

Promoting ourselves

We as engineers and surveyors have historically hesitated to promote ourselves. Most in the profession tend to go quietly about their business, letting their work speak for them instead.

Yes, the engineering and surveying professions have achieved marvelous things. The Golden Gate Bridge, the Eiffel Tower, the Hoover Dam, and the new Millau Bridge in France are all beautiful examples. The water we drink, the roads we navigate, and the public infrastructure we depend on are other examples of our professions at their best.

Very seldom in our country do we hear about bridges collapsing, buildings falling down, or undrinkable water emerging without a cause such as a natural disaster. But just as seldom do we hear public praise and admiration for great public works or a beautiful new subdivision aesthetically designed into a wooded valley.

We need to start blowing our own horn and beating our own drum. The number of graduates from engineering programs in the United States is down. The number of engineering graduates pursuing licensure is down.

At the last annual meeting of the American Society of Civil Engineers, I learned that some high school guidance counselors present the study of engineering as a difficult, time-consuming process that can take five years and has no advantages. When the same counselors address the study of medicine, though, they show it as benefiting mankind, providing social acceptance, and having other plusses despite its eight-year commitment.

Young women who eagerly participate in the National Engineers Week's Future City Competition in equal numbers to boys take a different career path as they get to high school and college, even though they are academically prepared in the math and science fields. Some just can't picture themselves as engineers. Why aren't we showing them that they could and should be engineers or surveyors?

The Council has previously said that we need to promote licensure, not the profession. We as surveyors and engineers, however, also need to promote the professions, or we will not have anyone to promote licensure to. We in the engineering and surveying community need to promote ourselves to our communities, our neighbors, and our children.

How many of you actively do something in your town to promote engineering or surveying, even during National Engineers Week? How many of you go to the local high schools to speak on engineering as a career? How many of you promote participation in the Future City Competition at your local schools and volunteer to mentor a team?

We need to put more emphasis on the importance of our profession to public welfare and to the standard of living we enjoy. We need to promote the career satisfaction we find as engineers and surveyors. Only then will more young people begin to see these professions as viable career alternatives.

All of you who serve on Member Boards already show your commitment to your profession and society. It is just as essential that you also promote your profession. We need to let the public know that we are vitally important. Young people need to see us as role models for careers that can be challenging and exciting.

Get involved with the Engineering Speaker's Kit. Promote surveying to middle school and early high school math and science students with the Surveying Speaker's Kit. Each and every one of us needs to be using these tools and speaking to student groups, math and science classes, and educators. Attend career fairs with others from your local society or office, and show the kids what you do and why you love it. If we want to see engineering and surveying grow in the future, we have to increase our efforts now.

*Martin A. Pedersen, L.S.
 NCEES President*



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 NCEES President*



Betsy Browne
NCEES Executive Director

Council launches new campaign to promote licensure

A little more than five years ago, the Council adopted a long-term plan to promote the value of licensure, and we've seen a great deal of activity and progress in that direction. The Council's goals, as laid out in the Strategic Plan, include raising awareness of the value of licensure in industry as well as in academia and promoting licensure to undergraduate students.

Our methods so far have been rewarding: creating the Speaker's Kits, sponsoring National Engineers Week, and promoting the FE exam as an outcomes assessment tool. The most recent component—a campaign of posters, advertisements, and giveaway items based on a unified theme—targets the undergraduate engineering community. The central message—Finish it!—is a simple appeal to students in engineering programs to perfect the degree they've begun.

This issue of *Licensure Exchange* introduces the Finish it! campaign and, beginning on page 7, discusses the advantages of the Speaker's Kits and some of the ways that individual Member Boards are advancing the cause of licensure.

Standard-setting studies currently under way

As reported in the last issue of *Licensure Exchange*, a specially appointed committee of licensed subject-matter experts determines the passing score of any exam with new or significantly modified content. This October exam administration, new specifications were implemented for several exams—the Fundamentals of Engineering (FE), the Fundamentals of Surveying (FS), the Principles and Practice of Surveying (PS), and the Industrial Principles and Practice of Engineering (PE) exam.

Standard-setting studies for these exams will take place this month. The scores should be released to Member Boards within eight weeks of the exam administration, and pass rates will be posted on the NCEES Web site by the beginning of January.

This exam administration begins a new procedure for reporting scores. As approved by the Council in 2004, the FE and surveying exam scores will be reported only as pass or fail. All failing candidates will be provided a diagnostic report indicating performance on the sections attempted.

Staff changes at headquarters

I would like to introduce our newest exam development engineer, Susan Cline, P.E., who joined NCEES in October. Susan is responsible for coordinating development of the Civil, Industrial, Mining and Minerals, and Architectural Engineering PE examinations. Because the Council recently completed a Professional Activities and Knowledge Study (PAKS) for the Civil examination, one of Susan's biggest tasks over the next couple of years will be working with the civil committee in developing exam questions for the new exam specifications that resulted from the PAKS. Before joining NCEES, Susan worked as an industry consultant in the area of water, wastewater, and stormwater designs. She earned a B.S. and an M.S. in civil engineering from Clemson University and is licensed in South Carolina.

