



## Bachelor's Plus 30 Task Force

*Michael J. Conzett, P.E., Chair*

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### ABSTRACT

The Bachelor's Plus 30 (B+30) Task Force was formed by NCEES leadership to work on specific issues that either need to be developed before the B+30 law can be implemented or that need to be worked out because of potential barriers to its implementation. The B+30 law is the future requirement that candidates for engineering licensure complete a baccalaureate degree plus 30 additional hours of acceptable coursework, or equivalent (e.g., master's degree), to be eligible to sit for the Principles and Practice of Engineering (PE) examination. The task force's charges are designed to clarify the B+30 requirement by developing language for the *Model Law* and *Model Rules* and by creating guidelines to allow easier implementation by NCEES Member Boards. The primary charges include defining acceptable coursework/credits and approved course providers and proposing revisions to make the *Model Rules* consistent with the *Model Law* language related to the B+30 requirement. Additionally, the task force developed a list of services that ideally could be provided by some national entity (a "clearinghouse") to accommodate the needs of stakeholders, including Member Boards, applicants, and course providers.

The B+30 Task Force is comprised of two members from each zone and an ex-officio member who is the chair of the Committee on Uniform Procedures and Legislative Guidelines (UPLG). The members represent diverse views relative to the B+30 concept, which resulted in discussions in which all sides were heard. In addition, representatives from six engineering societies (ACEC, AIChE, ASCE, ASME, IEEE-USA, and NSPE) serve as nonvoting resources to the task force. Every member of the task force contributed at a high level. Because of this, the task force was able to make significant progress on some difficult issues.

### TEXT

#### **Charge 1**

*Consider the bachelor's plus 30 requirement to ensure that activities are outcomes based. Provide recommendations as appropriate.*

In discussing what is meant by outcomes based, the task force focused on how to make the additional education requirement something that Member Boards will be able to implement. The task force sees several challenges to implementation, particularly the current date of 2015, the need to change existing language about requesting credit for courses taken over 120 hours, and the need for a clearinghouse that can carry out services for implementation.

### **Date of Implementation**

The date of implementation in the *Model Law* is currently January 1, 2015. Relative to this, the task force addressed a major concern expressed by attendees at the 2007 zone meetings and Annual Meeting—the feasibility of implementing the additional education requirement by the year 2015. The members acknowledged that many issues must be resolved before the B+30 requirement can go into effect. These issues include the following:

- The body of knowledge must be finalized (or developed) for each engineering discipline.
- Courses must be developed and/or approved.
- Providers must be identified and approved.
- A course-delivery system that is accessible to all must be developed.
- A system must be developed to allow Member Boards to easily implement the requirement.

The task force recommends that a new date of 2020 be put into the *Model Law* and *Model Rules* language, with a footnote clarifying what the date means: 4 years of preparation to put the structure in place and 8 years of phase-in time. An 8-year transition period was deemed necessary to be fair to first-time licensure candidates. The 8-year period includes 4 years for a candidate to earn a baccalaureate degree and 4 years for the candidate to earn experience (while fulfilling the B+30 requirement) prior to sitting for the PE exam.

The 2020 date does not mean that every jurisdiction must comply on that date; it means only that this is the model for licensure boards. The 2020 date was selected as the earliest reasonable date for adoption by jurisdictions. It took 40 years for licensure to work its way through the states. In the same way, each jurisdiction will have to develop its own law, which must then be passed by the appropriate legislative body. The amount of time this will take will vary from state to state.

The task force also discussed how this new education requirement could affect comity that is based on the current Model Law Engineer designation. The members believe that creating a separate designation—Model Law Engineer 2020—would address this issue. In 2020, the current MLE definition would still be valid, but the new designation of MLE 2020 would also go into effect. There would then be dual MLE definitions, which will allow states that are not able to immediately adopt the additional education requirements to still be able to use the MLE definition for comity purposes. The intent is for these dual designations of MLE and MLE 2020 to be mirrored throughout both the *Model Law* and *Model Rules*.

With regard to foreign comity, the task force concluded that the current language in *Model Law* 130.10 C.1 is satisfactory for addressing the additional education requirement.

