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ENGINEERING DIMENSIONS

PEO's 100TH ANNIVERSARY ISSUE

FEATURES

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ENGINEERING DIMENSIONS

100 YEARS

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HAPPY 100TH, PEO

By Nicole Axworthy

One hundred is splashed across the cover of this issue for a special reason: Next month is PEO's centennial. It's a milestone not many organizations can claim, so we're dedicating this issue of *Engineering Dimensions* to celebrating the long history of PEO and professional engineering in Ontario.

To create this issue, our team dedicated a substantial number of hours researching fascinating facts from PEO's archives, and we've compiled them into an exclusive 16-page historical feature. "PEO turns 100" (p. 34) takes you on a journey beginning with the leadup to the establishment of PEO on June 14, 1922—we even have the first engineer's application for registration, which came with a $5 annual fee—through the growth of professional regulation in the decades that followed, including the evolution of the *Professional Engineers Act*, the creation of PEO's discipline process and code of ethics, the forming of chapters and the separation of PEO's regulatory and advocacy roles.

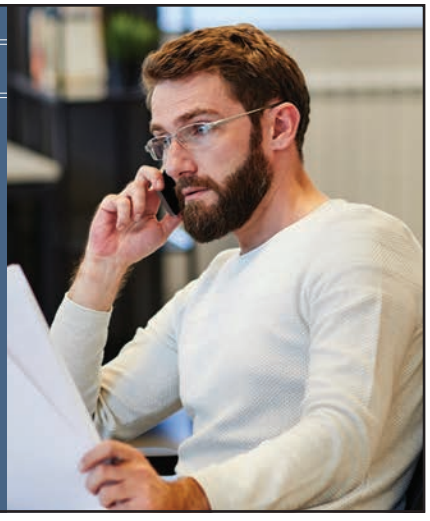
A second feature article ("An engineering legacy," p. 50), written by Thousand Islands Chapter executive member Ross Anderson, P.Eng., reminds us of the history behind the *Sons of Martha* cairns, which were constructed throughout Canada to commemorate engineering achievements, and their direct link to the creation and promotion of professional engineering in Ontario. Currently, the chapter is leading a project to resurrect the first cairn, which was constructed at Deeks Quarry in North Grenville, ON, in 1925.

Much has changed over 100 years, and today PEO is transforming and modernizing to meet the evolving expectations of society. We have reported on progress in this area in previous issues, but it's especially notable given the path that led us here. While we celebrate PEO throughout its centennial year, at the same time we are saying goodbye to CEO/Registrar Johnny Zuccon, P.Eng., FEC, who led PEO through its multi-year, enterprise-wide transformation and is now gearing up for retirement (p. 10).

This issue, we also announce PEO's newly elected 2022–2023 Council members (p. 8), who took office at the regulator's virtual annual general meeting (AGM) a few weeks ago. The full coverage of PEO's AGM and an introduction to all members of the new Council will be published in the next issue of *Engineering Dimensions*. In the meantime, on page 6, you'll find the first message from new President Nick Colucci, MBA, P.Eng., FEC, who shares his personal journey from chapter executive to PEO Council leadership and his commitment to PEO's ongoing transformation efforts to become a modern and efficient regulator. **e**

LET US KNOW

To protect the public, PEO investigates all complaints about unlicensed individuals or companies, and unprofessional, inadequate or incompetent engineers. If you have concerns about the work of an engineer, fill out a Complaint Form found on PEO's website and email it to **complaints@peo.on.ca**. If you suspect a person or company is practising engineering without a licence, contact PEO's enforcement hotline at 800-339-3716, ext. 1444, or by email at **enforcement@peo.on.ca**.



100 YEARS OF LEADERSHIP

By Nick Colucci, MBA, P.Eng., FEC

As I begin my term as PEO president for the 2022–2023 Council year—a year that also coincides with PEO's 100th anniversary—I am reminded of my 35-year journey as a PEO volunteer that led me towards the presidency.