Finally, the 2004–2005 NCEES Annual Report will be mailed to all Member Board members in January. By highlighting recent Council accomplishments, activities, and finances, this report offers both new and longtime board members an overview of where the Council has been and a context for understanding where it is going.

Betsy Browne
NCEES Executive Director

Finish it! campaign targets younger generation

NCEES Director of Professional Services Mike Shannon, P.E., often speaks across the country about the value of licensure. In a recent speech to the Tau Beta Pi honor society, he began with a quotation from Ralph Waldo Emerson: “Without ambition one starts nothing. Without work one finishes nothing. The prize will not be sent to you. You have to win it.”

He continued his endorsement of licensure by pointing out, “A P.E. license is a credential that conveys competence, and to get it you have to finish what you’ve started.” This sentiment highlights the theme of the marketing campaign begun by the Council this year. The main message is “Finish it!” And the advertisements feature the letters *engi* as the central image to reinforce this message.

The marketing group that created the campaign analyzed extensive marketing research conducted over the past six years. The research, which involved over 15,000 engineering students on more than 20 university campuses, revealed that many students were either unaware of the FE exam or unsure of whether or not they should take it.

To persuade these students to engage in the process of licensure, the campaign will answer the question, “What can the FE exam do for you?” to convince students of the immediate benefits of taking and passing the FE exam.

- ◆ **Perfect the degree you’ve earned.**

The advertisements focus on the idea that the FE exam acts as a confirmation of what a student has learned in school. Success on the exam demonstrates a student’s seriousness and immediately differentiates a candidate from other job-seekers.

- ◆ **Launch the career you deserve.**

The campaign seeks to inform students that passing the FE exam will facilitate their success in building the career they want. It visually links the FE exam with professional licensure with the statement, “Turn that little e into a big E.”

Directed to undergraduates, the campaign includes print advertisements, giveaway items, and posters that contain the same message.

NCEES Manager of Meetings and Marketing Communications Nina Norris, who is coordinating the marketing campaign, has already received positive feedback about the poster campaign. She’s heard

students say, “Hey, that’s cool. I’ve seen those posters at my school,” indicating that they’ve noticed the message.

Sometimes success is just a matter of causing them to pause at an NCEES booth. “If we can get them to stop and look, we can keep them for a three-minute conversation,” says Shannon. “And that’s long enough to talk to them about the value of licensure.”

NCEES Staff

MISSION

The Mission of NCEES is to coordinate with domestic and international organizations to promote licensure of all engineers and surveyors.

NCEES Strategic Plan



The President-Elect's MESSAGE



Louis A. Raimondi, P.E., L.S.
NCEES President-Elect

Volunteers make the difference

As president-elect, I am responsible for establishing the committee makeup for 2006–2007. To begin this process, the Council will send all Member Board members questionnaires requesting a list of committees they would like to serve on. In October's issue of *Licensure Exchange*, I stressed the need for Member Board members to assume their responsibility as members of NCEES. If you have the time and ability to serve on a committee, both the Council and I would appreciate your volunteering.

Here are a few things to remember as you are filling out your questionnaire:

- ◆ Promptness is greatly appreciated. Please try to respond as soon as possible.
- ◆ Be specific in the choice of committee you would like to serve on. If you have special expertise in a subject matter, please note that in your comments.
- ◆ Be flexible—be willing to accept whatever committee you are chosen for.

There are several factors that go into the committee selection. Each committee must have representation from each zone; certain committees require holdover members from one year to the next; and in some cases emeritus members need to serve either as committee members or as consultants.

To create a sufficient pool of volunteers, the questionnaire asks for three choices of committees. Even though you may not be assigned to your first choice, we ask that you be flexible in whatever assignment is entrusted to you.

Sometimes there are more volunteers than committee assignments. If that occurs, please remember that there are still other activities that members can engage in. For example, we need volunteers to prepare Professional Activities and Knowledge Studies, conduct cut-score workshops, write exam items, give licensure presentations (see related articles on pages 7–9), and write articles for *Licensure Exchange*.

When all is said and done, you will find that committee service is rewarding both personally and professionally. The Council is about licensure, and as a licensee in your specific jurisdiction, you'll be satisfied to know that you've played a key role in protecting the health, safety, and welfare of the general public.

Louis A. Raimondi, P.E., L.S.
NCEES President-Elect

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 2.01

Charging into a new year of Council activity

Each year, Council leadership delegates specific tasks to standing and special committees and task forces. The issues driving committee charges this year include education, exam content and security, and national and international comity. Many of these formed last year's charges and have continued to be significant for this year as well.

Here are some of the charges that committees are addressing this year, charges that will result in motions for Council action at next year's Annual Meeting.

Improving exam content

The **Committee on Examinations for Professional Engineers (EPE)** and the **Committee on Examinations for Professional Surveyors (EPS)** are responsible for the content and scoring of all NCEES engineering and surveying examinations.