The B+30 Task Force recommends that the UPLG Committee move to adopt the following modifications to the *Model Law* and *Model Rules*:

#### ***Model Law* 130.10 General Requirements for Licensure**

Education, experience, and examinations (as described in *Model Rules*) are required for licensure as a professional engineer or professional surveyor.

- 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.
  - c. Licensure by Examination (Effective January 1, ~~2015~~ 2020)<sup>5</sup> – 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 and/or graduate-level coursework from approved course providers, and with a specific record of 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 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 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 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.

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<sup>5</sup> The implementation of these provisions in all jurisdictions is anticipated to take a number of years, so the actual effective date will vary by jurisdiction. A minimum 8-year transition period subsequent to adoption by a jurisdiction is recommended to allow jurisdictions and prospective licensees to prepare for the new requirements. The 2020 date was selected as the earliest reasonable date for adoption by a jurisdiction based on a 4-year implementation period plus an 8-year transition period for first-time licensure candidates.

**Model Rules 210.20 Definitions**

B. The following definitions are included in the *Model Rules* only:

2. Model Law Engineer 2020 (effective January 1, ~~2015~~ 2020)<sup>1</sup> – The term “Model Law Engineer 2020” refers to a person who has obtained licensure in at least one jurisdiction as the result of satisfying the following conditions:
  - a. Is a graduate of an engineering program accredited by the Engineering Accreditation Commission of ABET, Inc. (EAC/ABET) and has completed an additional 30 credits of acceptable upper-level undergraduate and/or graduate-level coursework from approved course providers
  - b. Passes the 8-hour NCEES Fundamentals of Engineering (FE) exam and an 8-hour NCEES Principles and Practice of Engineering (PE) exam using the NCEES cut score
  - c. Completes 4 years of acceptable engineering experience after confirmation of a bachelor of science degree in an engineering program. Acceptable engineering experience may include up to 1 year of experience for an engineer intern with a master’s degree in engineering from an institution that offers EAC/ABET-accredited programs and up to 2 years of experience for an engineer intern with a doctorate in engineering from an institution that offers EAC/ABET-accredited programs
  - d. Has a record clear of disciplinary action
5. Model Law Structural Engineer 2020 (effective January 1, ~~2015~~ 2020)<sup>1</sup> – The term “Model Law Structural Engineer 2020” refers to a person who has obtained licensure in at least one jurisdiction as the result of satisfying the following conditions:
  - a. Is a graduate of an engineering program accredited by the Engineering Accreditation Commission of ABET, Inc. (EAC/ABET) and has completed an additional 30 credits of acceptable upper-level undergraduate and/or graduate-level coursework from approved course providers
  - b. Passes a minimum of 18 semester (27 quarter) hours of structural analysis and design courses. At least 9 of the semester (14 quarter) hours must be structural design courses.
  - c. Passes the 8-hour NCEES Fundamentals of Engineering (FE) examination
  - d. Passes 16 hours of structural examinations consisting of one of the following:
    - (1) NCEES structural examinations, 8 hours of which are SE II
    - (2) 16-hour state-written structural examinations taken prior to 2004
    - (3) NCEES SE II plus 8-hour state-written examinations
  - e. Completes 4 years of acceptable structural engineering experience after confirmation of a bachelor’s of science degree in an engineering program and has completed an additional 30 credits of acceptable coursework. A maximum of 1 year of experience may be credited to engineer interns with a master’s degree in engineering that includes at least 6 semester (9 quarter) hours of structural engineering (in addition to the 18 hours noted above). A maximum of 2 years of experience may be credited to engineer interns with a doctorate in engineering focused on structural engineering.
  - f. Has a record clear of disciplinary action

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<sup>1</sup> The implementation of these provisions in all jurisdictions is anticipated to take a number of years, so the actual effective date will vary by jurisdiction. A minimum 8-year transition period subsequent to adoption by a jurisdiction is recommended to allow jurisdictions and prospective licensees to prepare for the new requirements. The 2020 date was selected as the earliest reasonable date for adoption by a jurisdiction based on a 4-year implementation period plus an 8-year transition period for first-time licensure candidates.