I started on the chapter executive of the Lake Ontario Chapter and spent 12 years as chapter chair before relocating to the Peterborough Chapter, where I was a member of the chapter executive until I was convinced by then-Eastern Region councillors to run for Council. I ran and lost but tried again the next term and was successful. After two terms as Eastern Region councillor, I relocated again to the East Central Region and ran for Council again and won.

At the end of my second two-year term, I was standing in the convention room at the annual general meeting discussing the plans for the upcoming year as a "retired" councillor. My phone rang and it was my father, who said: "Nicky (my parents always call me Nicky), it's your father. Your mother is in the hospital." It turns out she went into the emergency room a couple of days prior and was first discharged and later taken back by ambulance after she collapsed at home. She needed emergency surgery to treat an infection in her kidneys. This led to several months in the intensive care unit, followed by several more months of recovery in the hospital and at home.

This type of traumatic experience had a profound effect on my family and myself that will never be forgotten. I never gave up on her and advocated for her recovery with the medical professionals every day she was in the hospital. After this experience, and after my mom was home safely, I decided to run for PEO vice president. I lost. This was followed by three more campaigns for PEO president-elect. In 2021, I was successfully elected, allowing me to become the president for this term.

PEO's TRANSFORMATION WORK

On June 14, PEO will turn 100 years old. This year is also significant because it is a critical time in PEO's transition to become a modern, future-ready regulator. We have nearly completed the Governance Roadmap, a two-year undertaking to review and modernize all aspects of PEO's governance structure. We are now developing an updated strategic plan to continue building on the governance work.

We are working on several other initiatives that continue to transform PEO into a better regulator. On the licensing renewal front, we are working to streamline the licensing process and remove the Canadian experience requirement to meet the newly amended *Fair Access to Regulated Professions and Compulsory Trades Act* (FARPACTA) legislation, which affects numerous Canadian regulators.

This year, PEO is also finalizing the regulatory changes required to implement a mandatory continuing professional development program as initially recommended in the Elliot Lake inquiry in 2014, and we are developing a Council and volunteer remuneration policy that recognizes the significant time commitment associated with volunteering for Council and committees. And as part of its work on the Governance Roadmap, Council has decided to conduct a risk assessment of chapters to determine which activities should be eliminated or operationalized to reduce PEO's overall risk while continuing the amazing work chapters do to benefit our licence holders. Finally, we have started the search for a new CEO/registrar to replace our current leader, Johnny Zuccon, P.Eng., FEC, who is taking his well-deserved retirement next month.

I am looking forward to leading PEO through its 100th year. I am committed to making PEO a modern and future-ready regulator with the help of the current Council and the hardworking staff at PEO. **e**

ADOPTING AN OUTWARD-LOOKING APPPROACH

By Johnny Zuccon, P.Eng., FEC

When I was appointed CEO/registrar in February 2019, I was handed a mandate of delivering change unprecedented in PEO's history. At that time, the regulatory landscape was already witnessing change. Calls for greater transparency and accountability of regulators—from government, the public and the media—were commonplace. It was no longer a threat for governments to intrude on the affairs of regulators—it was becoming the new reality.

Recognizing the rising temperature and the urgent need for risk mitigation strategies, PEO took a bold step forward and voluntarily subjected itself to an independent regulatory performance review to determine if we were effectively doing the job set out for us under the *Professional Engineers Act* (PEA). The external review examined how well PEO was performing its regulatory functions of standard setting, licensing, discipline and enforcement when measured against international regulatory best practices. The report concluded that "PEO does not fulfil its mandate with the steadfast focus on regulation in the public interest." Council accepted the report in its entirety and committed to making the changes necessary to address its 15 recommendations.

On the eve of my retirement, PEO is now well into a multi-year, enterprise-wide transformation to address these recommendations and achieve our change vision of becoming "a professional, modern regulator that delivers on its statutory mandate and is supported by a governance culture that consistently makes decisions that serve and protect the public interest."

INCREASING PUBLIC TRUST

As we strive to achieve this vision, we are improving our ability to regulate, using principles of right-touch regulation and adopting an outward-looking approach to guide our decisions that impact our public interest mandate.