The EPE Committee will address several new issues this year, including the potential use of multiple forms or versions of the Principles and Practice of Engineering (PE) exams, a new procedure for reviewing examinations that would place all exam meetings at NCEES headquarters, and the modification of the NCEES structural exams to incorporate seismic design questions that would satisfy requirements of all Member Boards.

"Incorporating adequate seismic design questions for all boards is a tough charge," says A.J.P. "Sonny" Launey, P.E., who is serving his second year as EPE chair. "But if we can find common ground among the states, it could greatly increase mobility for structural engineers in different seismic zones."

A number of EPE charges from last year were retained for further study. One such charge deals with the possibility of computer-based testing (CBT). "One of the big issues is cost," says Launey. "With that in mind, we'll continue to look at how other professions have adapted to this exam format. And because CBT requires that questions have certain characteristics, we'll

continue to assess our current item bank to see what options exist." The EPS Committee will also monitor CBT issues as one of its committee charges.

Having just updated both surveying exams to fit the new specifications, EPS Committee members will continue their work of improving exams by reviewing the existing item bank. "The full committee and related work groups meet together twice a year at Council headquarters in Clemson to assemble, review, and finalize exams for the next three examination administrations," says James R. Riney, P.E., P.L.S., a longtime EPS Committee member who is serving his first year as chair.

"Our main concerns are exam integrity, validity, and security," states Riney. "Do we have an adequate supply of items in the test bank? Are the tests actually measuring the correct knowledge and skills required for licensure? Are the exams fair and objective, even for a diverse test population? These are some of the questions that we will answer."

Increasing education requirements

The **Committee on Uniform Procedures and Legislative Guidelines (UPLG)** is charged with studying methods for facilitating licensure and professional practice and recommending revisions to the *Model Law* and *Model Rules*.

"The UPLG Committee is where the rubber meets the road—where the ideas and goals of the Council are codified in the *Model Law* and *Model Rules*," says Claude V. Baker, P.E., S.E., L.S., who is serving his second year as chair.

"The charges given to the UPLG usually consist of writing proposed laws and rules regulating the practice of engineering and surveying in the United States. This year they might affect the rest of the world too," says Baker. "Of the six charges assigned this year, two of them propose major changes that would have a lasting effect on all practicing engineers."

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One of these charges includes making recommendations for revising the *Model Law* to require additional education as a prerequisite for licensure as a professional engineer. “The idea of additional engineering education has been around for a while,” says Baker. “The analysis performed by the Licensure Qualifications Oversight Group and the Engineering Licensure Qualifications Task Force vividly shows how the required number of courses in technical matter has declined over the last decades. Most of the engineering societies see this as an alarming drop and have been working for years to correct the situation. As a result of LQOG and ELQTF efforts, the Council charged the UPLG to write the proposed laws and rules to effect the change. The committee will address not only education but also how it affects comity, grandfathering, *Model Law* status, and other equally important areas.”

Evaluating foreign degrees

The UPLG Committee is responsible for revising the *Model Rules* to include and define the term *or equivalent* as it pertains to evaluating foreign degrees conferred by Washington Accord members.

“The equivalency issue is more complicated than just saying that a Washington Accord degree is equivalent to an ABET degree,” says Baker. “Some countries have different program objectives and differing ideas of the role of humanities. What the Council decides will affect every foreign-educated engineer applying for licensure in the United States. With these issues in mind, the committee will do a lot of research before a definition is proposed to the Council at the next Annual Meeting.”

The Washington Accord is an international agreement between ABET and eight countries—nine members, with six provisional members. Members are recognized by the agreement as having substantially equivalent accreditation processes, and the Washington Accord recommends that graduates of these programs be accepted as having met the academic requirements for entry to the practice of engineering.

Defining engineering and surveying practice

Another UPLG charge will be performed in conjunction with the **Committee on Law Enforcement**. These two committees will work together to propose revisions to the *Model Law* definition of the practice of engineering and

surveying to reflect current practice. Although similarly charged last year, they felt they needed more time to address it. This year they will renew their efforts to define adequate boundaries for this designation.

Developing tools for law enforcement

The primary objective of the Committee on Law Enforcement is to provide Member Boards with tools and information that will enable more effective and uniform enforcement of the rules and laws governing the engineering and surveying professions.

“The Council already offers several tools to assist Member Boards with enforcing regulations—the Annual Meeting Law Enforcement program, the Enforcement Exchange database, the Law Enforcement listserv, the *Investigation and Enforcement Guidelines*, and the *Investigative Training Manual*,” says David J. Evans, who is serving his sixth year on the committee and his first year as chair. “Our committee will enhance the existing resources, promote their use, and add to them by compiling an enforcement directory. We will also study the feasibility of developing two additional tools: an investigative training program and guidelines for interstate cooperation in investigation.”

Standardizing continuing professional competency

The **Continuing Professional Competency (CPC) Task Force** is a special task force appointed to evaluate the current system of CPC requirements. Once its work is complete, it will recommend methods of facilitating recognition of a licensee’s satisfaction of CPC requirements in multiple jurisdictions and the development of a uniform means of reporting CPC activity.