### Credits Earned in Excess of 120 Hours

As currently worded, *Model Rules 230.40 B.4* says that “a graduate with a bachelor’s of science degree in engineering requiring more than 120 credits may request that credits earned in excess of 120 credits be applied to satisfy the requirements for an additional 30 credits of acceptable upper-level undergraduate or graduate level coursework.” The argument in favor of this language is that because many people believe a baccalaureate degree of 120 credits is a national standard, it is only fair to students enrolled in programs that require more coursework to apply the coursework beyond 120 hours toward fulfilling the B+30 requirement. The rationale is to provide some semblance of fairness to a student who graduates from an engineering program requiring more than 120 credits versus a student who graduates from a program that requires only 120 credits.

The goal of providing a level playing field for licensure candidates is laudable; however, the result of the language in the *Model Rules* as written could have the unintended consequence of encouraging all engineering programs to reduce their programs to 120 credit hours. In a sense, this could be lowering the bar. Defining a standard program in terms of an arbitrary number of credit hours has significant shortcomings.

All engineering programs are designed to meet a variety of constraints. The two primary ones are ABET accreditation and institutional curriculum requirements (typically referred to as core curriculum or general education requirements). These two constraints are not mutually exclusive; both must be satisfied. ABET criteria, obviously, is uniformly applied to all programs; however, core curriculum requirements vary greatly from program to program and from institution to institution. Engineering programs meet the ABET requirement and their own core education requirements in a manner consistent with their institution’s mission, their college/school mission, and their own mission. In ABET vernacular, they have set program outcomes (at graduation) and objectives (3 to 5 years after graduation) consistent with their mission and in consultation with their constituencies (alumni, employers, professional organizations, etc.). Because the curriculum is designed to meet those objectives and outcomes, the courses taken and number of credits earned on the path to a baccalaureate degree can vary greatly from program to program.

It would be very difficult, if not impossible, to identify the credits within a degree program that exceed 120 credits and the ABET criteria for the degree. If a program were to identify credits in excess of ABET requirements that satisfied the B+30 credits, a program would undoubtedly, and perhaps rightfully, be asked by the institution’s administration to remove those credits from the curriculum to maintain a program at or near 120 credits. NCEES, in effect, would be inadvertently promoting and advocating a 120-credit engineering degree program. This is the unintended consequence mentioned earlier.

The B+30 Task Force believes the fairest level playing field for licensure candidates is to use the degree requirements as defined by their institution. It therefore believes that *Model Rules 230.40 B.4* should be rewritten so that all applicants for licensure may request that credits in excess of those required by the institution granting their degree be applied to satisfy the B+30 requirements. This would allow programs to design and administer curricula that continue to be responsive to the profession, to ABET, and to their own institutional requirements and constituencies.

In the spirit of providing a uniform rule that promotes additional education, is fair to both students and institutions, and can be easily implemented by state boards, the B+30 Task Force requests that the UPLG Committee make a motion to revise the *Model Rules* as follows.

#### ***Model Rules 230.40 Examinations***

- ~~B.4. Effective January 1, 2015, a graduate with a bachelor’s of science degree in engineering requiring more than 120 credits may request that credits earned in excess of 120 credits be applied to satisfy the~~

requirements for an additional 30 credits of acceptable upper-level undergraduate or graduate-level coursework. Effective January 1, 2020, a graduate of an EAC/ABET-accredited baccalaureate program may request that credits earned in excess of the institution's requirements for the applicable degree be applied to satisfy the requirements for an additional 30 credits of acceptable upper-level undergraduate and/or graduate-level coursework.

The task force understands that this language merely says that it can be done and does not stipulate how it will be done. The task force believes, however, that it could be easily implemented and administered by state boards. Credits taken in excess of those required for a degree can be easily identified by an institution/program. Many institutions already have a mechanism for undergraduates to take extra courses and have them excluded from their undergraduate program yet still appear on their transcript if the student makes the request before taking the course. This puts the onus on the students because they will have to ensure that their transcripts state that the courses were not taken in fulfillment of their degree. This rule would also allow all students to take additional and appropriate courses while still undergraduate students (before they graduate with their B.S. degree in engineering) and have these credits count toward the B+30 requirement.

The task force acknowledges that this option for the undergraduate student must clearly be communicated to the student and his or her academic advisor early in the student's course of study. The task force also acknowledges that documentation showing that an applicant has earned the excess credit should come from a national clearinghouse and not be a burden on the state board to verify.

