engineering practice has become more complicated. The body of knowledge required for the practice of engineering in the future and for the continued adequate protection of the public health, safety, and welfare is beyond the scope of the current background provided in traditional four-year engineering curricula in the United States.

LQOG will move that the Uniform Procedures and Legislative Guidelines Committee (UPLG) be charged with incorporating recommended language requiring additional engineering education into the *Model Law* and *Model Rules*.

The new education requirements should include graduation with a B.S. degree from an engineering

program of four years or more accredited by the Engineering Accreditation Commission (EAC) of ABET, or equivalent, plus 30 additional credits from approved course providers in upper-level undergraduate or graduate-level coursework in professional practice and/or technical topic areas.

Professional practice examination

The ELQTF report recommended a professional practice examination covering engineering practice issues for engineers seeking licensure. LQOG agrees that there is a need for expanding coverage of “professional practice issues” in the examination process. It also believes there is broad-based support for professional practice exam content.

The committee will move that the Council conduct an engineering practice feasibility study and task analysis.

One important point to note is that the Council is being asked only to approve the study and task analysis—not to approve actual development of a new examination. Conducting such a study would answer many of our questions about a professional practice exam. It would determine the exam’s feasibility, most likely form, and timing as well as the knowledges related to engineering practice issues that all licensed engineers should know. The study would help define when these competencies are attained.

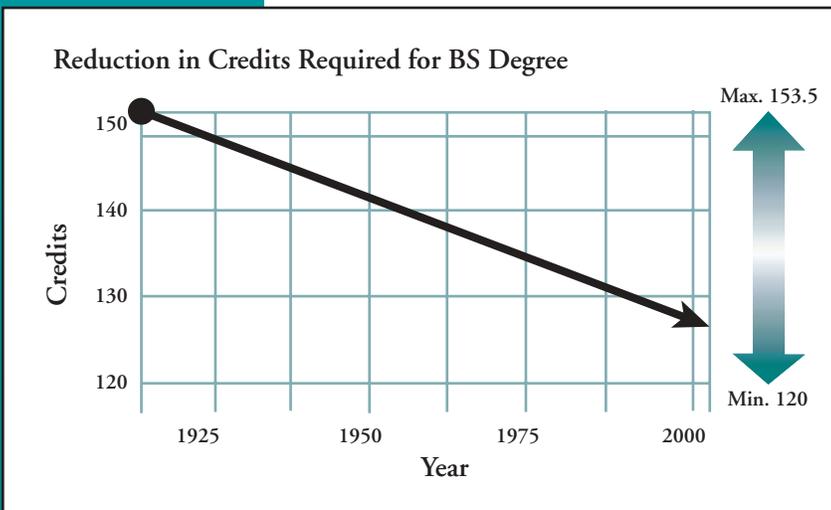
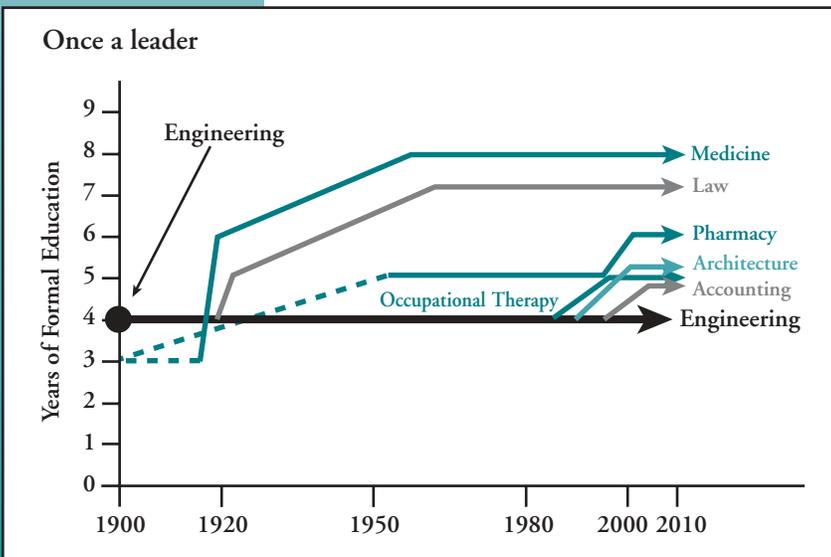
The estimated financial impact is \$130,000, which is comparable to the cost of a Group I PE task analysis.

