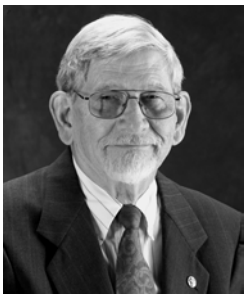

Committee on Uniform Procedures
and Legislative Guidelines

Claude V. Baker, P.E., S.E., L.S., Chair

ABSTRACT
The Committee on Uniform Procedures and Legislative Guidelines (UPLG) was established to study the methods of facilitating the licensure and temporary practice of engineers and surveyors previously qualified and licensed in other states and to promote effective procedures for uniform comity. The committee receives comments and suggestions about the *Model Law* and the *Model Rules* from Member Boards, professional organizations, and other NCEES committees and task forces.

In 2005–2006, the UPLG Committee was assigned six charges. It has prepared motions for Charges 1, 2, and 4; has no recommendations for further action on Charges 3 and 6; and presents a recommendation to the Board of Directors regarding Charge 5.

TEXT
Charge 1: *Revise the* Model Law *to include a provision stating that specialty certification is not a substitute for licensure and does not authorize a certified individual the right to practice engineering or surveying.*

NCEES currently has a position statement about specialty certification of engineers. It states, "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." The UPLG Committee feels the Council's position on certification needs to be in a more prominent place—the *Model Law*—to make it clear that a certificate granted by a nonlicensing body carries no privilege of practice. This language should also apply to surveying. The recommended changes to the *Model Law* are shown in Motion 1.

Charge 2: *Revise the* Model Law *to require additional education as a base requirement for licensure as a professional engineer with implementation no sooner than 2010. Consider language recommended by the 2004–2005 Licensure Qualifications Oversight Group (LQOG).*

At last year's Annual Meeting, the Council decided that more education is needed for licensure and passed a motion to charge the UPLG Committee with incorporating into the *Model Law* and *Model Rules* language requiring additional engineering education for licensure.

Background

Over the past five years, NCEES has devoted considerable time and resources to analyzing the adequacy of education requirements. The Engineering Licensure Qualifications Task Force (ELQTF) was established in 2001 to evaluate the U.S. licensure system. It was made up of representatives from NCEES, engineering professional practice, government, industry, and education. At the 2003 Annual Meeting, ELQTF presented the following evaluation of education as part of its comprehensive report:

> "Engineering education is falling behind other professions in preparing students for practice. There has been a persistent decrease in the credit hours required for an engineering degree over the past several decades. At present, the nominal (but nonuniform) requirement is 128 semester hours, corresponding to an 8-semester (4-year) program of 4 to 6 courses per semester. Based on national averages, 128 semester hours represent the low point on a downward trend—driven partly by a state-centered desire to make the educational process as cost-efficient as possible and to compete for students across state lines … This inexorable decrease in credit hours … represents a net national loss in the depth of engineering education in core subjects."

The task force concluded that additional education would be necessary in the future to prepare students for engineering practice at the professional level.

About the same time ELQTF submitted its report, the American Society of Civil Engineers (ASCE) published similar conclusions in *Civil Engineering Body of Knowledge for the 21st Century.* For more than 10 years, ASCE has been implementing a program to encourage "raising the bar" in engineering education. ASCE adopted Policy Statement 465 to formally advocate additional education beyond the bachelor's degree as a prerequisite for professional licensure. It based its conclusions on the steady decline in credit hours for graduation, from 150 a few decades ago to about 128 today. ASCE pointed out that increased requirements in nontechnical areas have further reduced the number of technical subjects required. Moreover, while engineering education requirements are decreasing, the body of knowledge required to practice engineering is exponentially growing, as much as doubling every 10 years. ASCE has been very helpful in providing ELQTF, LQOG, and this year's UPLG Committee with personnel and research.

In 2004, LQOG was formed to study the ELQTF report, assess the recommendations from the NCEES and Member Board perspectives, and prepare recommendations for consideration by the Council. LQOG supported the ELQTF conclusion that additional engineering education is needed. Its 2005 committee report stated, "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."

LQOG presented the following motion at the 2005 Annual Meeting.

> 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* 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.

The additional education requirements would be implemented no sooner than 2010.

The Council amended the motion as shown and passed it by a narrow margin.