Key to any self-regulating profession is an unwavering level of public trust. This includes a commitment to continuing professional development (CPD), and PEO has taken a big step forward in this regard. Beginning in January 2023, all PEO licence holders will be required to participate in a mandatory CPD program to annually maintain their licence. Last month, both Council and the Ontario Cabinet approved a regulation under the PEA that requires all licence holders to participate in a continuing education and professional development program and complete the annual requirements as a condition of renewing their licence with PEO. The new mandatory program will be based on the Practice Evaluation and Knowledge program that has been piloted on a voluntary basis for the past five years. Once implemented, the program will provide further assurance to the public that Ontario engineers are committed to continuing education to enhance their practice.

MODERNIZING LICENSING

Our transformation also includes a commitment to reviewing, simplifying and modernizing the P.Eng. licensing process. Our efforts have been accelerated with the proclamation in December 2021 of the *Working for Workers Act*, which includes significant amendments to the *Fair Access to Regulated Professions and Compulsory Trades Act* and the filing of O.Reg. 261/22. The government has set the bar for regulators on several licensing-related fronts, and PEO is now obligated to meet these requirements, as well as the government-imposed timelines related to Canadian work experience, licensing decision-making timeframes, language proficiency tests and emergency registration planning.

As part of our modernization efforts, we are also committed to incorporating diversity, equity and inclusion best practices into all PEO systems and operations. PEO's Anti-Racism and Anti-Discrimination Exploratory Working Group, for example, was formed to develop recommendations on how best to prevent issues of racism and discrimination, including systemic discrimination, in all aspects of PEO's work as a regulator, an organization and an employer. This group has done tremendous work, and I'm proud that at its April 8 meeting Council approved a policy code that aims to prevent issues of systemic racism and discrimination in all aspects of PEO's work (see p. 60).

Implementing an outward-looking perspective is at the heart of our modernization effort. Our public interest mandate requires us to make decisions that primarily consider the perspective or interests of the public above all else. And our ongoing relevance as a regulator requires us to constantly reflect on our role, measure our effectiveness and make course corrections where necessary. The public expects and deserves no less. **e**

NEW COUNCIL BEGINS 2022–2023 TERM

The new Council, including President Nick Colucci and President-elect Roydon Fraser, took office at PEO's annual general meeting last month.

By Adam Sidsworth

PEO's Council for the 2022–2023 term took office at PEO's virtual 2022 Annual General Meeting (AGM) on April 30. Nick Colucci, MBA, P.Eng., FEC, is the new president, and several new Council members also took office following a month-long election period earlier this year.

The election results, which were announced in late February, revealed that Council veteran Roydon Fraser, PhD, P.Eng., FEC, captured the role of president-elect. This means Fraser will automatically transition to the presidency for the 2023–2024 Council term at PEO's 2023 AGM. Fraser is the teaching chair and a professor in the department of mechanical and mechatronics engineering at the University of Waterloo. On Council, Fraser previously served as both a Western Region councillor and a councillor-at-large beginning in 1998. He has also served on numerous PEO committees, including the Academic Requirements, Discipline, Complaints and OSPE-PEO Joint Relations committees and the Governance Working Group. Additionally, Fraser has served on Engineers Canada's Canadian Engineering Qualifications Board.

Greg Wowchuk, P.Eng., was elected to the role of vice president (elected). Wowchuck previously served on Council from 1997 to 2000 and from 2018 to 2020, most recently as councillor-at-large. He has also served on the Communications and Discipline committees.

A little over 11 per cent of eligible PEO licence holders voted during this year's election cycle. This marks, for the most part, a gradually smaller number of voters in both percentage and overall numbers voting since 2017, when over 16 per cent of PEO licence holders cast a vote during Council elections.

Other new councillors elected to Council for the 2022–2023 term include:

- Councillor-at-Large Vajahat H. Banday, P.Eng., PE (Michigan), FEC;
- Eastern Region Councillor Tim Kirkby, P.Eng., FEC;
- East Central Region Councillor David Kiguel, P.Eng., FEC;
- Western Region Councillor Vicki Hilborn, P.Eng.;
- West Central Region Councillor Pappur Shankar, P.Eng., FEC; and
- Northern Region Councillor Dana Montgomery, P.Eng.