### **Clearinghouse for B+30 Requirements**

The task force believes that the most effective way to implement B+30 requirements is through the creation of a national clearinghouse. The intent of this clearinghouse would be to provide services to individual applicants, to Member Boards, and to institutions/organizations that act as approved course providers so that the burden of documenting the fulfillment of the B+30 requirement would not fall on the Member Boards or their administrators. The Member Board could then provide an up-or-down vote for each candidate. The task force feels strongly that the creation of such a clearinghouse can and should be accomplished prior to the effective date of the B+30 requirement.

The task force understands that funding such a clearinghouse is a concern and intends that these services be self-funded—that the users of the clearinghouse, not the Member Boards, would be charged for the services.

The task force held a brainstorming session to begin identification of the necessary services. While not necessarily all encompassing, the results of the session are shown below.

#### **Services Needed to Implement the B+30 Requirement**

- Services provided on behalf of candidates (similar to those of the Council Records Program and the Registered Continuing Education Providers Program)
  - Validate evidence of achieving B+30 (similar to transcript validation, applies to supporting documentation)
  - Determine that candidate meets MLE 2020 qualifications
  - Register approved providers
  - Determine whether coursework is classified as professional practice or technical
  - Provide a national list of online offerings
  - Include fee structure similar to that of Records program (transmittals, etc.)

- Provide advice about the process of completing the B+30 requirement
- Review plans sent in by individuals to help them figure out what would apply and what would not
- Services provided for Member Boards (similar to those of the Council Records Program, RCEPP, and the Center for Professional Engineering Education Services)
  - Determine equivalency of transferred courses (international)
  - Validate evidence of achieving B+30 (similar to transcript validation, applies to supporting documentation)
  - Include fee structure that is sufficient to offset the cost; put the cost on the candidates and providers, not on the Member Boards
  - Help fulfill the mission of NCEES to provide Member Board services that promote uniform licensing procedures
- Services related to institutions or organizations (elements similar to those of RCEPP)
  - Maintain a list of approved course providers and approved courses; publish on Web site so that individuals can easily find out what courses and providers are approved
  - Develop criteria for approved providers and courses; set limitations for what the providers can offer
  - Carry out reaccreditation (auditing) of providers every 6 years or so
  - Should we use same standards ABET uses to accredit programs?
  - Allow providers to participate at different levels
  - Allow approved providers to use tagline saying that they are compliant with B+30
  - Decide how much a course is worth in credits (1 credit, 3 credits, etc.)
  - Evaluate rigor of courses (how many fail?)

The B+30 Task Force will move that an appropriate committee be charged with exploring the idea of creating a national clearinghouse that would carry out the activities needed to implement the requirements of B+30.

### Charge 2

*Develop definitions for approved credits and approved course providers for inclusion in the Model Rules as appropriate. Consider comments and recommendations provided during 2007 zone meetings and the 2007 Annual Meeting.*

The task force spent a considerable amount of time and energy discussing this charge. The 2006–07 UPLG Committee developed definitions for these terms and presented them at the 2007 zone meetings and the NCEES Annual Meeting. The B+30 Task Force members reviewed comments and concerns raised during these meetings.

The task force recommends that the language being brought forward this year be considered conceptual language. As evidence of this, it has not assigned the language to any specific section of the *Model Rules*. Where the language should go can be addressed by the UPLG Committee at a later date. The task force is interested in constructive feedback from NCEES members, especially related to the distribution of the 30 credits between technical and professional-practice topic areas. Ongoing feedback to the task force will be necessary to develop model language that can effectively serve as a guideline to Member Boards.

The conceptual language is as follows, with explanations provided below it.

### Acceptable Coursework and Approved Course Providers

- A. 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. Some coursework may be in sciences and mathematics related to engineering.
  2. In professional practice topic areas, acceptable coursework shall be relevant to engineering and may include but not be limited to business, communications, contract law, management, ethics, public policy, and quality.
  3. All coursework shall be equivalent in intellectual rigor and learning assessment to upper-level undergraduate and/or graduate courses offered at institutions that have a program accredited by EAC/ABET.
  4. At least half of the credits shall consist of coursework as defined in paragraph A.1 above.
  5. The term “credit” is defined as 1 semester hour or its equivalent.
- B. 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. (Any of these institution’s courses that meet paragraph A above would be acceptable.)
  2. An institution or organization whose development, delivery, and outcomes assessment of coursework are accredited by an NCEES-approved accrediting body. (This institution/organization would be approved to develop and offer courses that meet paragraph A above. NCEES-approved accrediting bodies may include regional accreditation bodies and other appropriate discipline accreditations.)
  3. An institution or organization that offers specific courses individually accredited by an NCEES-approved accrediting body. (This institution/organization would be approved to offer one or more specifically approved courses that meet paragraph A above.)