“The approximately 30 jurisdictions that have CPC requirements differ in their requirements, renewal timetables, and recognition of CPC reported by nonresident licensees to their home jurisdiction,” says Task Force Chair Forrest M. Holly Jr., P.E. “Member Boards and their licensees would benefit from a standardization of CPC reporting that recognizes the common elements of CPC requirements across jurisdictions.

“This matter demands attention,” Holly notes, “because the number of jurisdictions requiring CPC has increased significantly in the last

“These are all important charges, but we have committees equal to the task. President Pedersen has carefully selected the committee members to present a balanced view both regionally and technically, and the additional support of committee consultants has been provided as necessary.”

*Claude V. Baker, P.E., S.E., L.S.
Chair, UPLG Committee*

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Promotion of licensure

One of the top three goals identified in the Strategic Plan is the promotion of licensure, which includes promoting the value of licensure to industry and academia and encouraging more students to pursue licensure.

The Council promotes licensure chiefly through its Speaker's Kits and student outreach. The Engineering Speaker's Kit, introduced in 2003, has been highly successful, and the Surveying Speaker's Kit, introduced this year, has also generated a positive response. These professionally packaged kits make it easy to talk about the professions and licensure.

The following articles discuss the advantages of these kits and illustrate how individual Member Boards are advancing the cause of licensure. February's issue of *Licensure Exchange* will continue the topic with a similar analysis of the Surveying Speaker's Kit and the ways that it can be used to promote the surveying profession.

Ready, set, present!

As a board member, you've been asked to make a presentation on the value of engineering licensure at your local university or on the surveying profession at a high school in your community. Fortunately, NCEES has put together two Speaker's Kits, "Engineering Licensure: A Path of Opportunity" and "Measuring the World Around Us: A High-Tech Career in Professional Surveying" that are going to make your job a lot simpler. All of the materials and media you need, except information unique to your state, have been put together, ready for you to use.

Here is how the Speaker's Kits will make your presentation so much easier to prepare for and to give.

Getting Started: This Speaker's Kit section helps you understand the kit materials and how to use them.

Things to Do in Advance, the Venue, and the Audience: These sections of the kits offer information on how to prepare for the presentation itself, the questions to ask to make sure that you understand the features of the venue where you will be speaking, the technology that you'll need, and who you can expect to be in the audience. Example questions that you should answer in advance include how many students are expected to attend and how long you will be speaking.

The Presentation: The kits include tips for using different media that might be available to you and what to do in an area where no Power-Point, video, or audio is supported. A slide-by-slide script provides the presenter with a wealth

of material, including slide objectives, key points for each slide, and special notes. At appropriate points in the presentation, the script prompts the presenter to describe anecdotes and stories from personal experiences.

Handouts: The kits also include student brochures (and more can be requested from NCEES whenever you need them) that are to be given to the students in the audience. The engineering brochure contains the NCEES exam information and Web site address and summarizes the four steps for obtaining professional licensure. The surveying brochure, on the other hand, discusses the benefits of a surveying career and introduces the students to the many different types of surveying. Also included with the Speaker's Kits are evaluation forms (one for the students and one for the speaker), which should be completed after every presentation and sent to NCEES.

I've found that using these materials makes preparing for and giving any presentation on licensure painless and that it yields professional results. I've used the Engineering Speaker's Kit at a local university for an audience that included professors and students and at a national conference of a professional society with an audience that was predominately students. In both cases, almost all of the questions the audience had upon arriving for the presentation were answered by the presentation itself.

So, on your mark . . .

*Jill S. Tietjen, P.E.
NCEES Western Zone Vice President*



*Jill S. Tietjen, P.E.
NCEES Western Zone Vice
President*

Speaker's Kit maintains clear, consistent message

Minnesota is among the states that have been using the Speaker's Kits to full advantage. To begin with, the Minnesota State Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience, and Interior Design uses the Engineering Speaker's Kit as part of its orientation for new board members to educate them about the engineering profession. Once they have experienced a Speaker's Kit presentation, board members are encouraged to use the Speaker's Kit themselves.

As part of its campaign to promote licensure, the Minnesota Board systematically visits state universities on an annual basis. Although they take significant planning, the meetings are fairly simple and straightforward: organized through the Minnesota Society for Professional Engineers or a similar organization, the meetings offer refreshments and a presentation to undergraduates in the engineering department.

At the beginning, student attendance to these presentations was typically low. Doreen Frost, executive director of the Minnesota Board, discovered that part of the problem was simply inadequate promotion. In some cases, the student chapters had failed to display posters given to them by the board.

"The contact person for these events, the one who is organizing them, is often a student with many other responsibilities. Sometimes the student chapters just need a little help in planning," says Frost. To assist them, she now gives suggestions for promoting the event, including specific dates for putting up posters and for sending invitations electronically.

These strategies have been successful, and attendance at the meetings continues to grow. At a recent meeting at the University of Minnesota Duluth, board member Harvey Harvala, P.E., encountered a wide variety of people attending the meeting. Along with the seniors sat juniors and even sophomores who wanted

to learn more about beginning the licensure process. Also encouraging was the presence of faculty members who came to support the effort and to discuss licensure issues.