Proposed licensure model

ELQTF developed a “consensus model” for licensure after lengthy deliberations. The model was designed to be more attractive to engineers in practice areas other than just the built environment—to attract more of the 80 percent of engineering graduates who do not currently pursue licensure.

LQOG agrees that there is a need for a model revision to eliminate deficiencies of the current licensure model. It will present a motion that the Council endorse the proposed NCEES licensure model and refer it to the appropriate committee for implementation. Implementing this model would require the efforts of a wide range of stakeholders, and jurisdictional adoption would take many years.

This new model is in fundamental agreement with the ELQTF consensus model, especially in that it is more inclusive of engineers not offering services directly to the public. One area where it is different is



in the creation of the Chartered Engineer designation. The term “chartered” was chosen only after exhaustive deliberations within both ELQTF and LQOG.

The ELQTF model recommended creating a Registered Engineer status. However, the term “registered” received strong objections because it could cause confusion within and outside the profession. One of LQOG’s goals has been to propose a model that boards would be able to implement, so it changed the terminology. “Chartered” means to grant or bestow a special privilege; a Chartered Engineer would be a protected title.

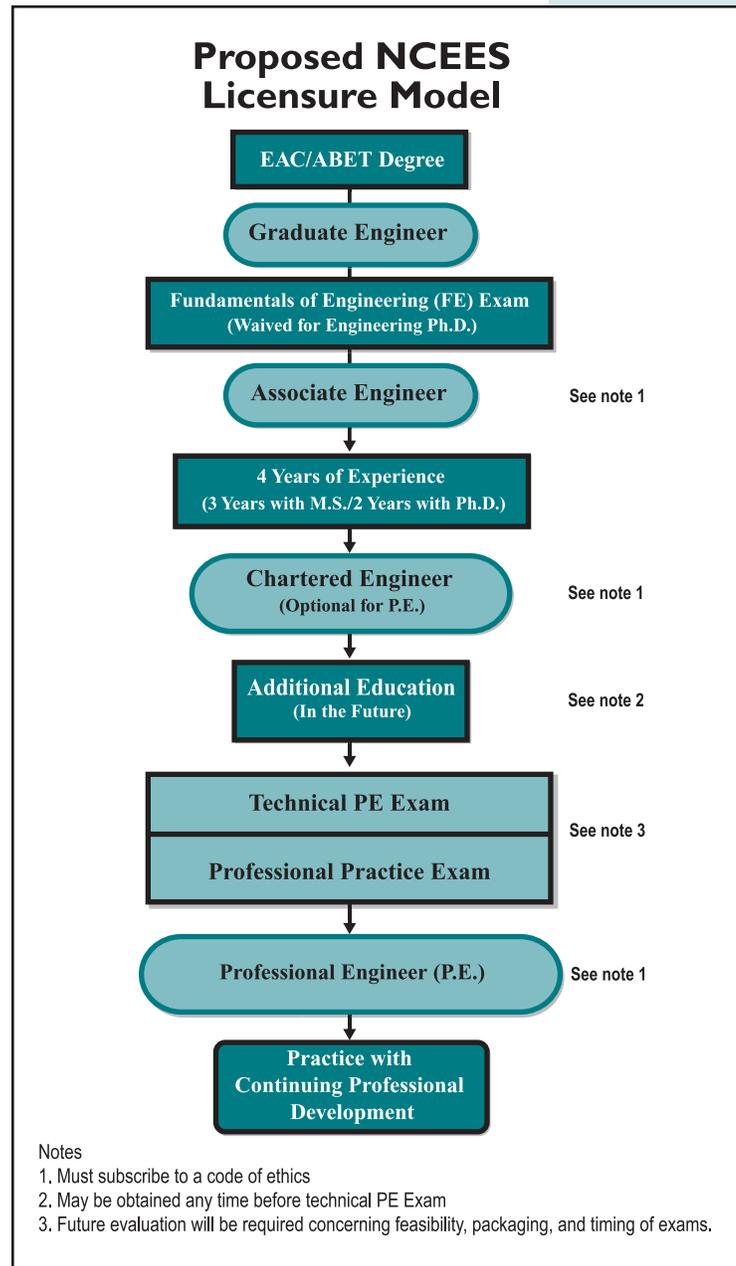
Chartered Engineers would not be able to offer services directly to the public but would perhaps provide services similar to those currently provided by engineers in industry. Member Boards would have jurisdiction over Chartered Engineers. A Chartered Engineer would also be required to subscribe to a code of ethics. The Professional Practice Exam included in this proposed model would be subject to future Council approval following completion of the proposed engineering practice feasibility study and task analysis.