Recommendations

The 2005–2006 UPLG Committee considered this charge carefully by studying the significant amount of background and research from ELQTF and LQOG. The proposed changes consider the issues of comity and grandfathering as well as the ability to secure the additional education at a modest cost of time and money. The committee discussed the argument that additional education may not be the sole answer—that something like the Canadian system, which controls curriculum and monitors output, would better serve the needs of the engineering community. While changing the method in which education is delivered in the United States has some adherents, it was the consensus of the committee that the existing U.S. licensure system is so entrenched that a major change would be unlikely. Lengthy discussions were held regarding the role of EAC/ABET in establishing the existing programs, the continual reduction in credits necessary for graduation, and the limited control of the educational process by the engineering community.

UPLG started with the language approved at last year's Annual Meeting and then looked for where it should be incorporated into the *Model Law.* The most appropriate place is in *Model Law* Section 130.10, which describes the qualifications needed to sit for the Principles and Practice of Engineering (PE) exam. Currently, the *Model Law* specifies that an "engineer intern or an individual with a doctorate in engineering acceptable to the board and with a specific record of an additional 4 years or more of progressive experience on engineering projects of a grade and a character which indicates to the board that the applicant may be competent to practice engineering shall be admitted to an 8-hour written examination in the principles and practice of engineering." (As defined by the *Model Law,* an engineer intern is someone who has qualified for, taken, and passed the Fundamentals of Engineering examination.)

Approved Credits and Approved Course Providers

The subcommittee assigned to this charge studied the question of the distribution of credits and recommended letting the students choose the upper-level or graduate-level credits that best fit their areas of specialization. The UPLG Committee's intent is to leave the wording flexible enough to allow as many avenues to the additional education as possible but without compromising the quality of that education. The proposed change to the *Model Law* is to add a requirement for students with a bachelor's degree in engineering to earn 30 additional credits to sit for the PE exam. The language also says that a master's of science satisfies the requirements, as does a Ph.D.

In the beginning, most of the additional education will probably be taken as a part of the normal degree process, perhaps as part of a five-year program. For this reason, UPLG is moving to add language to the *Model Rules* stating that graduates with a bachelor's of science degree in engineering from a five-year program may request that credits earned as part of their undergraduate work be applied to satisfy the requirements.

The UPLG Committee feels that over time the master's degree route will be the favored method of satisfying the requirements. Some employers surveyed state that they are now screening prospective employees on education and are giving preference to applicants with a master's degree. This trend will continue. The committee discussed whether a B.S. graduate who earns the additional 30 credits should receive a designation that acknowledges that he or she has earned these credits. It did not reach a conclusion on this. However, adding such a designation would perhaps increase employability by giving the additional credits significance similar to a master's degree.

The LQOG language gave us the term "approved course providers." In its investigations, the UPLG Committee determined that only a handful of institutions at this time offer distance learning that would qualify as approved. The committee does believe that in time, as demand for additional education increases, many providers will begin offering acceptable credits that are affordable and easily accessed via correspondence, the Internet, evening and part-time classes, and other forms of distance learning.

The 2005 LQOG conference report offers definitions for "approved course provider," "professional practice topic areas," and "technical topic areas." The UPLG Committee believes that adopting definitions for these terms is significant enough to warrant its being addressed separately from this year's vote on incorporating additional education requirements in the *Model Law.* For this reason, the UPLG Committee recommends that an appropriate committee be charged with specifically defining what constitutes both "approved credits" and "approved course providers."

Experience

Under the current *Model Law* and *Model Rules,* engineer interns who possess an M.S. may waive one year of the required four years' experience. Engineer interns with a Ph.D. may waive two years. But Ph.D.'s who are not engineer interns—that is, doctorates who waive the FE exam in qualifying to sit for the PE exam—must still have four years' experience. Because of the possibility for confusion in interpreting experience requirements, the new language clearly describes all avenues for qualifying to sit for the PE exam, including master's and doctoral degrees. The experience requirements described in the proposed language are not new—they are just spelled out in more detail for clarity. The UPLG Committee recommends that an appropriate committee be charged with clarifying language in the *Model Rules* regarding the required amount of experience.