Additionally, at the new Council's first meeting on May 4, Lorne Cutler, MBA, P.Eng., was appointed to the position of vice president (appointed), and Scott Schelske, P.Eng., FEC, was appointed to the Executive Committee. Chantal Chiddle, P.Eng., FEC, was appointed as councillor-at-large following the recent resignation of Pat Quinn, P.Eng., FEC; and Luc Roberge, P.Eng., FEC, was appointed as Northern Region councillor following the resignation of Ramesh Subramanian, PhD, P.Eng., FEC. The full 2022–2023 Council will be featured in the July/August 2022 issue of *Engineering Dimensions*.

HOW YOU VOTED

PRESIDENT-ELECT

Roydon Fraser, PhD, P.Eng., FEC	**5141**
Marilyn Spink, P.Eng.	2341
Darla Campbell, P.Eng., FEC	1975

VICE PRESIDENT

Greg Wowchuk, P.Eng.	**5661**
Michael Chan, P.Eng., FEC	3686

COUNCILLOR-AT-LARGE

Vajahat H. Banday, P.Eng., PE (Michigan), FEC	**2752**
Chantal Chiddle, P.Eng., FEC	2480
David Lapp, P.Eng., FEC	2264
Daniel Lam, P.Eng.	1886

EASTERN REGION

Tim Kirkby, P.Eng., FEC	**acclaimed**

EAST CENTRAL REGION

David Kiguel, P.Eng., FEC	**acclaimed**

WESTERN REGION

Vicki Hilborn, P.Eng.	**1028**
Wayne Kershaw, P.Eng., FEC	948

WEST CENTRAL REGION

Pappur Shankar, P.Eng., FEC	**acclaimed**

NORTHERN REGION

Dana Montgomery, P.Eng.	**165**
Luc Raymond Roberge, P.Eng., FEC	117
Agnes Krawczyk, P.Eng.	64

PEO ASKS LICENCE HOLDERS ABOUT MANDATORY CPD

PEO sought licence holders' feedback as the regulator prepares for a January 2023 rollout of mandatory continuing professional development.

By Adam Sidsworth

PEAK
REACHING NEW HEIGHTS

In a bid to engage with licence holders and other stakeholders, PEO conducted an online public survey this spring to gauge their views on continuing professional development (CPD), which will become a mandatory requirement for all PEO licence holders beginning January 2023.

The survey, which was available on PEO's website from April 12 to May 6, asked licence holders and other stakeholders their views on the six guiding principles of mandatory CPD. Notably, mandatory CPD must:

- Be necessary to improve the regulation of professional engineering;
- Have requirements relevant for the practice of professional engineering;
- Be pragmatic;
- Recognize the diversity of licence holders' needs and resources;
- Be scalable and proportional to the risk posed to the public; and
- Be effective.

Licence holders and other stakeholders were asked to gauge their agreement with the guiding principles as well to suggest any other guiding principles that PEO may want to consider. They were also asked about the relevance of the ethics module, the length of individual practitioners' learning plans and activities that could count towards learning plans.

PEO received over 8700 survey responses and, according to Arden Heerah, P.Eng., lead, professional development at PEO, licence holders' feedback and concerns are being considered as PEO finalizes the details of the mandatory program, which will be based on the regulator's current voluntary Practice Evaluation and Knowledge (PEAK) program. "This consultation will not be the final opportunity for PEO to obtain feedback from licence holders and other stakeholders," says Heerah. "But it is a crucial part of our effort to convert the voluntary program into a proportionate regulatory obligation."

PEO is the last provincial or territorial regulator in Canada to make CPD mandatory for its licence holders. The provincial government formally approved regulation changes last month so PEO has the necessary legal framework to require and enforce compliance with the program (see "Council proceeds with act and regulation changes", *Engineering Dimensions*, March/April 2022, p. 43).

