



Licensure Qualifications
Oversight Group

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ABSTRACT

In 2001, the Engineering Licensure Qualifications Task Force (ELQTF) was established to evaluate the current licensure system. In addition to NCEES members, this group was composed of representatives from the entire engineering profession: professional practice, government, industry, and education. After two years of intensive dialogue, ELQTF presented a comprehensive report to the Council at the 2003 Annual Meeting.

The Licensure Qualifications Oversight Group (LQOG) was formed the next year. The primary objectives of LQOG have been to review and research the conclusions and recommendations contained in the ELQTF report and to prepare recommendations for the Council on those that merit implementation. Unlike ELQTF, LQOG is made up of only Member Board members, including emeritus members, public members, and administrators.

LQOG is proposing several motions for Council consideration in 2005, including recommended language requiring additional engineering education for licensure, a professional practice feasibility study and task analysis, and a revised NCEES licensure model.

In an effort to maintain a broad NCEES perspective, more than half of the 2004–05 LQOG members were new to the group. A brief organizational meeting was held in August at the 2004 Annual Meeting, followed by two face-to-face working meetings in December 2004 and January 2005.

The 2005 LQOG recommendations and motions are consistent with ELQTF recommendations. Although 6 of this year's 17 LQOG members were also ELQTF members, the group believes the recommendations and motions contained in this report reflect their perspective as authorities on licensure rather than as professional society participants.

The recommendations and motions included in this report represent the culmination of four years of intensive efforts by leaders and stakeholders of the entire engineering profession, not just NCEES. Engineering licensure will be significantly enhanced by their adoption and implementation. LQOG recognizes that implementation of the recommended changes may take several years and the efforts of many stakeholders, including NCEES.

TEXT

Charge #1: *Research the conclusions and recommendations contained in the ELQTF report, and prepare recommendations for Council consideration at the 2005 Annual Meeting.*

The group based its deliberations on the Report of the Engineering Licensure Qualifications Task Force, dated March 2003. The entire report is posted on the NCEES Web site at www.ncees.org.

ELQTF was designed to acquire a practitioner perspective on the future of engineering licensure and was, therefore, largely composed of members with strong ties to professional societies. LQOG, on the other hand, is composed entirely of NCEES members. LQOG's objective is to examine the ELQTF results from the perspective of the licensing authority and the Council, ensuring that each meet the following qualifications as presented in the ELQTF report:

- Must protect the health, safety, and welfare of the public
- Must be enforceable
- Must be fair to applicants
- Should accommodate future conditions
- Should facilitate licensure and neither hinder nor discourage it
- Should be workable and able to be implemented
- Should be credible and logical
- Should be efficient and not overly complex
- Should enhance the stature of engineering in society

At the 2004 Annual Meeting, the Council acted on six motions resulting from the first phase of LQOG's review. This report represents a continuation of that effort and includes recommendations, all of which are consistent with ELQTF recommendations. Some recommendations support existing practices, and some represent new practices.

In the paragraphs that follow, applicable ELQTF report heading numbers from Section 8, Licensure Concepts Considered and Recommended, are shown in parentheses.

Engineering Education (8.1.4)

At the 2004 Annual Meeting, the Council passed the following LQOG motion:

"Move that the President consider initiating a process to determine specific recommendations regarding additional engineering education for the purpose of licensure and prepare an implementation plan."

Charge #2: *Recommend revisions to the Model Law to require additional engineering education for the purpose of licensure.*

Acquiring additional education beyond the Bachelor of Science degree as a prerequisite for professional practice and licensure is a concept that has been discussed throughout the engineering profession for more than a decade. It is LQOG's perception that there is growing support for this initiative within the engineering community. The American Society of Civil Engineers, for example, has taken formal action in support of this concept. LQOG recommends that the Uniform Procedures and Legislative Guidelines Committee be charged with incorporating language requiring additional engineering education into the *Model Law* and *Model Rules* as a prerequisite for licensure and offers the following suggested language:

“Graduation with a Bachelor of Science degree from an engineering program of four years or more accredited by EAC/ABET, or equivalent, plus 30 additional credits from an approved course provider(s) in upper-level undergraduate or graduate-level coursework in professional practice and/or technical topic areas.”

Terms used in the above are defined as follows.