Comity and Grandfathering

Comity and the fact that some licensed engineers will have more education than others were discussed in full committee. Most states base education requirements on the rules in effect in their state at the time of original licensing. The committee believes there are adequate safeguards, and comity should therefore not be a concern in deciding whether or not to approve this language. We envision that all states would grandfather all presently licensed engineers.

Timing

The key to the timing is to establish an effective date by realistically examining the educational opportunities available today and what will be required in the future. Assuming that a student starts a degree program in 2007 and takes additional courses to get the additional 30 required credits, following a fast track through school would mean that he or she would graduate in 2011. Four years of experience would enable him or her to take the PE exam in 2015. Therefore, UPLG decided that January 1, 2015, is the earliest practical date to make the requirements effective. The committee believes that the 8-year span allows ample time to acquire the additional 30 credits. In any event, anyone in school today would have time enough to get the additional education in any manner he or she chooses.

Because the definition of a Model Law Engineer would change on January 1, 2015, the UPLG Committee recommends that an appropriate committee be charged with revising the *Model Rules* language concerning a Model Law Engineer.

Conclusion

A recent project of the National Academy of Sciences, *The Engineer of 2020,* studied the future of undergraduate engineering education in this country. In addition to calling for more engineering education, the publication states, "If the United States is to maintain its economic leadership and be able to sustain its share of high-technology jobs, it must prepare for a new wave of change. … Engineering will only contribute to success if it is able to continue to adapt to new trends and educate the next generation of students so as to arm them with the tools needed for the world as it will be, not as it is today."

Changes in the education process for engineers are necessary if the profession is to keep up with the changing technologies of the 21st century. The UPLG motions are based on the conclusions from five years of intensive research and discussion involving the entire engineering profession, especially those involved with ELQTF and LQOG. Additional credits are required to reach the level of technical knowledge desired by the profession.

At last year's Annual Meeting, NCEES decided that requiring additional education is the direction engineering licensure needs to go. The committee strongly recommends that the Council vote to add this language to the *Model Law* and *Model Rules* this year. Additional education is needed to adequately prepare professional engineers of tomorrow with the depth and breadth of education they'll need to practice in our increasingly complex and global profession.

Charge 3: *Study and evaluate advances in technology that affect the regulation and practice of engineering and surveying, and provide recommendations for revisions to the* Model Law *and* Model Rules *as required.*

This charge applies to both the practice of engineering and surveying but appears to have been driven by the technological changes in the tools surveyors use in their profession. Rapid advances in technology in recent years have had significant impact on the way surveyors conduct their practice. Technologies have emerged such as GIS, GPS, network real-time kinematics, and LIDAR. Even the familiar practice of photogrammetry has changed through the use of digital photography, oblique imagery, and advanced lenses.

The question is how far the *Model Law* and *Model Rules* should go toward addressing the tools of surveying. Should the *Model Law* and *Model Rules* revolve around responsible-charge issues rather than the tools that surveyors use to practice their profession?

The *Model Law* refers to the use of the science of photogrammetry in making "geometric measurements and gathering related information pertaining to physical or legal features of the earth" (*Model Law* 110.20 B4, Practice of Surveying). As discussed in the *Model Law,* photogrammetry could be considered either a tool or a practice. Either way, it is clear that the *Model Law* intends for photogrammetrists to be licensed as surveyors.
The only tool-like reference within the *Model Rules* is the mention of GIS, which is discussed as an activity included in surveying if it is "used for authoritative boundary definition purposes wherein land title or development rights for individual parcels are, or may be, affected" (*Model Rules,* 210.25, Inclusions and Exclusions of Surveying Practice).

Another running debate involves the collection of data for GIS purposes. Some GIS technicians believe that field-to-GIS computer interfaces are better handled by technicians rather than surveyors. They do admit that any data collected that might be expected to be "highly accurate" should be collected with a surveyor on the team. Most

professional surveyors (and the *Model Rules*) hold the opinion that any data collected related to base mapping for authoritative uses should be done by a professional surveyor. Most infrastructure items fall into this category as well as any data relevant to regulatory purposes. Inventory-type data such as number of signs may not rise to the level of requiring a surveyor. The "Inclusions and Exclusions of Surveying Practice" in the *Model Rules* provide a good description of the kind of data collected that requires the services of a professional surveyor.