### Acceptable Coursework

The task force feels it is important to differentiate between technical topic areas and professional practice topic areas when defining acceptable coursework. The need for additional credits in each area is deemed important to fulfill the objectives of addressing the gaps in undergraduate education. The proportionate number of credits in each of the two areas needs to be flexible because each individual’s educational experience is unique. In addition, the bodies of knowledge for the different engineering disciplines vary. The task force struggled with stipulating the proportion of credits in each of the two areas. Some members believe that taking all coursework in professional topic areas to fulfill the B+30 should be allowed. Other members feel that some technical courses should be required because engineering is, by and large, a technical profession. The task force is interested in feedback on this issue.

Relative to paragraph A.1, within the technical topics category, the members generally agree that upper-level undergraduate and/or graduate-level coursework (any combination) is acceptable. Some members wanted to allow lower-level courses in engineering, science, or math to address the loss of breadth in undergraduate curriculum.

The intent of the wording about technical topics is to allow any course taught in an engineering college/department (i.e., has an engineering course number) to be considered a technical course even if it is not strictly technical in nature. For example, a course in engineering project management taught in the engineering college would be considered a technical course. If a project management course is taught through the business school or by an organization such as Project Management Institute (PMI), it would be considered a professional-practice course.

Also in paragraph A.1, the task force is proposing language that says, "Some coursework may be in sciences and mathematics related to engineering." There was a considerable amount of discussion regarding this. A few task force members feel it would be acceptable if all 30 credits were in science and/or math. Most of the members, however, feel that since we are preparing professional engineers, some courses having engineering content are needed. The word "some" is undefined at this time and should be clarified before the language is incorporated into the *Model Rules*.

Relative to paragraph A.2, the task force feels it is important that courses in professional practice topic areas be relevant to the engineering profession. Development of an approved list of such courses is a task a national clearinghouse could undertake.

Relative to paragraph A.3, the wording is intended to convey the idea that, in general, continuing education courses would not be acceptable in fulfilling the B+30 requirement because such courses typically do not have the intellectual rigor or learning assessment in place to be equivalent to courses taken during an undergraduate career.

Relative to paragraph A.4, a great deal of debate occurred without final unanimity. Some members of the task force believe that an individual should be able to fulfill the B+30 requirement with all professional practice courses; other members feel that because we are dealing with engineering licensure at least half of the credits should be of a technical nature. As the language is currently drafted, all of the coursework could be in technical topic areas but not all could be in the professional practice area. Comments are encouraged.

### **Approved Course Providers**

Relative to paragraph B.1, the task force feels that an institution that has one or more EAC/ABET-accredited programs should be an acceptable provider for any course referenced in paragraph A regardless of how the course is delivered (on campus, over the Internet, etc.). If the course originates at that EAC/ABET institution, it should pass muster.

Relative to paragraph B.2, any course delivered by an institution or organization that is accredited by a body that has been approved by NCEES should be an acceptable course provider. If the institution/organization is one that has in place systems to develop, deliver, and assess coursework that fulfills section A, then the institution/organization itself can be accredited, similar to what EAC/ABET accreditation currently provides. Individual courses, then, would not need to be approved for these institutions. The task force suggests that NCEES may be the organization best suited to serve as the accrediting body (or national clearinghouse). Ultimately, however, this decision should be made by a vote of the Council. Regardless, the task force is adamant that NCEES should approve the body or bodies that would accredit the institution/organization. It is important to state that the task force considers an institution to be a 2- or 4-year college/university and that an organization can be any other entity that currently offers acceptable coursework or would like to offer it in the future. Entities that fit the task force's idea of an organization include but are not limited to professional engineering societies (ACEC, AIChE, ASCE, ASHRAE, ASME, IEEE-USA, NSPE, etc.) and employers of professional engineers (consulting engineering firms, industrial companies, and governmental bodies such as the Corps of Engineers, FAA, DOE, and others). Once a program of courses offered by one of these organizations is accredited by the approved body, the organization would then be considered an approved course provider.