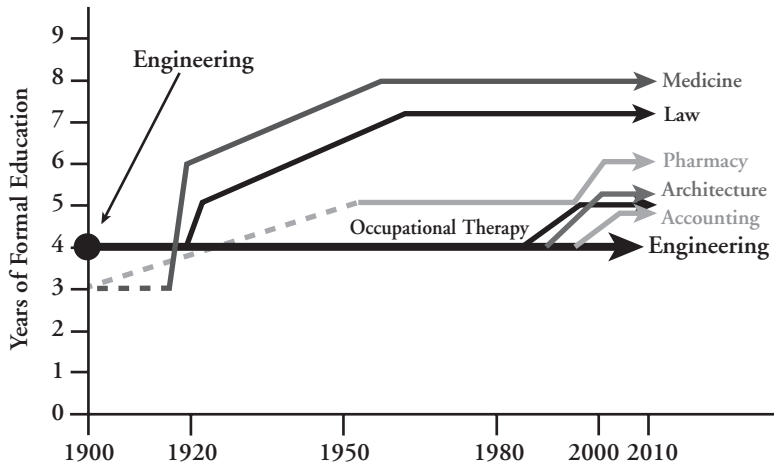
- “Approved course provider” shall mean an institution that has a program or programs accredited by EAC/ABET or an approved alternative education provider that offers courses equivalent in both intellectual rigor and learning assessment to upper-level undergraduate or graduate-level courses offered by engineering programs accredited by EAC/ABET.
- “Professional practice topic areas” shall mean ethics; communications; engineering, marketing, financial, and/or institutional management; project management; contract law; and other professional skills directly related to an individual's practice.
- “Technical topic areas” shall mean engineering, science, mathematics, or other technical disciplines related to an individual's specific engineering expertise and practice areas.

There are several arguments that can be offered in support of this recommendation. LOOG offers the following as compelling examples of how the educational requirements for licensure have deteriorated over a period of 50 or more years.

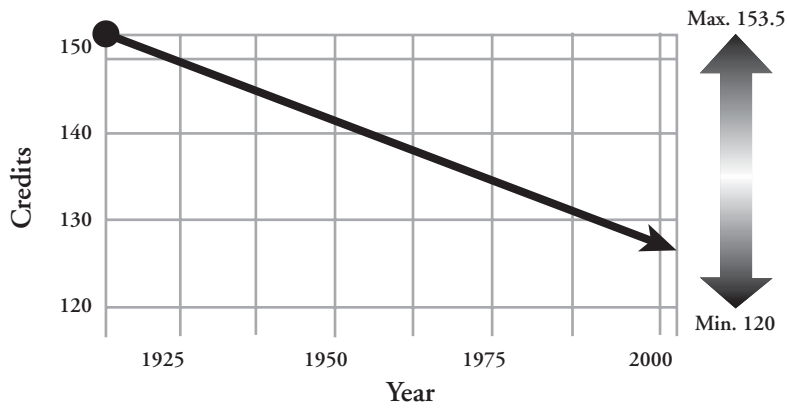
At one time, the engineering profession was a leader, requiring more formal education to practice than other recognized professions. While other professions have increased educational requirements over the years, engineering has, in effect, decreased the requirements. The number of credit hours required for a bachelor's degree has steadily decreased over the years, and the curriculum emphasis has shifted. These changes have resulted in a decrease in core engineering courses, a decrease in technical breadth and depth, and an increase in general studies. (See figures on next page.)

This has occurred at a time when technology is exploding and the practice of engineering is becoming 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.

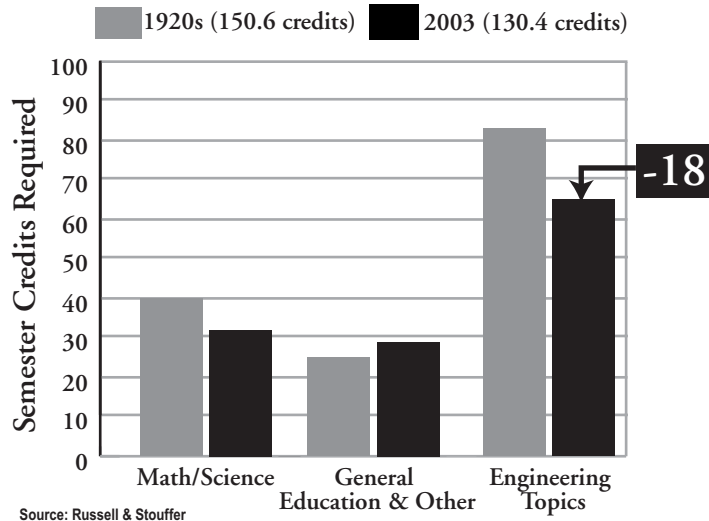
Once a Leader



Reduction in Credits Required for BS Degree



Engineering Curricula



Source: Russell & Stouffer

Examination (8.3.3)

ELQTF recommended a professional practice exam covering engineering practice issues for engineers seeking licensure. LQOG deliberated this issue at length over a two-year period and agrees that there is a need for expanding coverage of “professional practice issues” in the examination process.