Although many changes in technology have changed how surveyors practice, the UPLG Committee finds that the *Model Law*s and *Model Rules* adequately cover this issue. The UPLG Committee believes that to venture too far into the tools of the surveying practice would be tantamount to creating a document that would constantly be out of sync with emerging technology. The committee agrees that no action is necessary at this time.

Charge 4: *In conjunction with the Law Enforcement Committee, propose a revision to the* Model Law *definition of the practice of engineering and surveying to reflect current-day practice.*

In 2004–2005, the UPLG and Law Enforcement Committees discussed a similar charge but were unable to resolve differences over the language. In 2005–2006, both committees again proposed revisions to the definitions of the practice of engineering and surveying and this time were able to agree on similar wording. However, the two committees disagree on which Member Board manual should incorporate the new language. The Law Enforcement Committee believes it should be adopted as a position statement in the *Manual of Policy and Position Statements.*

The UPLG Committee, however, feels strongly that the issue is important enough for the language to be incorporated into the *Model Law.* The increasing use of electronic communications and national advertising by engineering firms has made violations of the "offering to practice" clause almost universal. The committee believes that many engineers and surveyors inadvertently violate the law as written because the *Model Law* can be difficult to follow with regard to this issue and can in fact be interpreted in different ways. Adding the language to the *Model Law* will not harm the public or restrict the states in their enforcement policies but will correct confusion over the intent of the *Model Law.* The proposed language is shown in Motion 2.

Charge 5: *Revise Section 230.10 of the* Model Rules *to include and define the term* or equivalent. *Consider language as proposed by the 2003–2004 Education/Accreditation Task Force (E/ATF).*

At the 2004 Annual Meeting, the Council amended and passed a motion that the definition of *or equivalent* as shown below be considered for inclusion in the *Model Law* and that this language be referred to the UPLG Committee for review and potential action. The language that passed is as follows:

230 CANDIDATES FOR LICENSURE

230.10 Programs Approved by the Board

A. The term "an engineering program of four years or more <u>accredited by EAC/ABET, or the equivalent</u>" used in Section 130.10 A in *Model Law* is interpreted by this board to mean:
   1. A baccalaureate degree program in engineering accredited by ~~EAC/ABET~~ <u>the Engineering Accreditation Commission of ABET, Inc.</u> at the time of the awarding of the degree (~~A~~ <u>a</u> board may accept the degree if accreditation is received within a prescribed period of time~~.~~), <u>or</u>
   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 equivalent to~~

~~those which have been accredited.~~ An engineering program accredited by an accrediting body signatory to the Washington Accord, or

3. An engineering program outside the United States that has undergone a program review in which ABET, Inc., through selected representatives, acts on a consultancy basis, and that leads to an assessment of "substantial equivalency" of the program under review with accredited programs in the United States, or
4. A program that culminates in a bachelor's or master's degree which contains or is supplemented by a minimum of the following:
   a. One year (defined as 32 semester credit hours) of a combination of college-level mathematics and basic sciences (some with experimental experience) appropriate to the discipline;
   b. One and one-half years (defined as 48 semester credit hours) of engineering topics (from institutions meeting the requirements of 1, 2, or 3 above), consisting of engineering sciences and engineering design appropriate to the applicant's field of study; and
   c. A general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

The UPLG Committee reviewed this suggested language as well as several other possible revisions to Section 230.10 and discussed underlying issues driving the charge. However, the committee believes that a useful definition cannot yet be adopted because the Washington Accord and ABET, Inc., are not currently providing Member Boards with the assurance that foreign-degree evaluations result in applicants with adequate education. The committee recognizes the importance uniformity of evaluation plays in comity and feels there is a need for a recognized entity, accepted by all jurisdictions, to assist Member Boards in the area of foreign-degree evaluations.

The consensus of the committee is that the Board of Directors of NCEES should take the necessary action to establish an accreditation program within the Council. NCEES will then be able to ensure that foreign or other non-ABET degrees meet the requirements of NCEES and the state boards. Only then can a useful definition of *or equivalent* be adopted.

