

PEO 2020 AGM Submission

1. Title of Submission

Licensure pathways for engineering graduates who are innovators and entrepreneurs.

2. Please briefly describe the issue, problem, risk or gap that this submission addresses.

The current experience requirement for the P.Eng. licence filters out engineering graduates who are innovators and entrepreneurs and does not provide a pathway for these graduates to licensure. As a result, there are very few entrepreneurs and innovators getting their P.Eng. This is a risk to the public interest as they expect that technological innovations that affect their wellbeing have some degree of oversight by a licenced engineer. This is a gap in PEO's mandate as the design of engineering innovations that protect the public interest is not being regulated. And this is disingenuous to students who want to be a P.Eng., complete an accredited engineering undergraduate degree to meet the academic requirements for licence, and then find out that PEO offers them no way to achieve the experience requirements needed to qualify for a licence.

The ways the current experience requirements exclude entrepreneurs and innovators include:
One - the current requirement is a minimum of 48 months of verifiable acceptable engineering experience. This excludes engineering graduates who start-up business either during school or after graduation, who are constantly innovating their ideas and may already be onto their second or third innovation after 48 months.

Two - the current requirement only allows for up to 12 months of pregraduation experience towards the 48 months of required experience. This excludes recognizing accredited engineering students who pursue coop and job experiences and capstone projects with engineering companies during their undergraduate program in excess of 16 months.

Three - the current requirement expects at least 12 months of acceptable engineering experience in a Canadian jurisdiction under supervision of a P.Eng., and this supervision cannot have occurred during the undergraduate or graduate degrees. This excludes engineering graduates who start their innovations during their accredited undergraduate program, possibly working with a PEng professor or PEng peer, who launch a new business at graduation, go directly to creating their own business and therefore never works under the supervision of a PEng in the traditional employee-employer sense.

Fourth – the current requirements rely on PEngs and companies to provide the experience opportunities to engineering graduates and act as referees in the licensure process. As PEO has no contract with PEngs and companies to assume these roles of providing experience opportunities and references, this expectation is flawed. Also, entrepreneurs do not end up working for existing companies and in fact the public and governments today ask engineers to

innovate and start-up new businesses to provide the technological advances that the public needs.

Overall, the PEO experience requirements are heavily weighted by time spent working and do not provide alternative methods for accredited engineering graduates to demonstrate their engineering competence based on skills and outcomes. PEO needs to change its pathways to acceptable engineering experience.

As an example, a mentor or entrepreneur's client could provide such input.

3. Please summarize the action that you are requesting from Council and how it will address the issue, problem, risk or gap stated above.

PEO Council adopt new pathways to the PEng licence to recognize engineering experience attained while engineering students are in accredited undergraduate program (through coop placements, jobs, capstone projects and other experience opportunities) and attained while engineering graduates work outside of the traditional employee-employer relationship without a direct PEng supervisor (such as entrepreneurs, innovators and graduates who apply their engineering education to new and emerging fields of technology).

PEO is empowered to do this work under the Professional Engineers Act which permits PEO to establish the standards for admission. PEO currently uses a model of assessing licence qualifications in series with academic requirements obtained first followed by experience requirements. However, PEO could in fact assess academic and experience qualifications in parallel.

4. Please cite and briefly summarize any research that supports the proposed action.

Under the CEAB accreditation requirements, PEO asks for engineering students to get design experience under a faculty member licenced as P.Eng. This requirement is complimentary to PEO's experience requirements for licence to work under the supervision of a PEng and could be used to assess an applicant's experience in parallel with the academic assessment.¹

In Quebec, it is required to have 36 months of engineering experience to acquire the targeted competencies of which up to 24 months can be obtained during undergraduate and graduate degrees². Although this leaves at least 12 months of work experience required after graduation, it one year less time than required by PEO in this scenario. And someone who obtains a licence through Quebec can easily transfer it to an Ontario P.Eng, having completed less years of experience than PEO currently requires.

The PEO Ottawa Chapter has been running an Innovators and Entrepreneurs Program for the past xx years, providing group supervision by P.Engs. This could be a model for the supervision licence requirement for accredited engineering graduates who launch their own businesses.

¹ CEAB accreditation criteria 3.4.4.6: “a significant design experience to be conducted under the professional responsibility of faculty licensed to practise engineering in Canada. The significant design experience is based on the knowledge and skills acquired in earlier work and it preferably gives students an involvement in team work and project management.”

² <https://www.oig.qc.ca/en/lam/member/junior/experience/Pages/experience.aspx>

5. As applicable please describe how the proposed action will contribute to serving and protecting the public interest as it pertains to the regulation of professional engineering and the engineering profession.

It is a risk to the public interest if PEO is not regulating engineering work and/or engineering graduates who develop technological innovations that affect public wellbeing. This is a gap in PEO’s mandate as the design of engineering innovations that protect the public interest is not being regulated.

6. Please identify any legal considerations (eg., the need for changes to the statute, regulation, by-laws etc.) that may affect Council’s ability to implement the proposed action.

A change to Regulation 941 would be required to reflect changes to what PEO requires for an applicant to meet the experience requirements for licence. A change to the Professional Engineers Act may also be required.

7. Please identify any considerations that are relevant to the timing (or urgency) of the proposed action.

The Ontario government's Innovation Agenda³ is to create a healthy economy that provides good jobs and better lives for Ontarians. To achieve it, the government specifically identifies generating a workforce with first-rate skills in engineering and entrepreneurship, as well as investing in innovation and attracting innovators and entrepreneurs. This agenda is meant to address the broad social challenges that include climate change, poverty reduction and health care.


