

How to regulate P.Engs

An international primer

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Despite some differences in how the right to practise is understood, engineering regulators in Canada, the US and the UK seek to uphold the compact between self-regulation and the greater public good.

A comparison of engineering regulation in Canada, the United States and the United Kingdom reveals similarities—and key differences—among the three systems.

All three uphold the basic agreement between government and the profession that allows for a degree of autonomy in exchange for engineering's commitment to consumer protection and the public interest generally.

But with privilege comes responsibility, and each system also faces increased expectations to show consistency and accountability in its operations and, in turn, to reduce barriers to the mobility of licensed members beyond traditional jurisdictions.

The Canadian regulatory system has come under scrutiny recently due to the challenge of licensing international engineering graduates. The self-regulation and licensing of engineers is not widely practised in Europe and Asia, and its nuances sometimes present problems for those looking to resume their former engineering careers in Canada.





Whatever differences exist in the way engineering practice and practitioners are regulated in Canada, the US and the UK, governments in each country expect engineers to maintain high standards and safeguard the public against the risks involved in ever more pervasive—and often invisible—use of technology.

THE CANADIAN SYSTEM

In Canada, responsibility for licensing professional engineers and regulating engineering practice is delegated by provincial statute to the 12 provincial or territorial regulatory bodies, such as PEO, the Ordre des ingénieurs du Québec and the Association of Professional Engineers and Geoscientists of British Columbia.

Together, these bodies oversee the licensing and practice of up to 160,000 registered members. Their efforts are coordinated by a national body, Engineers Canada, that was established in 1936 to develop programs for constituent members, and to coordinate policies and guidelines on behalf of Canada's engineering profession.

Engineers Canada oversees the Canadian Engineering Accreditation Board, which evaluates engineering programs as providing

the necessary academic preparation for professional licensure.

In the Canadian model, the privilege of self-regulation is bestowed by provincial governments in recognition that the profession itself is best situated to regulate engineering in the interests of the general public.

The 12 provincial/territorial licensing bodies fulfill this mandate by ensuring high standards of engineering practice and education in Canada, by upholding requirements for admission into the profession, by disciplining engineers who fail to uphold the profession's practice and ethical standards, and by preventing the practice of professional engineering and use of the title "engineer," "professional engineer," or variations, by unlicensed individuals.

Each licensing body's mandate and obligation to undertake this role is outlined in provincial engineering acts. Despite province-to-province differences, engineering acts outline a scope of practice for engineers and restrict the use of engineering titles to individuals who have been recognized or licensed by the provincial/territorial engineering association.

US MODEL

Engineering regulation in the US falls primarily to individual state licensing boards, which are departments of the state governments.

These state boards receive some direction from the Clemson, South Carolina-based



National Council of Examiners for Engineering and Surveying (NCEES), which was established in 1920 (renamed in 1931) to coordinate interstate licensing problems associated with engineers moving from one state to another.

The council's membership increased as state boards and jurisdictions assumed legal status through legislation in states and territories across the US.

In addition to licensing those engineers who require licensing, primarily consultants as engineers employed in industry are not generally required to hold a licence, each state board administers a complaints and discipline process to investigate cases of engineering incompetence and substandard practice.

The chief objective of NCEES is to provide leadership in professional licensure of engineers (and land surveyors), working to encourage uniform laws, licensing standards, and professional ethics for the protection of the public health, safety and welfare, and to shape the future of professional licensure.

It also assists the state agencies in promoting regulatory processes "which demonstrate high standards of knowledge, competence, professional development and ethics."

Jerry Carter, NCEES executive director, says the council makes use of "model" laws and rules to encourage consistency among the state licensing boards.

Nonetheless, individual state boards can and do tailor the system to local needs.

"Although the regulations for each member board closely resemble the NCEES model law and model rules, each also contain requirements that are unique to that jurisdiction as required by the appropriate legislative entity," Carter told *Engineering Dimensions*.

And like Engineers Canada, NCEES promotes uniform licensing practices emphasizing a high-quality education, progressive qualifying experience and continuing professional competence.

"NCEES strives to bring greater consistency to the licensure process, but this is still a decision to be made by the individual jurisdictions and I do not anticipate this process to change any time in the near future," Carter adds.



Despite minor variations state to state, obtaining an engineering licence in the US is a four-step process: graduation from an Accreditation Board for Engineering and Technology (ABET)-accredited engineering program; successful completion of a fundamentals of engineering exam; obtaining the work experience specified by the state licensing board; and completing the principles and practice of engineering exam.