Charge 6: *Review and provide recommendations for revisions to the "Suggested Guidelines for Progressive Engineering and Surveying Experience" for distribution by individual jurisdictions to all candidates who pass the FE and FS examinations.*

The "Suggested Guidelines for Progressive Engineering and Surveying Experience" were developed and refined in 2000 and 2001 by the NCEES Special Committee on Experience Evaluation. The guidelines are intended to give engineer and surveyor interns an opportunity to ensure that they get enough experience in the suggested areas before they apply to sit for the PE exam. At the 2000 Annual Meeting, the Council adopted the guidelines to be set forth as a model for NCEES Member Boards. The publication was printed as a stand-alone document.

In 2002, UPLG presented a motion to add language to the *Model Rules* saying the experience may be summarized as shown in Appendix A, Suggested Guidelines for Evaluating Progressive Engineering Experience. This motion passed, and the language was added, along with the appendix. The guidelines have been in the *Model Rules* since then. In 2004, ACCA was charged with reviewing the guidelines for evaluating experience as set forth in Section 230.20 (including Appendices A and B) of the *Model Rules* for possible modification. ACCA recommended that the UPLG Committee consider deleting these provisions of the *Model Rules* and instead publish the referenced guidelines as stand-alone reference documents for use by Member Boards in their assessments of experience by P.E. and surveying applicants for licensure. Also in 2004, LQOG presented a

successful 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 exam.

In 2005, LQOG was given the charge to recommend revisions to the guidelines for distribution by individual jurisdictions to all candidates who pass the FE examination. The committee did not have the time to devote to the charge, so the president reassigned it to the committee this year.

This year's UPLG Committee believes that nothing should be done to change the existing appendices in the *Model Rules.* The guidelines in the appendices are adequate as written to properly guide the Member Boards. The existing appendices could be copied by any board so interested for distribution to their interns. The consensus of the committee is that little use would be made of such a separate document. If NCEES were to establish a standard mandatory intern process, then such a booklet would be a part of the program.

Respectfully submitted, the **Committee on Uniform Procedures and Legislative Guidelines:**

Claude V. Baker, P.E., S.E., L.S., Chair

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MOTIONS

Mr. President, I request the privilege of the floor to make the following motions on behalf of the Committee on Uniform Procedures and Legislative Guidelines.

1. Move that *Model Law* Section 110.20 be amended as follows to state that specialty certification is not a substitute for licensure and does not authorize a certified individual the right to practice engineering or surveying.

Model Law

110.20 Definitions

A. Engineer

1. Engineer – The term "Engineer," within the intent of this Act, shall mean a person who is qualified to practice engineering by reason of special knowledge and use of the mathematical, physical, and engineering sciences and the principles and methods of engineering analysis and design, acquired by engineering education and engineering experience.

<u>A person having certification in an engineering specialty shall not have the right to practice engineering in that specialty solely by virtue of such certification.</u>

5. Practice of Engineering – The term "Practice of Engineering," within the intent of this Act, shall mean any service or creative work, the adequate performance of which requires engineering education, training, and experience in the application of special knowledge of the mathematical, physical, and engineering sciences to such services or creative work as consultation, investigation, expert technical testimony, evaluation, planning, design and design coordination of engineering works and systems, planning the use of land, air, and water, teaching of advanced engineering subjects, performing engineering surveys and studies, and the review and/or management of construction for the purpose of monitoring and/or ensuring compliance with drawings and specifications; any of which embraces such services or work, either public or private, in connection with any utilities, structures, buildings, machines, equipment, processes, work systems, projects, communication systems, transportation systems, and industrial or consumer products, or equipment of a control systems, communications, mechanical, electrical, hydraulic, pneumatic, chemical, environmental, or thermal nature, insofar as they involve safeguarding life, health, or property, and including such other professional services as may be necessary to the planning, progress, and completion of any engineering services.

Design coordination includes the review and coordination of those technical submissions prepared by others, including as appropriate and without limitation, consulting engineers, architects, landscape architects, surveyors, and other professionals working under the direction of the engineer.

Engineering surveys include all survey activities required to support the sound conception, planning, design, construction, maintenance, and operation of engineered projects, but exclude the surveying of real property for the establishment of land boundaries, rights-of-way, easements, and the dependent or independent surveys or resurveys of the public land survey system.