Conclusion

These initiatives are not about the past. They are about the future of engineering licensure. The proposed changes represent four years of work by the entire engineering profession, not just NCEES. To paraphrase a quote from President Nelson in his 2004 Annual Meeting address: “Shall we walk backwards into the future admiring the past, or shall we turn around and face the challenges the future brings?”

Please discuss these initiatives with your boards. Continue the dialogue at the zone meetings so that you can come to the Annual Meeting in August fully informed about these vital licensure issues. Let us take the initiative in defining the future of engineering licensure.

Monte L. Phillips, Ph.D., P.E.
Chair, Licensure Qualifications Oversight Group



Building a better world, one community at a time

It's not every day you meet a prince. But implementing engineering projects in disadvantaged communities throughout the world can create some unlikely partnerships. After more than 80 projects in 35 countries, volunteers of Engineers Without Borders–USA (EWB–USA) have crossed the paths of royalty, villagers, and missionaries alike.

Partnering with local communities to improve the quality of life is at the heart of this fast-growing nonprofit organization based in Longmont, Colo. In Thailand alone, EWB–USA has participated in five projects and is currently starting two new ones. When it built a medical clinic in the region a couple of years ago, the organization worked closely with the local district health officials to get the plans approved and with the Ministry of Health to secure staffing.

“Now that we’ve worked in this region several years, we’re beginning to build relationships,” says Dr. Richard N. Herring, a chemical engineer who serves on the EWB–USA board. “This in turn is opening channels and new contacts.”

One of these contacts is the prince of the northern tribe of Thailand. He met with Herring earlier this year to request that EWB–USA begin an education building project in the region.

Student participation

EWB–USA implements environmentally and economically sustainable engineering projects while developing internationally responsible engineering students. The five-year-old organization is dedicated to developing a new generation of engineering students who will benefit from seeing the many facets of engineering solutions to problems in developing communities, beyond the

technical skills obtained in their curriculum. Students are involved in every step of the projects. Their majors run the gamut of engineering fields, from civil to mechanical to aerospace to environmental.

“One of the main things we’re trying to do is provide engineering students with experiences they normally wouldn’t get in the classroom. The projects provide access both to practicing

professional engineers and to hands-on experience working on engineering projects,” says Executive Director Cathy A. Leslie, P.E. “This is as much a part of our mission as the projects are.

“I’ve known students who were unsure if engineering was right for them as a profession,” Leslie continues. “Then they went on one of the project trips and saw that engineering is not just a school exercise. They return with a renewed dedication to engineering.”

EWB–USA works with many engineering societies to promote the profession. Many of its

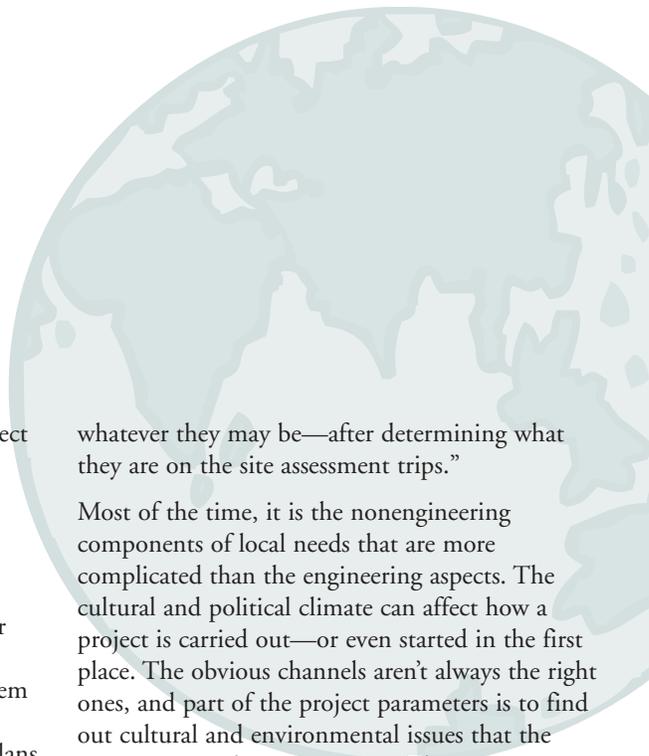
projects start through student chapters at universities.