In its 2004 Annual Meeting report, LQOG noted that most disciplinary cases faced by state boards involve nontechnical issues. Furthermore, the engineering community has faced criticism for being focused primarily on technical subject matter both in education and licensing exams. While there is apparently a difference of opinion on the extent to which professional practice issues are addressed by the various disciplines in current PE exams, there appears to be general agreement that the exams are heavily weighted to technical subject matter. Furthermore, the current PE exams have limited coverage of the professional practice issues that engineers face when offering services to the public.

While there appears to be broad-based support—both within NCEES and throughout the engineering profession—for enhancing the professional practice examination content, several questions must be answered before moving ahead with this initiative. These include the feasibility of such an exam; the form and timing of the exam; how the exam should be incorporated into the existing exam structure; the knowledge related to engineering practice issues that all licensed engineers should have; and when these competencies are attained in the licensing process.

To move forward with this initiative, LQOG recommends that the Council conduct a feasibility study and task analysis for an engineering professional practice exam. The expenses associated with creating a task force will be \$50,000 for 2005–2006. Conducting a feasibility study will be \$125,000. If the results of a feasibility study indicate that a task analysis is warranted, a task analysis will be conducted at a cost of \$125,000. The total cost would therefore be \$300,000 over a four- to five-year period.

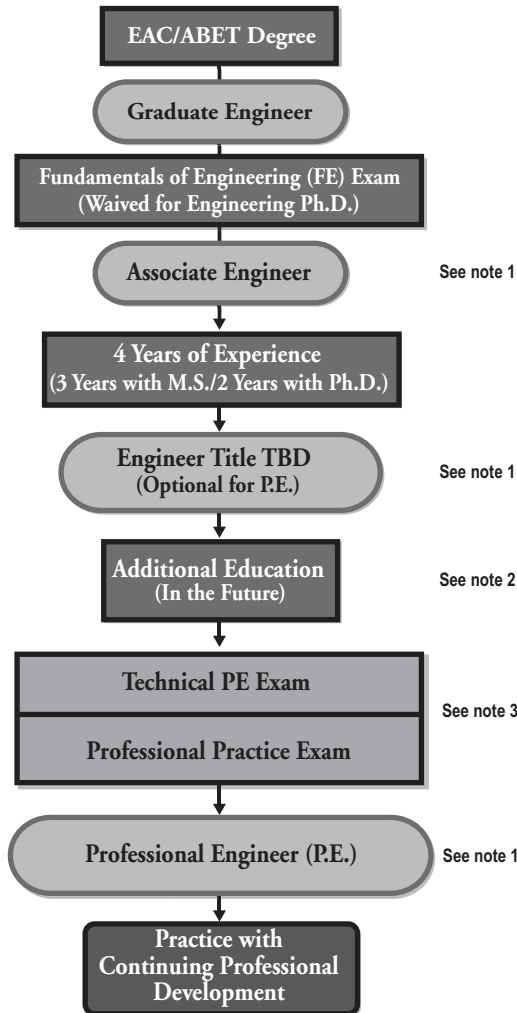
The EPE Committee has been informed of and endorses this recommendation.

Licensure Model (8.4.2.1)

After lengthy deliberations, ELQTF developed a consensus licensure model that would eliminate deficiencies in the current model and be more attractive to engineers not offering services directly to the public.

LQOG agrees there is a need for a model revision and recommends that the Council endorse the Proposed NCEES Licensure Model shown in the figure on the next page and refer it to the appropriate NCEES committee for implementation.

Proposed NCEES Licensure Model



Notes

1. Must subscribe to a code of ethics
2. May be obtained any time before technical PE Exam
3. Future evaluation will be required concerning feasibility, packaging, and timing of exams.

The proposed model is in fundamental agreement with the ELQTF consensus model. One area of difference to note, though, is that the ELQTF model recommended creating a Registered Engineer status. The LOOG model has replaced that title with a new engineer title to be determined (TBD). The term *registered* received strong objections because it could cause confusion within and outside the profession. Engineers classified under the new designation 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. They would also be required to subscribe to a code of ethics.

The professional practice exam included in the proposed model would be subject to future Council approval following completion of the proposed engineering practice feasibility study and task analysis.

Specialty Certification (8.4.1.2)

In the *Manual of Policy and Positions Statements*, PS 2 is stated as follows:

PS 2 Certification of Engineers

NCEES agrees with the right of professional organizations and societies to recognize or certify their members for any purpose that does not conflict with legal licensure. NCEES opposes the certification of engineers by any organization or society wherein the purpose of such certification is to provide recognition in lieu of legal licensure as established by the statutes of the various jurisdictions.

LQOG agrees that certification by professional organizations and societies has value and that it should continue to be done post-licensure.

After revisiting the issue of specialty certification and noting the outcome of the vote on this issue at the 2004 Annual Meeting following little discussion, LQOG recommends that PS 2 remain as it is currently stated.