A person shall be construed to practice or offer to practice engineering, within the meaning and intent of this Act, who practices any branch of the profession of engineering; or who, by verbal claim, sign, advertisement, letterhead, card, or in any other way represents themselves to be a professional engineer, or through the use of some other title implies that they are a professional engineer or that they are licensed under this Act; or who hold themselves out as able to perform, or who does perform

any engineering service or work or any other service designated by the practitioner which is recognized as engineering.

A person having the title "Engineer" as a member of a specialty certification program is not granted the right to practice engineering in that specialty, such right being controlled by the laws of the jurisdiction.

Model Law

110.20 Definitions

B. Professional Surveyor (Professional Land Surveyor, Professional Surveyor and Mapper, Geomatics Professional, or equivalent term)

1. Professional Surveyor – The term "Professional Surveyor," as used in this Act, shall mean a person who has been duly licensed as a professional surveyor by the board established under this Act, and who is a professional specialist in the technique of measuring land, educated in the basic principles of mathematics, the related physical and applied sciences, and the relevant requirements of law for adequate evidence and all requisite to surveying of real property, and engaged in the practice of surveying as herein defined.

   A person having certification in a surveying specialty shall not have the right to practice surveying in that specialty solely by virtue of such certification.

4. Practice of Surveying – The term "Practice of Surveying," within the intent of this Act, shall mean providing, or offering to provide, professional services using such sciences as mathematics, geodesy, and photogrammetry, and involving both (1) the making of geometric measurements and gathering related information pertaining to the physical or legal features of the earth, improvements on the earth, the space above, on, or below the earth and (2) providing, utilizing, or developing the same into survey products such as graphics, data, maps, plans, reports, descriptions, or projects. Professional services include acts of consultation, investigation, testimony evaluation, expert technical testimony, planning, mapping, assembling, and interpreting gathered measurements and information related to any one or more of the following:
   a. Determining by measurement the configuration or contour of the earth's surface or the position of fixed objects thereon.
   b. Determining by performing geodetic surveys the size and shape of the earth or the position of any point on the earth.
   c. Locating, relocating, establishing, reestablishing, or retracing property lines or boundaries of any tract of land, road, right of way, or easement.
   d. Making any survey for the division, subdivision, or consolidation of any tract(s) of land.
   e. Locating or laying out alignments, positions, or elevations for the construction of fixed works.
   f. Determining, by the use of principles of surveying, the position for any survey monument (boundary or non-boundary) or reference point; establishing or replacing any such monument or reference point.
   g. Creating, preparing, or modifying electronic or computerized or other data, relative to the performance of the activities in the above described items a. through f.

Any person shall be construed to practice or offer to practice surveying, within the meaning and intent of this Act, who engages in surveying or who by verbal claim, sign, advertisement, letterhead, card, or in any other way represents themselves to be a professional surveyor, through the use of some other title implies that they are able to perform, or who does perform any surveying service or work or any other service designated by the practitioner which is recognized as surveying.

A person having the title "Surveyor" as a member of a specialty certification program is not granted the right to practice surveying in that specialty, such right being controlled by the laws of the jurisdiction.

2. Move that *Model Law* Section 110.20 be amended as follows to clearly define the practice of engineering and surveying.

Model Law
110.20 Definitions

A. Engineer

5. Practice of Engineering – The term "Practice of Engineering," within the intent of this Act, shall mean any service or creative work, the adequate performance of which requires engineering education, training, and experience in the application of special knowledge of the mathematical, physical, and engineering sciences to such services or creative work as consultation, investigation, expert technical testimony, evaluation, planning, design and design coordination of engineering works and systems, planning the use of land, air, and water, teaching of advanced engineering subjects, performing engineering surveys and studies, and the review and/or management of construction for the purpose of monitoring and/or ensuring compliance with drawings and specifications; any of which embraces such services or work, either public or private, in connection with any utilities, structures, buildings, machines, equipment, processes, work systems, projects, communication systems, transportation systems, and industrial or consumer products, or equipment of a control systems, communications, mechanical, electrical, hydraulic, pneumatic, chemical, environmental, or thermal nature, insofar as they involve safeguarding life, health, or property, and including such other professional services as may be necessary to the planning, progress, and completion of any engineering services.