Both Harvala and Frost are strong supporters of the Speaker's Kit. Having just made the presentation, Harvala gives a few suggestions to future speakers: "This is a useful tool that is simple to follow and can be modified as needed. I've learned to be flexible—if you go in too determined to have a set presentation, you might find yourself less able to communicate with your audience. Be prepared to change and know what disciplines your audience members are focused on."

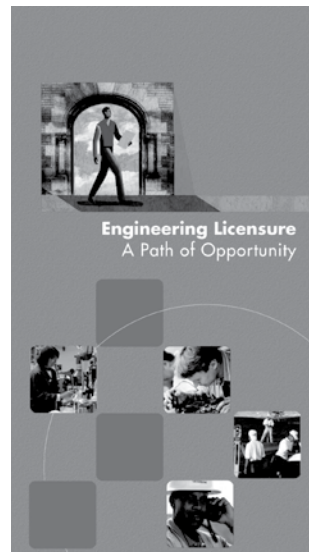
According to Harvala, one of the most effective parts of the presentation is the video testimonies, which present the students with real-life scenarios and genuine success stories. The Speaker's Kit combines these testimonies with powerful statistics. Harvala notes that the statistics seem to "resonate with the students and put things in perspective. They're able to see

that they need to take the FE exam right away if they want to get ahead."

Statistics, according to Frost, were some of the hardest things to gather before the Speaker's Kits. "The kit saves time by bringing all of these facts together," she says. "It does a good job of presenting facts from a variety of perspectives in engineering to build one consistent message."

But the message is not only consistent. More importantly, it is accurate. As Frost notes, "Misinformation can be worse than no information at all." The Speaker's Kit can help everyone—those who took the exams decades ago as well as those who are new to a state board—maintain a clear, precise message about licensure.

NCEES Staff



"I've learned to be flexible—if you go in too determined to have a set presentation, you might find yourself less able to communicate with your audience. Be prepared to change and know what disciplines your audience members are focused on."

Harvey Harvala, P.E.,
Member of the Minnesota Board

One-on-one discussions prompt more students to sign on

The Oklahoma State Board of Registration for Professional Engineers and Land Surveyors also strongly supports the Speaker's Kits. Executive Director Kathy Hart has actively promoted the Surveying Speaker's Kit, which she presented to the Oklahoma Society of Land Surveyors shortly after it was introduced in February. After explaining the benefits of the kit to more than 350 surveyors, she encouraged them to use the kit themselves at venues such as high school career days.

Regarding the promotion of engineering licensure, the Oklahoma Board has had a slightly different experience. While it has used the Engineering Speaker's Kit in conjunction with faculty meetings at Oklahoma universities, the Oklahoma Board has found that meeting with faculty and students can be challenging.

One of their strategies is to develop a well-integrated presence on campus, occasionally planning board meetings at a campus location followed by lunch with faculty to discuss licensure issues. They've found that the Speaker's Kit works effectively as a presentation given in engineering classes. When board members are asked to speak in a classroom setting, they will often use the kit and then leave it with faculty members for future use.

In an effort to reach students directly with the licensure message, Emeritus Member Bill Dickerson, P.E., and Hart have adopted another strategy, visiting two of the state universities before each exam administration—usually right before the cut-off date for applications. After contacting the appropriate deans and the office of student services, they set up a table at a suitable location on campus and wait for the inevitable: student contact. With assistance from university staff, this visit is publicized so that students can come prepared to sign up for the examination or ask questions.

Dickerson calls it a "win-win situation" as he describes the benefits of this approach:

- ◆ **Doesn't require faculty involvement.**

While they do stop by to take part in the discussion and to ask questions of their own, faculty members aren't required to give up a large portion of their time.

- ◆ **Generates contact with a variety of students.** Board members have been able to talk to students who had never thought of licensure as well as those who, though at the beginning of their college career, already want to know their options for the future. Anyone walking by the table will hear about the path to licensure.
- ◆ **Assists students with the licensure process.** Students are able to sign up for the exam right there at the table. Dickerson has observed that students look forward to the visits and appreciate the ease of signing up in person.

To help students prepare for the FE exam, the Oklahoma Board gives applicants a copy of the *FE Supplied Reference Handbook* when they sign up for the exam. Other copies of the handbook are handed out to students who are interested in taking the exam at a future date.

"Working on the EPE Committee has shown me the importance of the reference book," Dickerson says. "It will help them prepare for the exam, and it's also a good resource for their classes. Our presence on campus provides an opportunity to give applicants the reference book directly, without the delay and cost of shipping."

Personally appearing twice a year to assist students and to answer questions has proved a successful strategy for the Oklahoma Board, with the number of FE applicants at an all-time high. While part of the increase can be attributed to the fact that some university programs are requiring students to take the FE exam, the board's presence on campus has also played a key role.

"We don't see this as a substitute for meeting with the deans and faculty of these schools," says Hart. "But it has been a great method of getting students to sign up for the FE exam and a great opportunity to talk to students one on one."

