

# UPDATE

## Education task force releases response to 2008 resolution

On March 19, the NCEES Engineering Education Task Force released its analysis of the potential impact of requiring additional education for engineering licensure. The paper is a response to the Southern Zone resolution passed by the Council at last year's Annual Meeting in Minneapolis.

The task force was charged with responding to the resolution prior to the first interim zone meetings so that Council members could discuss it within their zones before the 2009 Annual Meeting.

The full text of the analysis is available as a PDF for download at [www.ncees.org](http://www.ncees.org); the resolution is included as an appendix.

### Emphasis shifts toward master's degree requirement

As it currently stands, the additional education requirement calls for candidates for engineering licensure to acquire 30 credits beyond the bachelor's degree. The credits must meet certain standards and must include at least 15 credits in upper-level and/or graduate technical topic areas. The courses must also come from approved course providers.

The earliest date the requirement could go into effect is 2020. (In a separate charge, the task force worked with this year's Committee on Uniform Practice and Legislative Guidelines on *Model Law* and *Model Rules* language defining approved coursework and approved course providers; see page 11.)

The task force analysis refers to the requirement as the "master's or equivalent," which is a change from the previously used term "bachelor's plus 30." According to the report, this terminology changed because NCEES Member Boards have indicated that a requirement focusing on a master's degree would be more likely to be received favorably by state legislators than a requirement based on a formula of post-graduate courses.

### Report analyzes potential impacts of the requirement

The resolution asks the task force to consider the potential educational, professional, economic, and regulatory impacts of enacting the additional education requirement.

The task force analysis of the educational impact includes a list of potential paths for candidates seeking licensure after 2020, including those pursuing master's degrees as full-time and part-time graduate students and those without ABET-accredited bachelor's degrees who enroll in an ABET-accredited master's program (see table on facing page). In these scenarios, a candidate pursuing studies that do not culminate in a master's degree could still qualify as a Model Law Engineer under the "or equivalent" language.

In its discussion of the professional impact, the task force reported that the requirement would likely have a minimal effect on the number of precollege students enrolling in engineering programs. It reported that the requirement could adversely affect the number of already enrolled and bachelor's degree-holding engineers who decide to pursue licensure.

The report's analysis of the regulatory impact—that is, the ability of Member Boards to enact the requirement efficiently after the language is incorporated into state practice acts—says that a proposed national clearinghouse would mitigate any additional workload demands the requirement could impose on Member Boards. It states, "It is critical that a highly functioning clearinghouse be in place to facilitate uniformity in the application of the master's or equivalent requirements."

The proposed clearinghouse would be responsible for evaluating whether an applicant's course of study after being awarded an ABET-accredited bachelor's degree is equivalent to earning a master's degree in engineering.

**Pathways to meeting additional education requirements in 2020**

Path	Bachelor's Education	Additional Education	Years of Education (B.S. = 4 years)	Additional Years of Experience	Total Years
1	EAC/ABET	<ul style="list-style-type: none"> <li>• Engineering master's degree</li> <li>• Full-time student</li> </ul>	B.S. + 1–2 years	3	8–9
2	EAC/ABET	<ul style="list-style-type: none"> <li>• Engineering master's degree</li> <li>• Part-time student</li> <li>• Full-time employee</li> </ul>	B.S. + 4–6 years	0*	8–10
3	EAC/ABET	<ul style="list-style-type: none"> <li>• Engineering master's degree</li> <li>• Executive format or "weekend" format</li> <li>• Full-time employee</li> </ul>	B.S. + 2 years	2*	8
4**	EAC/ABET	<ul style="list-style-type: none"> <li>• Full-time student</li> </ul>	B.S. + 1–2 years	4	9–10
5**	EAC/ABET	<ul style="list-style-type: none"> <li>• Part-time student</li> <li>• Full-time employee</li> </ul>	B.S. + 4–6 years	0*	8–10
6	Non-EAC/ABET	<ul style="list-style-type: none"> <li>• EAC/ABET engineering master's degree (M-ABET)</li> </ul>	B.S. + 1–3 years	3	8–10

\*Accrues all or part of the experience requirement while completing the additional education requirement

\*\*B+30 option

In the table, it is assumed that all full-time employment is acceptable for engineering experience and that experience credit for graduate education cannot be counted if it is concurrent with employment experience.