   Design coordination includes the review and coordination of those technical submissions prepared by others, including as appropriate and without limitation, consulting engineers, architects, landscape architects, surveyors, and other professionals working under the direction of the engineer.

   Engineering surveys include all survey activities required to support the sound conception, planning, design, construction, maintenance, and operation of engineered projects, but exclude the surveying of real property for the establishment of land boundaries, rights-of-way, easements, and the dependent or independent surveys or resurveys of the public land survey system.

   A person shall be construed to practice or offer to practice engineering, within the meaning and intent of this Act, who practices any branch of the profession of engineering; or who, by verbal claim, sign, advertisement, letterhead, card, or in any other way represents themselves to be a professional engineer, or through the use of some other title implies that they are a professional engineer or that they are licensed under this Act; or who hold themselves out as able to perform, or who does perform any engineering service or work or any other service designated by the practitioner which is recognized as engineering.

The following items are not considered offering to practice engineering, provided that the engineer is licensed in another jurisdiction:

a. Advertising in publications or electronic media, provided there is no holding out of professional services in jurisdictions where not licensed
b. Sending letters of inquiry regarding requests for proposals from out-of-jurisdiction agencies, provided there is written disclosure that the engineer and firm are not licensed in this jurisdiction
c. Responding to inquiry letters from prospective clients outside the jurisdiction, provided there is written disclosure that the engineer and firm are not licensed in this jurisdiction and that the response is limited to demonstration of interest to a specific project
d. Mere use of the title/designation Professional Engineer, licensed engineer, P.E., or the like in correspondence or on business cards

B. Professional Surveyor (Professional Land Surveyor, Professional Surveyor and Mapper, Geomatics Professional, or equivalent term)

4. Practice of Surveying – The term "Practice of Surveying," within the intent of this Act, shall mean providing, or offering to provide, professional services using such sciences as mathematics, geodesy, and photogrammetry, and involving both (1) the making of geometric measurements and gathering related information pertaining to the physical or legal features of the earth, improvements on the earth, the space above, on, or below the earth and (2) providing, utilizing, or developing the same into survey products such as graphics, data, maps, plans, reports, descriptions, or projects. Professional services include acts of consultation, investigation, testimony evaluation, expert technical testimony, planning, mapping, assembling, and interpreting gathered measurements and information related to any one or more of the following:
   a. Determining by measurement the configuration or contour of the earth's surface or the position of fixed objects thereon.
   b. Determining by performing geodetic surveys the size and shape of the earth or the position of any point on the earth.
   c. Locating, relocating, establishing, reestablishing, or retracing property lines or boundaries of any tract of land, road, right of way, or easement.
   d. Making any survey for the division, subdivision, or consolidation of any tract(s) of land.
   e. Locating or laying out alignments, positions, or elevations for the construction of fixed works.
   f. Determining, by the use of principles of surveying, the position for any survey monument (boundary or non-boundary) or reference point; establishing or replacing any such monument or reference point.
   g. Creating, preparing, or modifying electronic or computerized or other data, relative to the performance of the activities in the above described items a. through f.

Any person shall be construed to practice or offer to practice surveying, within the meaning and intent of this Act, who engages in surveying or who by verbal claim, sign, advertisement, letterhead, card, or in any other way represents themselves to be a professional surveyor, through the use of some other title implies that they are able to perform, or who does perform any surveying service or work or any other service designated by the practitioner which is recognized as surveying.

The following items are not considered offering to practice surveying, provided that the surveyor is licensed in another jurisdiction:

a. Advertising in publications or electronic media, provided there is no holding out of professional services in jurisdictions where not licensed
b. Sending letters of inquiry regarding requests for proposals from out-of-jurisdiction agencies, provided there is written disclosure that the surveyor and firm are not licensed in this jurisdiction
c. Responding to inquiry letters from prospective clients outside the jurisdiction, provided there is written disclosure that the surveyor and firm are not licensed in this jurisdiction and that the response is limited to demonstration of interest to a specific project
d. Mere use of the title/designation Professional Surveyor, licensed surveyor, P.S., or the like in correspondence or on business cards

3. Move that *Model Law* Section 130.10 be amended as follows to require additional engineering education for licensure.

Model Law

130.10 General Requirements for Licensure

C. Professional Engineer or Professional Surveyor – To be eligible for admission to the examination for professional engineers or professional surveyors, an applicant must be of good character and reputation and shall submit five references acceptable to the board with his or her application for licensure, three of which references shall be professional engineers or professional surveyors having personal knowledge of the applicant's engineering or surveying experience.