Partnership with communities

The organization also believes in active involvement of what it calls the “host-community partners.” For a project to begin, a request must be submitted by the community that will receive the assistance. This request can be made on the community’s behalf by a nongovernment organization, chapters of EWB–USA, or other interested parties. Many requests also come from other nonprofit organizations that are already working in an area but don’t have the engineering expertise to carry out certain aspects of their work.

From the local villages, EWB–USA requires in-kind contributions, which could be a place to stay or work. The purpose for this is to ensure that the

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communities believe and participate in the project so that it will be sustainable. The projects must have community ownership, be culturally appropriate, and be effective in the long-term.

Implementing projects

Most of the EWB–USA projects involve a water supply component, sanitation systems, and renewable energy systems. About a fourth of them involve structures or construction. The organization relies on volunteers to create the plans before the trip and to make the final site assessment when a project is being implemented. A Technical Advisory Committee, which includes P.E.'s as well as nonengineers such as health professionals, reviews of all projects once a month.

“We haven’t really had to address many licensure issues in other countries, mainly because most of them are third-world and may have no existing licensure system in place,” says Leslie. “We do observe a country’s requirements, though—

whatever they may be—after determining what they are on the site assessment trips.”

Most of the time, it is the nonengineering components of local needs that are more complicated than the engineering aspects. The cultural and political climate can affect how a project is carried out—or even started in the first place. The obvious channels aren’t always the right ones, and part of the project parameters is to find out cultural and environmental issues that the project must take into account. The project manager is responsible for making sure the project conforms to local standards and regulations.

“Ultimately, EWB–USA complies with the standards of a country and with the standards of the United States—whichever is stricter,” Leslie says. “The goal is to offer the same level of engineering that is provided in the United States.”

NCEES staff

EWB–USA tsunami relief efforts

As the December 26, 2004, tsunami recovery shifts from immediate relief to long-term reconstruction, EWB–USA is rallying both volunteers and resources to help devastated communities begin the difficult and lengthy task of rebuilding their lives. After a funding goal of \$7 million is met, it will mobilize teams of professional engineers to implement reconstruction projects in small villages requesting assistance with basic infrastructure needs.

“When a major disaster strikes, less populated communities often get overlooked by large-scale aid efforts that are usually focused on major cities,” explains Leslie. “All of us involved with EWB–USA are deeply saddened by the incredible devastation and loss of life from the tsunami in Southeast Asia. And while we are not set up to provide emergency relief, we are poised and ready to fill the gap by offering long-term reconstruction assistance for these remote areas.”

Herring recently returned from Thailand where he met with the Asian Section of American Society of Civil Engineers (ASCE). In addition, several EWB–USA professional teams, who have previously worked in the region, are conducting site visits throughout Southeast Asia to assess rebuilding and reconstruction needs. However, many local leaders have expressed the need for a few months’ time to plan and prepare for work to begin.

Starting as early as this summer, EWB–USA hopes to commence the first round of grassroots projects—with an expected two-to-three-month turnaround—helping rebuild water delivery and wastewater systems, schools, community buildings, housing, medical facilities and power sources in communities of 2,500 people or less.

For more about EWB–USA, go online to www.ewb-usa.org.

NEWS



Gloria Keene
Licensing Administrator,
Michigan Builders/Design
Boards

ELSES services simplify Michigan application process

Like many other licensing boards, the Michigan State Board of Professional Engineers contracts with ELSESES to administer its examinations. When we began this process three years ago, the board also decided to take advantage of another ELSESES service—prequalification of education for examination applicants.