Relative to paragraph B.3, the task force feels that some institutions or organizations would want to provide only a limited number of specific courses that could fulfill the B+30 requirement. These entities would not seek accreditation of the institution/organization per se (as would be the case in B.2) but rather would seek approval

only of specific courses. In such a case, the provider would need to show that each course separately has rigor and robust assessment procedures in place.

Again, as with acceptable coursework, the task force strongly recommends that a national clearinghouse be established to approve course providers so that individual Member Boards would not be burdened with such tedious work.

The B+30 Task Force will move that the president charge the appropriate committee with incorporating the suggested language into the *Model Rules*.

### **Charge 3**

*Evaluate the provisions of the Model Rules that allow credit towards the experience requirement for candidates with advanced degrees. Provide recommendations as appropriate.*

#### **Experience Credit for Model Law Engineer**

The task force discussed the language in *Model Rules* 210.20 B.2.c. Currently, 1 year of experience is waived for an engineer intern with a master's degree and 2 years are waived for an engineer intern with a doctorate. The questions addressed were whether a candidate with an advanced degree should still get experience credit to be a Model Law Engineer when the education requirements are increased. If so, should a year's experience credit be given for someone who completes the additional education requirements without earning an advanced degree? Should the experience requirements be raised for everyone else?

The group proposes that the credit should continue for the master's and Ph.D. degrees but should not be given for someone who meets the additional education requirements without earning an advanced degree. The rationale is this: If we allow 1 year of credit for B+30 individuals, then we have reduced the total number of required years of experience from 4 to 3 for everyone in the future. The task force believes it is important to continue to encourage and recognize individuals who attain advanced degrees by granting them experience credits. An advanced degree has continuity within the curriculum/research that would not be present when taking the assortment of courses allowed to fulfill the B+30 requirement.

In addition, in a large number (maybe most) cases, an advanced engineering degree is a full-time effort for an individual who does not otherwise work in an engineering job at the same time to gain experience credit toward licensure. A "B+30" individual is probably gaining work experience while attaining the 30 credits. If we allow 1 year of experience credit for the B+30, there could be unintended inequity for the individual pursuing the advanced degree because it could take that person longer to reach licensure, thus reducing one of the incentives for earning an advanced degree. The task force recommends that the UPLG Committee make a motion to change the *Model Rules* as follows (to avoid confusion, the language below reflects the 2020 date discussed earlier in this report). The committee would also need to present corresponding language for Model Law Structural Engineer 2020.

#### ***Model Rules 210.20***

- B.2. Model Law Engineer 2020 (effective January 1, 2020) – The term "Model Law Engineer 2020" refers to a person who has obtained licensure in at least one jurisdiction as the result of satisfying the following conditions:
- a. Is a graduate of an engineering program accredited by the Engineering Accreditation Commission of ABET, Inc. (EAC/ABET) and has completed an additional 30 credits of acceptable upper-level undergraduate and/or graduate-level coursework from approved course providers
  - b. Passes the 8-hour NCEES Fundamentals of Engineering (FE) exam and an 8-hour NCEES Principles and Practice of Engineering (PE) exam using the NCEES cut score

- c. Meets one of the following experience requirements:
- (1) Completes 4 years of acceptable engineering experience after confirmation of a bachelor of science degree in an engineering program accredited by EAC/ABET
  - (2) Completes 3 years of acceptable engineering experience as an engineer intern and holds a bachelor of science degree in engineering from an EAC/ABET-accredited engineering program and a master's degree in engineering from an institution that offers EAC/ABET-accredited programs
  - (3) Completes 2 years of acceptable engineering experience as an engineer intern and has an earned doctorate in engineering from an institution that offers EAC/ABET-accredited programs
- ~~–Acceptable engineering experience may include up to 1 year of experience for an engineer intern with a master's degree in engineering from an institution that offers EAC/ABET-accredited programs and up to 2 years of experience for an engineer intern with a doctorate in engineering from an institution that offers EAC/ABET-accredited programs~~
- d. Has a record clear of disciplinary action

### **M-ABET Concept for Consideration**

As the B+30 Task Force considered possible equivalencies to the B+30 requirement, the subject of a degree from an ABET-accredited master's program (M-ABET) came up. It did not take too long before the group realized that an M-ABET degree should be considered equivalent.