1. As a Professional Engineer – The following shall be considered as minimum evidence satisfactory to the board that the applicant is qualified for licensure as a professional engineer.
   a. Licensure by Comity –
      (1) A person holding a certificate of licensure to engage in the practice of engineering, issued by a proper authority of a jurisdiction or possession of the United States, the District of Columbia, or any foreign country, based on requirements that do not conflict with the provisions of this Act and possessing credentials that are, in the judgment of the board, of a standard not lower than that specified in the applicable licensure act in effect in this jurisdiction at the time such certificate was issued may, upon application, which may include a Council Record with NCEES, be licensed without further examination except as required to present evidence of knowledge of statutes, rules, and design requirements unique to this jurisdiction.
      (2) A person holding an active Council Record with the National Council of Examiners for Engineering and Surveying, whose qualifications as evidenced by the Council Record, meet the requirements of this Act, may, upon application, be licensed without further examination except as required to examine the applicant's knowledge of statutes, rules, and design requirements unique to this jurisdiction.
   b. Licensure by Examination – An engineer intern or an individual with a doctorate in engineering acceptable to the board and with a specific record of an additional 4 years or more of progressive experience on engineering projects of a grade and a character which indicates to the board that the applicant may be competent to practice engineering shall be admitted to an 8-hour written examination in the principles and practice of engineering. Upon passing such examinations, the applicant shall be granted a certificate of licensure to practice engineering in this jurisdiction, provided the applicant is otherwise qualified.

c. Licensure by Examination (Effective January 1, 2015) – The following individuals shall be admitted to an 8-hour written examination in the principles and practice of engineering:
   (1) An engineer intern with a bachelor's degree, with an additional 30 credits of acceptable upper-level undergraduate or graduate-level coursework from approved course providers, and with a specific record of an additional 4 years or more of progressive experience on engineering projects of a grade and a character which indicate to the board that the applicant may be competent to practice engineering.
   (2) An engineer intern with a master's degree in engineering from an institution that offers EAC/ABET-accredited programs, or the equivalent, and with a specific record of an additional 3 years or more of progressive experience on engineering projects of a grade and a character which indicate to the board that the applicant may be competent to practice engineering.
   (3) An engineer intern with a doctorate in engineering acceptable to the board and with a specific record of an additional 2 years or more of progressive experience on engineering projects of a grade and a character which indicate to the board that the applicant may be competent to practice engineering.
   (4) An individual with a doctorate in engineering acceptable to the board and with a specific record of an additional 4 years or more of progressive experience on engineering projects of a grade and a character which indicate to the board that the applicant may be competent to practice engineering.

4. Move that *Model Rules* Section 230.40 be amended as follows.

Model Rules
230.40 Examinations

B. Eligibility of Applicant for an Engineering Examination
   1. Applicants for licensure as a professional engineer will be permitted to sit for the PE examination upon satisfactorily fulfilling all application requirements of this jurisdiction.
   2. No applicant may sit for the 8-hour Fundamentals of Engineering (FE) examination or the 8-hour Principles and Practice of Engineering (PE) examination until the board has established that the applicant is eligible for the examinations.
   3. An applicant for certification as an engineer intern becomes eligible to sit for the FE examination during the senior year of enrollment in an engineering program leading to a baccalaureate degree in engineering and approved by the board. The enrollment of the applicant must be verified by the school being attended by the applicant.
   4. Effective January 1, 2015, a graduate with a bachelor's of science degree in engineering from a 5-year program may request that credits earned as part of this undergraduate work be applied to satisfy the requirements for an additional 30 credits of acceptable upper-level undergraduate or graduate-level coursework.
   ~~4~~5. Engineering Ph.D. applicants with an undergraduate degree from an EAC/ABET program and a Ph.D. or doctorate in engineering from an institution that offers EAC/ABET undergraduate programs in the Ph.D. field of engineering and with experience that meets the qualifications defined by the board may sit for the professional engineering examination without having taken or passed the FE examination.