Through this program, ELSESES verifies that an applicant meets our education requirements to sit for the examination. The main benefit to our board? ELSESES handles the busywork. Our ELSESES coordinator evaluates an applicant's education records for approval to sit for the examinations, notifies applicants when they are eligible or ineligible for the

examination, manages applicants' files until they have passed the Principles and Practice of Engineering (PE) examination, score and send results to applicants, maintain score results for the applicants and report the results as requested, and answers applicant telephone calls and e-mails pertaining to the exams.

If there is any doubt about the applicant's eligibility to sit for an examination, ELSESES sends the applicant's file to us so that we can conduct a second review and make a final decision. Our board maintains the authority to determine whether the applicant's experience meets the requirements for licensure.

Tailored to meet our needs

When we began this process, ELSESES worked closely with us to tailor services to our needs. One of the ways ELSESES did this was by sending staff to visit our board and observe how we conducted the entire application process. Once ELSESES staff understood our expectations and what we were already doing, they customized a program for us. This open communication has been a consistent

characteristic of our relationship with ELSESES. In fact, a specific ELSESES coordinator is assigned to cover our state and is aware of the laws and rules unique to us.

There's no cost to our board. ELSESES directly charges the applicants a fee to cover the administrative costs of these services, so we don't have to worry about keeping up with transactions. Applicants have not complained about the fee because of the quick turnaround time of the application process.

How it works

Applicants apply directly to ELSESES for approval to take the FE and PE examinations. Michigan does not require submission of documents for approval to take the FE exam. However, applicants are required to meet certain education requirements for the PE examination and ELSESES verifies the education for eligibility. The process is simple. Applicants submit the Application for Michigan Pre-Approval of Education for the Principles and Practice of Engineering (PE) Examination to ELSESES and arrange for official college or university transcripts to be sent directly to ELSESES. Upon receipt of these documents, ELSESES reviews the information using Michigan's specific requirements.

Michigan's law and rules require that applicants for the examinations possess a bachelor's degree in engineering that is accredited by EAC/ABET or the Canadian Engineering Accreditation Board (CEAB). For foreign-educated applicants, Michigan requires that their education be reviewed equating it to the ABET standards by the Engineering Credentials Evaluation International (ECEI). If the foreign education has not been evaluated prior to submitting an application, ELSESES sends the applicant a letter stating that the

Through this program, ELSESES verifies that an applicant meets our education requirements to sit for the examination. The main benefit to our board? ELSESES handles the busywork. ... Our board maintains the authority to determine whether the applicant's experience meets the requirements for licensure.

application is incomplete and the reason. All questionable or ineligible files are sent to our board for further review and final judgment.

As for experience, applicants must sign a statement of certification on the preapproval application to acknowledge that they understand and have met the experience requirements as stated in the Michigan Law and Rules. Our board waits until an applicant applying for licensure has taken and passed both the FE and PE examinations before we verify the experience requirements have been met.

Candidate notification

After reviewing credentials, ELSESES notifies applicants whether they are approved or ineligible to sit for the exam. If ineligible, applicants are informed of their evaluation deficiencies and their file is forwarded to us for further review. Approved applicants receive instructions on how to register for the examination. Our ELSESES coordinator also notifies the applicants who pass and explains how to access our board's application for licensure.

When an applicant fails the PE examination, he or she receives a diagnostic report detailing the areas of strengths and weaknesses and instructions for applying for re-examination. When an applicant passes the PE examination, he or she receives a notice indicating this and instructions for obtaining the application packet for licensure. The ELSESES coordinator simultaneously sends the file to our board containing a copy of the FE (if available) and PE score results, degree transcript or

evaluation and the pre-approval application. The applicant submits the actual licensure application and the required experience verification forms directly to our board.

Communication with examination applicants about the application process is more direct, and the number of calls and e-mails our board receives has significantly decreased. We're also able to post examination information to applicants on our ELSESES Web pages quickly because there is an ELSESES coordinator dedicated to making sure that happens.

The ELSESES education prequalification program has made the application process more efficient for both our licensure candidates and our board staff. Examinees have told us in post-exam surveys that they appreciate the ease of being able to apply and register for the exams in one place. In fact, many of them have said that they were approved to sit for the exam within a day of sending in a complete application. As for our staff, the reduction in busywork frees their time for other meaningful tasks, such as being able to concentrate on applicants who have more complicated issues.

Questions?