The criteria for ABET accreditation of master's-level programs are fulfillment of the baccalaureate-level general criteria, fulfillment of program criteria appropriate to the master's-level specialization area, and 1 academic year of study beyond the baccalaureate level. The program must demonstrate that graduates have an ability to apply master's-level knowledge in a specialized area of engineering related to the program area.

Thus, according to ABET, an M-ABET degree must satisfy all 9 criteria required for baccalaureate accreditation, including the program criteria, plus have a full additional academic year of study beyond the baccalaureate level. Additionally, the graduates must have the ability to apply master's-level knowledge in a specialized area of engineering related to the program area.

Accordingly, the task force believes it is prudent and logical to formally allow the M-ABET degree to be included in the definition of Model Law Engineer 2020. In addition, it agrees that an M-ABET degree is appropriate for the current definition of Model Law Engineer. The task force recognizes that some language in the *Model Law* and *Models Rules* that refers to a graduate of an EAC/ABET accredited program of 4 years or more would already include the M-ABET, but it recommends charging the UPLG Committee with providing language to make this explicit throughout both documents.

There would be three paths to becoming an MLE 2020:

1. EAC/ABET-accredited bachelor's plus 30 credits of acceptable coursework
2. EAC/ABET-accredited bachelor's plus a master's (B-ABET)
3. EAC/ABET-accredited master's (M-ABET)

As with a B-ABET master's degree, the M-ABET would be allowed to waive a year of the experience requirement.

The task force developed specific language to recognize the M-ABET in the *Model Law* and *Model Rules*. However, because this is a new concept to NCEES Member Boards, the task force believes it is important to present this as a recommendation in concept for the Council to approve at the Annual Meeting. The B+30 Task

Force will move that the UPLG Committee be charged with incorporating the M-ABET concept into the *Model Law* and *Model Rules*.

**Charge 4**

*Propose revisions as necessary to ensure that the Model Rules are consistent with revisions to the Model Law concerning the bachelor's plus 30 requirement.*

This was addressed with regard to experience requirements in Charge 3.

Respectfully submitted, the **Bachelor's Plus 30 Task Force**:

Michael J. Conzett, P.E., Chair

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## MOTIONS

Mr. President, I request the privilege of the floor to make the following motions on behalf of the Bachelor's Plus 30 Task Force.

1. Move that the appropriate committee be charged with exploring the idea of creating a national clearinghouse that would carry out the activities needed to implement the bachelor's plus 30 requirement for engineering licensure.
2. Move that the appropriate committee be charged with incorporating the following language into the *Model Rules*.
  - A. 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. Some coursework may be in sciences and mathematics related to engineering.
    2. In professional practice topic areas, acceptable coursework shall be relevant to engineering and may include but not be limited to business, communications, contract law, management, ethics, public policy, and quality.
    3. All coursework shall be equivalent in intellectual rigor and learning assessment to upper-level undergraduate and/or graduate courses offered at institutions that have a program accredited by EAC/ABET.
    4. At least half of the credits shall consist of coursework as defined in paragraph A.1 above.
    5. The term "credit" is defined as 1 semester hour or its equivalent.
  - B. 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. (Any of these institution's courses that meet paragraph A above would be acceptable.)
    2. An institution or organization whose development, delivery, and outcomes assessment of coursework are accredited by an NCEES-approved accrediting body. (This institution/organization would be approved to develop and offer courses that meet paragraph A above. NCEES-approved accrediting bodies may include regional accreditation bodies and other appropriate discipline accreditations.)
    3. An institution or organization that offers specific courses individually accredited by an NCEES-approved accrediting body. (This institution/organization would be approved to offer one or more specifically approved courses that meet paragraph A above.)
3. Move that the Committee on Uniform Procedures and Legislative Guidelines be charged with incorporating the M-ABET concept into the *Model Law* and *Model Rules*.