By definition, the practice of professional engineering is the creating of new things using engineering knowledge to protect public wellbeing. And PEO is mandated to regulate the practice and its practitioners. With this urgent call from government to have engineering entrepreneurs to advance Ontarians wellbeing, PEO needs to act urgently to ensure that it is doing its part to protect the public interest. And by not providing a pathway for engineering entrepreneurs to be licensed and their practice to be regulated, PEO is not fulfilling its public protection mandate.

³ <https://www.ontario.ca/page/seizing-global-opportunities-ontarios-innovation-agenda>

8. Please provide any other information that you feel will assist members of the AGM and Council in understanding your submission, in particular your proposed action.

9. Please list any attachments to this document.

Engineers Canada paper on entrepreneurship 2019

Member #1 (name/signature): Tapan Das, Ph.D., P.Eng., FEC, Director Ottawa PEO Chapter Innovation/Entrepreneurship Program. *signed* 

I wish to Pre-record a brief introduction to this submission.

Member #2 (name/signature): Joe Podrebarac, P. Eng. Director and Past Chair of Ottawa PEO Chapter. *signed* 

I wish to Pre-record a brief introduction to this submission

Advisor (name/signature): Peter DeVita, P.Eng., FEC, PEO Past President.

Advisor (name/signature): Ray Barton, Ph.D., CEO Vitesse, Ottawa.

Date: May 5, 2020

**PLEASE FORWARD THE COMPLETED SUBMISSION ELECTRONICALLY,
WITH ANY ATTACHMENTS**

TO:
CEO/REGISTRAR, c/o AGMSUBMISSIONS@PEO.ON.CA

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AT LEAST TEN (10) BUSINESS DAYS PRIOR TO THE ANNUAL GENERAL MEETING

Cover Page:
Canadian Engineering Qualifications Board Consultations:
Paper on Entrepreneurship
(Winter 2019)

BACKGROUND

The question of entrepreneurship was raised during the 2016 work plan development consultation process and added to the 2017-19 CEQB work plan as a guideline for development. The Engineering-in-Training Committee struggled with the issue and decided to proceed with the review of the [engineer-in-training web content](#), the [Model Guide on Mentoring Programs](#), the [Model Guide on Direct Supervision](#).

[As part of the 2018 CEQB work plan consultation process, regulators were asked if guidance pertaining to entrepreneurship was still a priority for them and tepid support was received. As a result,](#) a decision was made to proceed with organizing a national workshop to better define the issue and potential content before triggering the regular national document development and consultation process. The purpose of this package is to consult regulators on the one-pager to subsequently determine if CEQB should develop the document or not.

CONSIDERATIONS

- There is existing guidance on general licensure requirements from regulators and on starting a business from governments/industry/CEAB-accredited higher education institutions.
- There does not seem to be guidance on why and how entrepreneurs should become licensed engineers, what constitutes engineering in their area and how they can meet licensure requirements within their own specific context.
- Survey results from this workshop seem suggest that there might be appetite for a communications document that look at each step of the business development process, and provide information on:
 - What constitutes the practice of engineering;
 - What are the legal requirements associated with the practice of engineering and use of title;
 - What are the benefits of becoming a licensed engineer; and,
 - Path and tips to meet licensure requirements under their specific circumstances

NEXT STEPS

If sufficient regulators support is secured during the consultation process, the CEQB will develop a document for regulators consultation in the fall 2019.

Consultation Paper on Entrepreneurship

Entrepreneurship has been suggested in both the 2016 and 2018 Canadian Engineering Qualifications Board's work plan consultation process. After receiving tepid support from regulators, a decision was made to host a national workshop to identify content, followed by regulators consultations before proceeding with developing any document. The purpose of this paper is to consult regulators on proposed high-level content and on if work should proceed on a guideline or other resources.

BACKGROUND

The typical licensure path has been for an individual, living in Canada, is to progress from graduation from a CEAB-accredited program, acquire four years of experience as an engineer-in-training under the supervision of a P.Eng., and then become a licensed engineer. Information on admission requirements provided by regulators is typically general, and not specifically targeted toward entrepreneurs.

CONSIDERATIONS

Juggling many competing priorities, entrepreneurs challenge this traditional path, given that:

- They might not see the value of licensure, especially when their priority is to survive the initial capitalization period "entrepreneurial valley of death" (see figure in Annex A);
- Their experience might be in emerging disciplines, where it is unclear what constitutes the practice of engineering and finding a licensed supervisor is challenging;
- Their academic background might be outside CEAB programs, and as a result, they might not be aware of engineering self-regulation and associated legal requirements; and
- Their career progression might put them on a path of practising engineering, but they do not know if and how to get their experience recognized and lack guidance on how to proceed.

Regulators' responsibility is to ensure that public interest is paramount. They might benefit from a document that proactively encourages individuals with an entrepreneurial mindset to become licensed, and provide them with a path to licensure within the existing framework.

PROPOSED CONTENT

It is proposed that the document be a communications piece for regulators to reach entrepreneurs that would highlight:

- Self-regulation, its value and relevancy, how it protects public interest as well as ethical, and professional obligations;
- Define the practice of engineering, applicable to all traditional and emerging disciplines;
- Benefits associated with becoming a licensed engineer in an entrepreneurial context; and
- Path and tips to licensure for each of the startup financing cycle stages (see Annex A).

This document will not propose changes to admission, practice, or enforcement requirements.

NEXT STEPS

If sufficient regulator support is secured, the CEQB will proceed with developing this document, to be submitted for consultation in the fall 2019.