If you have any questions or comments about this process, please feel free to contact me at gkeene@michigan.gov or 517-241-9253.

*Gloria Keene
Licensing Administrator
Michigan Builders/Design Boards*

NEWS

ALABAMA

- ◆ Lynn Doyle is the new chair.

ARKANSAS

- ◆ The board's new address is 1311 W. 7th Street, Little Rock, Ark., 72201. All other contact information remains the same.

COLORADO

- ◆ Sandra Scanlon and William "Bud" Starker are new appointees to the board. The terms of Dawn Bookhardt and Jill Tietjen have expired. Angeline C. Kinnaird's new title is program director. The board address is 1560 Broadway, Suite 1300, Denver, Colo. 80202. Numerous changes to the board's laws went into effect on July 1, 2004, as a result of the sunset review process, including a change to the board's name, which is now as follows: State Board of Licensure for Professional Engineers and Professional Land Surveyors.

ILLINOIS

- ◆ M. David Brim (DBrim@idfpr.com) is now the design licensing manager of the Illinois PE, LS, and Structural boards. He replaces Alicia Purchase, who was interim Member Board administrator for the boards.

KANSAS

- ◆ The new chair is Joe Vanderweide. George Barbee, George Dean, and Timothy Sloan are new appointees to the board. The terms of Lawrence "Larry" Hole and F. Glenn Phinney have expired.

KENTUCKY

- ◆ James "Mac" Yowell is the new chair. Randall W. Russell is a new appointee to the board. The term of I. David Sanders has expired.

MARYLAND

- ◆ Thomas L. "Lee" Woods (twoods@dllr.state.md.us) is the new executive director for the Maryland PE and LS boards. He replaces Pamela J. Edwards, who was acting executive director.

MICHIGAN

- ◆ The PE and LS boards' new fax number is 517-373-2162.

NEW HAMPSHIRE LS

- ◆ Linda Capuchino is the new chair. Gregory Brown is a new appointee to the board. The term of Douglas Burnell has expired.

NEW YORK

- ◆ Joseph P. Berger is a new appointee to the board.

TENNESSEE PE

- ◆ Mark Freeman is the new board chair. John G. Love III, Dana Miller, Carlton Norris, and William J. Stockard are new appointees to the board. Sandra S. Moore (sandy.s.moore@state.tn.us) is the new executive director. She replaces John Cothron, who was interim executive director.

UTAH

- ◆ Scott F. McNeil is the new chair. Von R. Hill, Jonathan Richards, and David E. Wesemann are new appointees to the board. The terms of Barry Anderson, Robert Knox, and Charles Richardson have expired. The board's new fax number is 801-530-6720.

WYOMING

- ◆ The board's new address is 6920 Yellowtail Dr., Suite 100, Cheyenne, Wyo. 82002. Phone and fax numbers remain the same.

The President's Message (continued from page 4)

The relationship between ABET and NCEES is critical to the future of licensure. Engineering is changing, and both organizations are not only trying to respond to change but are also trying to anticipate it. Each organization has its own set of driving factors, and the needs of one do not always seem to line up with the needs of the other. Although we still have issues to resolve, I am confident that we are moving in a positive direction. NCEES leadership

remains committed to resolving the concerns and will remain vigilant, continuing to seek solutions through increased communication and cooperation with ABET and the rest of the engineering profession.

I am encouraged.

*Jon D. Nelson, P.E.
NCEES President*

Comity for continuing education credits

I read Lou Raimondi's article "Why Not Comity for Continuing Education Credits" with great interest (February 2005 *Licensure Exchange*). It was exactly on target in my opinion. I'd like to briefly share what we have been able to do in and around Kentucky to accomplish in a small way this vision of what should be done in the professional world.

Having served on the Kentucky Continuing Professional Development Committee since its conception in 1995, I have participated in our efforts to accept professional development hours (PDHs) from other states. Kentucky has mandatory continuing education for the surveying profession only. Our jurisdiction will accept surveying continuing education credits from a practitioner who meets the continuing education requirements for his or her state of residence.

Like most other jurisdictions, Kentucky has state-specific requirements that must be satisfied by attending courses that are sponsored or approved by the Kentucky State Board of Licensure for Professional Engineers and Land Surveyors (a total of four PDHs every four years). These courses are normally offered only within the state. Multiplying that same scenario by the 50 states means that this situation is still a major problem for multi-jurisdictional practitioners.