It should be recognized, however, that specialty certification programs for engineers that do not require licensure may produce confusion in the public regarding the practice of engineering. In fact, such certification may actually encourage unlicensed practice; therefore, LQOG recommends that the NCEES *Model Law* be revised to explicitly state that specialty certification is not a substitute for licensure and does not give the certified individual the right to practice engineering.

Experience (8.2)

At the 2004 Annual Meeting, the Council approved an LQOG motion "that the president consider charging a committee with finalizing experience guidelines and a verified experience form for distribution by individual jurisdictions to all who pass the FE examination." This action precipitated the third LQOG charge.

Charge #3: *Recommend revisions to the Council-adopted "Suggested Guidelines for Progressive Engineering and Surveying Experience" for distribution by individual jurisdictions to all candidates who pass the FE examination.*

Goal-Oriented Experience (8.2.1)

To ensure that each applicant achieves an appropriate level of technical and professional practice skills, Member Boards may rely on the Council-adopted "Suggested Guidelines for Progressive Engineering and Surveying Experience." The guidelines provide a baseline of experience that can be useful in guiding, mentoring, and verifying acceptable experience of engineer-interns and intern applicants prior to licensure. Experience in each of the areas is not necessarily or specifically required for licensure, and all work and skill areas indicated may not be applicable to each engineering discipline.

Incorporation of uniform experience summary application documents may assist boards in getting applicants to provide the desired information and ensure that the information is sufficient.

Individual Recordkeeping System (8.2.2)

The Council-adopted "Suggested Guidelines for Progressive Engineering and Surveying Experience" can also be used as a recordkeeping system by engineer-interns and intern applicants. Applicants could use the guidelines summary as a checklist for each assignment or engagement and have it verified by the appropriate supervisor or reviewer. Applicants could place a checkmark next to any experience category in which they claim to have gained experience during each assignment or engagement and circle or list specific activities in each category applicable to the experience.

Communication upon Passing the FE Examination (8.2.3)

To encourage engineer-interns to continue with the licensure process and to provide consistent guidance and structure to applicants' engineering experience qualifications as well as to the evaluation of those qualifications by Member Boards, LQOG concurs with the ELQTF recommendation to distribute the "Suggested Guidelines for Progressive Engineering and Surveying Experience," a verifiable recordkeeping program, and the state's code of professional conduct with notification letters to those who have passed the FE examination. To facilitate this process for all Member Boards, it is recommended that NCEES provide the appropriate number of copies of the guidelines with each score report sent to jurisdictions to encourage its enclosure with the notification letter.

LQOG's motion at the 2004 Annual Meeting was intended to create a user-friendly document that would be widely used for the purposes stated above. Time limitations prevented LQOG from adequately addressing this issue; therefore, LQOG recommends that the president again charge an appropriate committee or task force with revising the "Suggested Guidelines for Progressive Engineering and Surveying Experience."

National Registry (8.4.2.3)

LQOG studied the potential value and use of a national registry, or an engineering credential data system, as suggested in the ELQTF report. After considerable study and discussion, LQOG concluded that while this concept may have significant merit, it is premature to move forward with this initiative at this time. LQOG recommends reconsideration of this issue following adoption of the proposed licensure model.

Licensure Qualifications Oversight Group

Respectfully submitted, Licensure Qualifications Oversight Group:

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MOTIONS

Mr. President, I request the privilege of the floor to make the following motions on behalf of the Licensure Qualifications Oversight Group.

1. Move that the Uniform Procedures and Legislative Guidelines Committee be charged with incorporating the following language requiring additional engineering education into the *Model Law* and *Model Rules* no sooner than 2010 unless recommended otherwise by UPLG in 2006:

Graduation with a Bachelor of Science degree from an engineering program of four years or more accredited by EAC/ABET, or equivalent, plus 30 additional credits from an approved course provider(s) in upper-level undergraduate or graduate-level coursework in professional practice and/or technical topic areas.

2. Move that the Council conduct a feasibility study and task analysis for an engineering professional practice exam.

Financial impact: The expenses associated with creating a task force will be \$50,000 for 2005–2006. Conducting a feasibility study will be \$125,000. If the results of a feasibility study indicate that a task analysis is warranted, a task analysis will be conducted at a cost of \$125,000. The total cost would therefore be \$300,000 over a four- to five-year period.

3. Move that the Council endorse the proposed NCEES licensure model and refer it to the appropriate committee for inclusion in the *Model Law*.

Financial impact: The expenses associated with a new licensure model—TBD.

4. Move that the president charge the appropriate committee or task force to revise the Council-adopted “Suggested Guidelines for Progressive Engineering and Surveying Experience” for distribution by individual jurisdictions to all candidates who pass the FE and FS examinations.

Financial impact: The expenses associated with a new task force would be \$18,000.