NCEES Staff



Gregg E. Brandow,
Ph.D., P.E., S.E.
NCEES Treasurer

Council finances in good shape

As you can see from the operating summary, the Council has completed the 2004–2005 fiscal year with a surplus of \$1,144,401, which will raise our reserves to about 70% of the year's total expenses (compared to a target of 75%).

Although the surplus was greater than anticipated, revenue was under budget by \$98,000. The decline in the number of examinees resulted in a revenue shortfall of about \$360,000, but other revenue centers were above or substantially equal to budget. The 2005–2006 budget has been calculated using the lower trend numbers for examinees.

Fortunately, the Council was able to offset the revenue shortfall by holding expenses more than a million dollars under budget. Here are a few of the underbudget expenses for this year:

- ◆ Because of the newness of e-commerce, we were unable to determine precisely how its growth would affect the budget. Rates and account configurations were renegotiated to substantially lower the projected costs, causing banking fees to be under budget by about \$120,000.

- ◆ Personnel services ended the year about \$365,000 under budget, largely due to several open professional positions during the year.
- ◆ Committee travel expenses were also significantly under budget. Some meetings were eliminated and others were conducted less expensively than budgeted.

Having completed the annual financial audit, the independent auditors have issued unmitigated support of the NCEES financial statements. In their conclusion, they noted that Council management has demonstrated its commitment to establishing and maintaining a plan with clear objectives for financial reporting, meeting budget, operating goals, business risks, and safeguarding assets against unauthorized use or disposition. Council management and staff are to be commended for the excellence they have shown in responding to suggestions for improvement and incorporating new accounting procedures.

*Gregg E. Brandow, Ph.D., P.E., S.E.
NCEES Treasurer*

Looking ahead with *The Engineer of 2020*

Predicting the future may be tricky, but attaching a date to a prediction can be downright dangerous. Yet people feel compelled to speculate, and even when dates are especially inaccurate—1984 being a noteworthy example—humanity can often profit from conjecture.

The authors of *The Engineer of 2020: Visions of Engineering in the New Century* recognize the difficulty of their task. They readily acknowledge that “predicting the future with any exactitude is not possible,” yet they firmly believe that scenario-based strategic planning can assist in a better understanding of potential directions for the engineering profession.

Both NCEES President Martin Pedersen, L.S., and Past President Jon Nelson, P.E., have recently alluded to this report, Pedersen in his acceptance speech (published in the last issue of *Licensure Exchange*) and Nelson in his final president’s report in August. The Licensure Qualifications Oversight Group also consulted this text while discussing a new licensure model. Although primarily intended for engineering educators, *The Engineer of 2020* is a valuable resource for anyone concerned about the future of engineering.

Birth of the engineer of 2020

The brainchild of the National Academy for Engineering (NAE) Committee on Engineering Education (CEE), *The Engineer of 2020* is the first phase in a project to examine the future of engineering for the purpose of possible reform in engineering education.

Composed of experts with backgrounds in industry, academia, and government, the CEE worked in conjunction with a scenario-based planning expert to consider what would be expected of an engineer in the future. Together, they asked the question, “What will or should engineering be like in 2020?”

The group analyzed current trends and potential factors that might affect social, economic, political, and technological conditions. The committee considered both a future engineering profession that reflects current trends and growth patterns as well as a profession that might experience a fundamental

shift in its development. In forming conclusions from scenarios, the CEE used the following principles as a guide:

- ◆ The progressive advance of technology
- ◆ A deeply integrated and globalized world of technology
- ◆ An increasingly diverse technological community focused on a growing number of disciplines
- ◆ The continued influence of social, cultural, political, and economic forces on technological progress
- ◆ The progressively ubiquitous and substantial role of technology in all areas of life

Traits of the engineer of 2020

The CEE views globalization and technological innovations as two of the primary factors shaping the future of engineering. Other factors include the information explosion, an expanding and increasingly diverse population, and the growing importance of environmental issues.

According to the CEE, engineers of the future will need to understand their roles as global citizens, will need to be leaders in both industry and civil service, and will need to understand how to work in groups with people diverse in education and social background. A successful engineer of 2020 will communicate effectively, display solid leadership skills, act with consistent professionalism, and make sound ethical decisions.

This engineer must be flexible and creative in the face of rapidly advancing technology and must make decisions based on strong analytical skills. The engineer of 2020 needs a foundation not only in “engineering but also [in] history, politics, [and] business” among other things; therefore, according to the CEE, he or she must continue to learn even after graduation.

Because of the vast scope of the necessary body of knowledge, the CEE recommends continued education as well as an increased base educational requirement for beginning professionals. According to this group, “Almost all discussion of educating the engineer of 2020 presumes additions to the curriculum.”

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The report points out three alternatives—decreasing current requirements to fit other subject matter, reorganizing current curricula to be more effective, and actually raising the amount of necessary education—and concludes that the solution will probably include a combination of these.

Implications for licensure

These are challenging propositions not only for educational reform but also for professional licensure. Many of these predictions ring true to Council members because they reflect what the Council has already noted: challenges due to the information explosion, the splintering of engineering disciplines, and growing globalization and mobility.