Within the last two years, members of the Kentucky board met with representatives of the Indiana State Board of Registration for Professional Land Surveyors. We ultimately agreed to a reciprocal policy. The Tennessee State Board of Examiners for Land Surveyors has also approved surveying credits on a reciprocal basis for several years. Kentucky and Tennessee are "metes and bounds" states, while Indiana is a "public lands" state. Getting comity for the state-specific portion (mandatory courses) of the continuing-education requirements will be the major problem. However, getting comity for the general PDH requirements in all jurisdictions is a more achievable goal for the short term.

I agree with the article that the Council is the logical clearinghouse for those continuing education credits.

James R. Riney, P.E., P.S.

Member of the Kentucky State Board for Professional Engineers and Land Surveyors

Reader poll results

Thank you to everyone who completed the reader poll in the recent issue of *Licensure Exchange*. One of the main purposes of the reader poll was to find out what issues you want covered in the newsletter. More than 85 percent of respondents indicated a high or medium interest level in reading articles about the following topics: Annual Meeting, Board of Directors' meetings/actions, committees, education, exam administration, exam development, exam pass rates, exam scoring, exam security issues, value of licensure, and zone meetings/activities.

Respondents also offered many story suggestions. Some of the most common not included in the list above are the relationship between ABET and NCEES, comity in continuing education, experience, surveying, and faculty licensure.

The poll received 134 responses for a 10 percent response rate. More than half of respondents indicated engineering as their primary area of specialty, 23 percent said surveying, 7 percent said engineering and surveying, and about 15 percent said other (including MBAs). For a more in-depth report of the reader poll results, go online to www.ncees.org/licensure_exchange.

The primary goal of *Licensure Exchange* is to provide a forum for the exchange of information, opinions, and ideas regarding the licensure of professional engineers and surveyors. If you would like to contribute an article or have an idea for a story, please e-mail kanderso@ncees.org.

Keri Anderson

Editor, Licensure Exchange

Send letters to *Licensure Exchange* editor at NCEES, P.O. Box 1686, Clemson, SC 29633 or kanderso@ncees.org.

Please include your name and state of residence on the letter. Letters may be edited for clarity, brevity, and readability.

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Council again sponsors national surveying award

"What do you think the letters P.E. and L.S. after our names stand for?" This was our first question to teams competing for the Best Land Surveying Practices special award at this year's National Engineers Week Future City Competition. Two of the more interesting responses—"physical education" and "practically engineer"—demonstrate the ongoing need for promoting the engineering and surveying professions.

This is the second year NCEES has sponsored the special surveying award. The Future City Competition started in 1993 as an IEEE legacy activity and has grown into a successful outreach tool for reaching young students. Since it began, more than 225,000 students, teachers, and engineering mentors have participated. This year alone, more than 1,000 schools (about 30,000 students) registered.

The competition is a four-phase project in which students design a future city using SimCity 3000 software, build a physical to-scale model of a portion of their future city, write an essay explaining their response to a specific engineering challenge, and communicate their results through a formal timed presentation.

Thirty-two regional winners competed at the national finals, held February 19–23 in Arlington, Va. The

judging for the 29 special awards was intense for both the students and the judges. Each team was allocated about five minutes to respond to specific questions. As judges, we took into consideration the impact of high standards used by surveyors in the protection of the public health, safety, and welfare. This year's surveying award winner is Maple Hill Middle School from the Albany, N.Y., area (Capital District).

We see many benefits to Council participation in this event. Very few teams really understood the impact surveying has on all their future cities. A few seeds planted now will bear fruit in the future. The sponsorship also allows us to emphasize the need for licensure and use of licensed practitioners in the design and building of cities.

A side benefit to this sponsorship is that it opens networking opportunities and increases the Council's visibility with other professional organizations. ASCE, IEEE, NSPE, Fire Protection Engineers, and other groups attended the competition, and we were able to demonstrate the Council's willingness to advance the practical aspects of engineering and surveying.

*Robert Krebs, P.E., L.S.
NCEES Past President and
Martin Pedersen, L.S.
NCEES President-Elect*

See inside for highlights of the Board Presidents' Assembly.

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