The task force considered how many current candidates would have had to get additional education were the requirement already in effect. Based on the available information, the estimated portion of current engineers who would have been required to attain additional education for initial licensure if the requirement were already in effect is about 60 percent or somewhat higher.

**Report describes education costs and possible effect on earnings**

The report states that the cost of obtaining a master's degree in engineering varies widely based on the institution, delivery method, and program. It noted that many conventional master's engineering programs requiring a thesis may take an average of 18 months for full-time students. It also noted that project and course-only master's degrees, as well as accelerated "executive" M.S. degrees that can be completed in one year, are becoming more common. It also indicated that high-quality graduate engineering distance-learning options are now available in most engineering disciplines. With regard to cost of education, the report noted that there was substantial variation by program type and institution.

The task force also reported that, based on existing statistics, a P.E. with a master's degree can—over the course of a 30-year career—expect to earn 5.5 percent more than one with only a bachelor's degree. This translates to a 30-year increase in compensation of a present value of \$75,000 if the spread between salaries does not increase over time with inflation and of \$125,000 if the spread does increase with inflation.

**Task force explores alternatives to the master's or equivalent**

The 2008 Southern Zone resolution also asks the task force to provide a list of alternatives to the requirement that would potentially have less impact on candidates and the profession as a whole. These alternatives, which are based on deliberations within the task force and include a diverse range of opinions from academia, industry, and private practice, focus on expanding the existing continuing education structure, teaming candidates with licensed mentors, and enacting a dual-level licensing structure featuring a new class of "master professional engineer."

*NCEES staff*

# UPDATE



Henry V. Liles Jr., P.E.  
UPLG Committee Chair

## UPLG focuses on model language

The Committee on Uniform Procedures and Legislative Guidelines (UPLG) was established to strengthen the licensure process by reviewing and recommending changes to the NCEES *Model Law* and *Model Rules*. The committee relies on the input of board members of the Council as it seeks ways of improving the ability of Member Boards to serve their jurisdictions and licensees.

Henry Liles, P.E., the current UPLG chair, provided the following update on the committee's work in addressing its charges for 2008–09. The committee's full report will be distributed with the *Action Items and Conference Reports* prior to this year's Annual Meeting.

### Five-year review of Model Rules

The NCEES *Bylaws* requires that UPLG review both the *Model Law* and *Model Rules* every five years. The committee has developed numerous revisions to the *Model Rules* as a result of this comprehensive review of the document. Last year's review of the *Model Law* resulted in more than 40 motions for the Council's consideration, and this year's review of the *Model Rules* will result in a similar number of motions.

Like last year, though, most of the proposed revisions to the *Model Rules* are considered "housekeeping" changes that are not substantive. They are designed to resolve conflicts and confusion between the two model documents and make the language more consistent throughout. The committee did find several other items that could be considered more substantive changes and will therefore recommend that next year's UPLG Committee be charged with addressing them.

### Continued work on the additional education requirement

The committee has worked closely with the Engineering Education Task Force to craft language applicable to acceptable coursework and approved course providers (see facing page). Ultimately, an accrediting body such as a clearinghouse will need to provide uniformity in deciding whether particular providers or courses meet the requirement. The next step

in the evolutionary path is for NCEES to establish the ground rules for how such an accreditation process would operate.

The concept of "grandfathering" for current Model Law Engineers is an important one to consider as NCEES presses forward with the additional educational requirements for licensees. The UPLG Committee is conducting a thorough review of the *Model Law* and *Model Rules* to ensure that this group will retain their MLE status after the additional education requirement goes into effect. The initial year of licensure in one's home jurisdiction establishes the basis for comity and MLE status. Since the requirements for additional education will not take effect before the year 2020, comity and MLE status for current licensees will be protected.