The following quotations from *The Engineer of 2020* describe challenges for engineering education that apply to professional licensure as well.

Teaching and testing pertinent information

“The engineer of 2020 and beyond will face a bewildering array of new technologies, appearing at a rate that will bring his or her professional qualifications constantly near obsolescence.”

“Providing a broad engineering education . . . will only become more daunting as the information on new science and technology continues to explode and new and totally unanticipated technologies, requiring even more specialization, emerge in the future.”

Licensure, professionalism, and ethics

“In fact, engineering impacts the health and vitality of a nation as no other profession does.”

“Complementary to the necessity for strong leadership ability is the need to also possess a working framework upon which high ethical standards and a strong sense of professionalism can be developed.”

Optimism for the future

“The years between the present and 2020 offer engineering the opportunity to strengthen its leadership role in society and to define an engineering career as one of the most influential and valuable in society and one that is attractive for the best and the brightest. If we are to take full advantage of this opportunity, it is important to engage all segments of the population in a vigorous discussion of the roles of engineers and engineering and to establish high aspirations for engineers that reflect a shared vision of the future.”

Importance of flexibility and cooperation

“It is a daunting challenge for the engineering profession and engineering education to remain flexible enough to anticipate such changes or, if anticipation fails, to respond as rapidly as possible.”

Just as engineering education must keep up with a rapidly changing profession, the Council also needs to adapt. We as a Council must be willing to move forward, to implement new policies and procedures. If we refuse, our profession will stagnate—licensure will become irrelevant and unable to protect the public.

One step in the right direction is to examine the findings of this group and to determine their implications for licensure. If we consider this compelling look into the future, we may very well be more prepared for what takes place 15 years from now.

Past-President Nelson addressed these issues at the Annual Meeting in August. “Relevancy is a serious concern that is growing more urgent all the time,” he said. “Licensure is at risk. But we are up to the task. We have the people to make the difference; we have the leadership and the staff to make it happen. We just need the will to do it.”

Lynn C. Doyle, P.E.

*Member of the Engineering Practice Exam Task Force and
Member of the Alabama State Board of Licensure
for Professional Engineers and Surveyors
and*

Kerry M. Hawkins, P.E.

*Member of the Louisiana Professional
Engineering and Land Surveying Board*

20 years, and this trend is likely to continue. NCEES Position Statement 10 supports CPC, and model CPC requirements are in the *Model Law* and *Model Rules*. But the Council needs to provide operational support for the policy, law, and rules through mechanisms for more uniform reporting and recognition.”

Reviewing cut-score procedure

The **Cut-Score Task Force** is a special group formed to research and evaluate the existing cut-score procedure and to make recommendations for changes. While the method currently used to determine passing scores is well regarded and widely used, the task force will analyze its effectiveness for NCEES exams and research secondary methods that may be able to validate the current procedure. The group will also analyze current exam development procedures regarding cut-score subcommittee membership.

Considering national awards

The **Special Awards Task Force** was appointed this year to evaluate the creation of a national engineering award, an award that prompted a great deal of discussion at the last Annual Meeting. The task force will review the details for the award as approved by the Board of Directors in 2005, while also considering the feasibility and advantages of offering a national award in surveying.

Continuing Council activities

Certain committees have recurring goals to keep Council operations running efficiently. The **Committee on Finances**, for example, reviews the budget and financial condition of the Council and recommends exam price increases.

“The budgeting process is a balancing act: matching the wants and needs of various committees and groups with the available resources,” says David Cox, C.P.A., who is serving his second year as committee chair. “A key responsibility of the committee is to try

to identify financial issues as far in advance as possible in order to avoid surprises that require immediate attention. If fee increases are necessary, they should be announced at least two years in advance.”

The **Advisory Committee on Council Activities (ACCA)**, on the other hand, provides advice and briefing to the Board of Directors on new policy issues, problems, and plans that warrant preliminary assessment of policy choices and procedures.

“ACCA charges cover a wide range of current issues that the president wants researched and discussed during the year,” explains ACCA Chair Henn Rebane, P.E. “The other standing committees and task forces have a prescribed and relatively well-defined focus, whereas we are a catchall, dealing with remaining issues. The president assigns specific nonrecurring problems or plans to ACCA, and the committee formulates a recommendation for each of these to the president and the Board of Directors.”

Some of the issues that the committee will consider include specialty certification, online degrees, and the addition of a financial expert to the Board of Directors. Each of these topics directly affects Council procedure or the entire process of licensure, demanding careful analysis before recommendations can be presented and action determined.

All of the committee charges call for considerable analysis and discussion. As the committees meet together face to face and communicate throughout the year, they will seek resolutions to present to the entire Council at the 2006 Annual Meeting.

NCEES Staff

Send letters to *Licensure Exchange* editor at NCEES, PO Box 1686, Clemson, SC 29633 or dtalbert@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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CALIFORNIA

- ◆ The term of David Fruchtman has expired. The August issue of *Licensure Exchange* incorrectly reported that he had resigned.