THE UK SYSTEM

Turning to the British model, engineering regulation rests with the Engineering Council UK (ECUK), which was established by royal charter to qualify engineers through its 36 member engineering institutions.

Member institutions include organizations of chemical, civil, agricultural, nuclear, environmental, mechanical and transportation engineers.

In essence, it is the 36 engineering institutions that are licensed to place qualified members on the ECUK's register of engineers with the protected titles of "chartered" engineer, "incorporated" engineer, or engineering technician.

The London-based ECUK is an umbrella organization, working in co-operation with its member institutions to supervise the profession, set the stan-

dards for registration and see to the accreditation of engineering educational programs.

There are no restrictions on the right to practise as an engineer in the UK, though some areas of work are limited by statute to those who hold one of the protected titles or are otherwise approved.

To become registered with the ECUK, applicants must be members of an engineering institution, have undergone approved professional development, and demonstrate professional competence against specific criteria.

Within the British system, the ECUK sets the registration standards, maintains the reg-

ister of members, and owns and awards the protected titles.

Institutions must meet minimum standards to be members of the ECUK. In return, the council authorizes the institutions to assess the applicants for registration. So although it is ECUK that ultimately registers engineers, individual applicants are processed for registration by their discipline-specific institution.

Disciplinary matters are handled by the member institutions, which have their own code of conduct and complaint investigation procedures. In the event an institution finds an offence sufficiently serious to withdraw institution membership from an offender, that person is also automatically struck off the ECUK register.

Jim Birch, CEng, FICME, ECUK head of international recognition, says the British model makes a fine distinction between being registered and being licensed.

“In the UK, registration means being assessed as meeting professional standards, so it is the same as the licensing requirement in Canada,” he explains. “However, unlike Canada, there are no licence-to-practise consequences because working in UK is pretty much unrestricted.”

In the UK, as in much of Europe, there is little restriction on the right to work as an engineer, Birch adds. “There are a few areas, such as dam inspection, that are restricted to licensed, competent persons, and these are under specific legislation. However, the UK government is persuaded that there is ‘a public good’ in having a general system of voluntary registration, which sets entry conditions and maintains ethics, in which those engineers who wish to publicly demonstrate their professional competence can enroll. This is provided by ECUK, which is a self-regulating body made up entirely of the profession, which is incorporated by royal charter.”

Birch says although the council was created by royal charter, the government has no influence over the setting of registration standards or of their implementation.

Birch also says about one-third of eligible engineers choose to register with the ECUK. “We think this is good market penetration for a system where there is no legislative requirement driver,” he says. Σ



REGULATION SYSTEMS AT A GLANCE

	CANADA	US	UK
Purpose	Public protection, safety, services	Regulate professions where there may be harm to public if practitioners are unqualified	Public protection
Self-regulation	Yes	Yes, but subject to political interference of state legislatures	Yes
National body	Engineers Canada develops programs and coordinates policies and guidelines on behalf of profession	National Council of Examiners for Engineering and Surveying coordinates interstate licensing, and promotes uniform licensing practices and continuing professional competence	Engineering Council UK (ECUK) sets standards for profession and overall requirements for accreditation of the qualifying technical institutions. ECUK licenses professional engineering institutions (licensed members) to interpret requirements as appropriate for their own sectors
Licensing and regulation authority	12 provincial regulators and ordre responsible for licensing	State licensing boards observe "model law" but tailor to individual states' needs	36 member engineering institutions (chemical, civil, etc.) assess the qualifications of, and place engineers on, ECUK's register of engineers
Accreditation	Canadian Engineering Accreditation Board (CEAB)	Accreditation Board for Engineering and Technology (ABET)	ECUK, working with engineering institutions
Admission to profession	Graduation from CEAB-accredited engineering program (or equivalent), four years' experience (12 months in a Canadian jurisdiction under supervision of Canadian-licensed practitioner), professional practice exam, good character	Graduation from an ABET-accredited engineering program, fundamentals of engineering exam, principles and practice of engineering exam, work experience specified by state licensing board, generally of four years duration.	Satisfy ECUK-set competence standards, membership in appropriate engineering institution, satisfactory educational base, approved professional development, demonstrated professional
Engineering act	<i>Professional Engineers Act</i>	Each US state and jurisdiction has laws to regulate practice of engineering	Independent of government
Protected titles	Engineer, P.Eng., ing., limited engineering licensee (LEL)	Professional Engineer, PE, legally defined and protected in US regions	chartered engineer (CEng), incorporated engineer (IEng)
Mobility agreements	Yes	Yes	Yes