### M-ABET and the engineering licensure process

Due to ABET's recent decision to allow dual-level accreditation, the UPLG Committee was charged with investigating how this could affect the paths to licensure for P.E. candidates. The committee regards a degree from an ABET-accredited master's program as an applicable engineering degree for licensure. The likelihood for alternate paths to licensure is an outcome anticipated by NCEES. This year's UPLG Committee developed revisions to the *Model Law* and *Model Rules* to recognize the alternative paths to licensure as impacted by the potential for M-ABET degrees as well as the dual levels of accreditation. The various experience requirements have also been considered and made a part of the revisions.

### Separation of firms and individuals in model documents

Many provisions of the *Model Law* and *Model Rules* apply to firms rather than individuals. Currently, the provisions related to the two groups are combined and as a result create a format that is not user friendly. This year's committee has separated the requirements applicable to firms and individuals. Even though this results in additional language, it will be much easier to reference the requirements for individuals versus firms.

# Approved course providers and acceptable coursework

At the 2008 Annual Meeting, the Council passed a motion from the Bachelor's Plus 30 Task Force to charge the appropriate committee with incorporating definitions of approved coursework and course providers into the *Model Rules*. The UPLG Committee was charged with doing this and worked closely with the Engineering Education Task Force to refine the language. It will propose motions to make the following changes as well as some related changes to the *Model Law*.

## **Model Rules 230 Candidates for Licensure**

### **230.10 Programs-Education Requirements Approved by the Board**

#### **A. Undergraduate Engineering Program**

The term “an engineering program of 4 years or more” used in Section 130.10 A in the *Model Law* is interpreted by this board to mean:

1. A baccalaureate degree program in engineering accredited by EAC/ABET<sup>1</sup> at the time of the awarding of the degree. (A board may accept the degree if accreditation is received within a prescribed period of time.)
2. A baccalaureate degree in engineering not accredited by ABET such as those programs recently developed or programs offered by foreign schools evaluated by the board as being substantially equivalent to those which have been accredited.

#### **B. Post-Graduate Engineering Course Providers**

The term “approved course provider” used in Section 130.10 C.1.c of the *Model Law* is interpreted to mean the following:

1. An institution that has an EAC/ABET-accredited program;
2. An institution or organization accredited by an NCEES-approved accrediting body<sup>1</sup>;  
or
3. An institution or organization that offers specifically approved courses that are individually approved by an NCEES-approved accrediting body.<sup>2</sup>

#### **C. Post-Graduate Acceptable Coursework**

The term “acceptable upper-level undergraduate and/or graduate-level coursework” used in Section 130.10 C.1.c of the *Model Law* is interpreted to mean the following:

1. In technical topic areas, acceptable coursework shall be upper-level undergraduate and/or graduate-level courses in engineering.
2. Other topic areas of acceptable coursework shall be upper-level undergraduate and/or graduate-level courses relevant to the practice of engineering and may include engineering-related science, mathematics, and/or professional practice topics such as business, communications, contract law, management, ethics, public policy, and quality control.

#### **D. Post-Graduate Minimum Required Education**

The term “acceptable amount of coursework” used in Section 130.10 C.1.c of the *Model Law* is interpreted to mean the following:

1. A minimum of an additional 30 credits of coursework, none of which were used to fulfill the bachelor's degree requirement
2. All 30 additional credits shall be equivalent in intellectual rigor and learning assessments to upper-level undergraduate and/or graduate courses offered at institutions that have a program accredited by EAC/ABET.
3. Of the minimum required 30 additional credits, a minimum of 15 credits must comply with 230.10 C.1.
4. The term “credit” is defined as a semester hour, or its equivalent, from an approved course provider defined in 230.10 B.

<sup>1</sup> This institution/organization would be approved to develop and offer courses that meet *Model Rules* 230.10 C. NCEES-approved accrediting bodies may include regional accreditation bodies and other appropriate discipline accreditations.

<sup>2</sup> This institution/organization would be approved to offer one or more specifically-approved courses that meet *Model Rules* 230.10 C.