COLORADO

- ◆ Program Director Angie Kinnaird's name has changed to Angie Kinnaird Linn (Angie.KinnairdLinn@dora.state.co.us).

DISTRICT OF COLUMBIA

- ◆ The board's new fax number is 202-442-4864.

FLORIDA LS

- ◆ John Knap is the new executive director. The board's new fax number is 850-922-2918, and its new Web site is www.myflorida.com/dbpr.

KANSAS

- ◆ The board's new Web address is www.Kansas.gov/ksbtp.

MARYLAND PE

- ◆ The terms of Melvin Hotz and Michael J. Howard have expired. Sandra J. Murphy (sjmurphy@ssd-inc.net) and Pastor Farinas (pfarinas@mrt-a.com) are the new appointees to the board.

MISSISSIPPI

- ◆ The board has five new appointees: Terrell W. Temple (tw1@engineeringplus.com), Rick Turner (rick.turner@hanson.biz), Dennis D. Truax (truax@civil.msstate.edu), Ronald K. Phillips (rkpsam@direcway.com), and Joe Byrd (joebyrd@bellsouth.net).

MISSOURI

- ◆ The term of Josephine Emerick has expired. The new appointee to the board is C. Royce Fugate (fugatr@townsq.com).

NEW MEXICO

- ◆ John T. Romero Sr. is a new appointee to the board

OREGON

- ◆ John H. Seward (jseward@odf.state.or.us) and Richard O. Persons are new appointees to the board. The term of Stuart Albright has expired.

PENNSYLVANIA

- ◆ Ms. Terrie Kocher is the new board administrator (tkocher@state.pa.us).

SOUTH DAKOTA

- ◆ The board's fax number has changed to 605-394-2509.

VIRGINIA

- ◆ The term of Richard N. Davenport has expired. Doyle B. Allen, whose term has expired, has been appointed as an emeritus member. Wylie V. Johnson III (wvj@handp.com) and Nancy McIntyre (nmcintyr@vb.gov.com) are the new appointees to the board.

WISCONSIN

- ◆ Tim Wellnitz is the new executive director (tim.wellnitz@drl.state.wi.us). The board's new telephone number is 608-266-2112.

National Engineers Week fast approaching

Each year, the National Engineers Week Committee designates a week close to George Washington's birthday (a land surveyor and proponent of early engineering education) to raise public awareness of the engineering profession. Initiated in 1951, Engineers Week is devoted to educating people about the contributions of the engineering profession and encouraging students to pursue careers in engineering and technology. This coming year, Engineers Week will be February 19–25.

The week includes a variety of ongoing programs to encourage youth to consider engineering as a career. Here are a few of the programs:

- ◆ **Introduce a Girl to Engineering Day**

February 23 will begin the sixth year of this program, which unites women engineers to share engineering experiences with more than one million girls and young women.

- ◆ **New Faces of Engineering**

This program calls attention to young engineers from around the world, highlighting their contributions to industry or academia.

- ◆ **Future City Competition**

In its 14th year, this program makes engineering practical and fun for middle school students. The competition reaches approximately 30,000 students every year, requiring that they work together on teams to build scale models of cities that they have designed themselves. In 2004, the Council initiated the Best Surveying Practices Award for the competition, and Council leaders have been attending as competition judges since that time as well.

The newest plan to promote the engineering profession is Connecting Educators to Engineering, a program designed to build connections between educators and the engineering profession. The goal is to reach 10,000 middle school teachers through partnerships, literature, and an online forum. For more information about these events, visit www.eweek.org.

NCEES has been a sponsor of National Engineers Week for seven years.

New calculator list approved

Each year, a subcommittee of the Examination Policy and Procedures Committee reviews and revises the approved calculator list and submits it to the Board of Directors for approval. At its November meeting, the Board voted on a new list of approved calculators for the April and October 2006 exam administrations. The following models are the only calculators that will be permitted in the examination room for the 2006 exam administrations:

Hewlett Packard—HP 9s, HP 30s, and HP 33s

Casio—FX 115 ES, FX 115 MS, FX 115 MS Plus (Note: FX 115 ES and MS models with an SR designation are also allowed.)

Texas Instruments—TI 30XA (or TI 30Xa), TI 30X IIS, and TI 30X IIB

Texas Instruments—TI 36X Solar

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Clemson, South Carolina

Upcoming
EVENTS

DATE	EVENT	LOCATION
December 23–26	Headquarters Closed	
January 2	Headquarters Closed	
February 24–25	Board of Directors' Meeting	Monterey, Calif.
April 14	Headquarters Closed	
April 21	PE/PS Exam Administration	
April 22	FE/FS Exam Administration	
April 27–29	Southern Zone Meeting	Savannah, Ga.
May 18–20	Northeast Zone Meeting	Charleston, W.Va.
May 31–June 1	Board of Directors' Meeting	Santa Fe, N.Mex.
June 1–3	Joint Central/Western Zone Meeting	Santa Fe, N.Mex.

Licensure
EXCHANGE

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