In the meantime, PEO is continuing its voluntary PEAK program, but only one in six licence holders are currently participating in the program. PEAK includes a practice declaration and ethics module for all licence holders, and practising engineers answer a practice evaluation questionnaire that is accompanied with an individual continuing knowledge target of up to 30 hours for the year.

For further information on PEO's rollout of mandatory CPD, visit www.peopeak.ca.

PEO's CEO/REGISTRAR ANNOUNCES RETIREMENT

CEO/Registrar Johnny Zuccon announces his retirement after leading PEO through one of the largest transformations in its century-long history.

By Adam Sidsworth

CEO/Registrar Johnny Zuccon, P.Eng., FEC, transitioned into PEO's top staff role just as the regulator embarked on an ambitious transformation journey.

PEO's top staffer has announced that he is retiring this year after leading PEO through a multi-year, enterprise-wide transformation to focus on its regulatory responsibilities.

CEO/Registrar Johnny Zuccon, P.Eng., FEC, was officially named as PEO's CEO/registrar in February 2019 after serving in the position in an interim capacity for nearly a year. Zuccon had previously served in various roles at PEO for nearly 27 years, including, most recently, as deputy registrar of tribunals and regulatory affairs.

Zuccon was named as the permanent CEO/registrar just as Council embarked on an extensive external review of its regulatory performance (see "PEO undergoes external regulatory review," *Engineering Dimensions*, January/February 2019, p. 8). The review's feedback identified areas where PEO could be more efficient, transparent and objective, and it sparked PEO into action. Over the four years of Zuccon's tenure, PEO conducted:

- a high-level action plan and activity filter that assessed the roles of 93 PEO committees, subcommittees, chapters and working groups;
- a two-year Governance Roadmap to clarify the roles of Council and staff;
- an organizational restructuring of PEO's operations so staff can effectively focus on PEO's regulatory mandate; and
- an anti-racism and anti-discrimination review to address any areas of concern in PEO as a regulator, organization and employer.

Additionally, under Zuccon's leadership, PEO staff has begun the process of:

- Creating a mandatory continuing professional development program;
- Re-examining the role of the mandatory 12 months of supervised Canadian engineering experience in PEO's licensing process; and
- Digitizing PEO's licensing processes and existing paper-based licence applications.

"Johnny leaves PEO in excellent shape to continue these important changes to our regulatory work, including committing to a governance model that provides strategic direction and high-level control; and making the organizational changes necessary to ensure we have the capacity and agility to achieve our objectives," says Past President Christian Bellini, P.Eng., FEC. "He will be greatly missed, and we wish him well in his retirement."

REFLECTING ON SUCCESSES

Zuccon holds an undergraduate degree in applied science from the University of Toronto, where he also earned a master's degree in mechanical engineering. Prior to joining PEO in 1995, Zuccon spent 10 years working as an engineer, mainly in a research capacity in the optical and mechanical sectors.

Zuccon is proud of many of the accomplishments he and PEO staff achieved during his tenure in the top position. Notably, Zuccon cites the activity filter. Of the 93 activities examined, 35 were deemed unrelated to PEO's regulatory mandate or governance structure. "We called it a tool because I felt strongly that if you started picking on the committees or chapters, you're going to get all the emotions," reflects Zuccon. "You need to neuter the emotion and deal with the outputs. [Staff] did a masterful job of designing something that put the activities into the three categories. I got people wanting me to change 'neither' to 'other.' I said, 'No. It's either 'regulatory' or 'governance' or 'neither.'"

Zuccon also notes the positive outcomes of PEO's organizational restructuring, which witnessed a simplification of

PEO's departments to reduce silos and more effectively focus on the organization's regulatory mandate. PEO departments now fit into three core areas: regulatory operations, policy and governance and organizational effectiveness. "From a regulatory mandate, regulatory operations [needs to view] things from the outside looking in," Zuccon emphasizes. "We're too inwardly focused. With policy and governance, it's critical that if we're going to be a modern-edge regulator we be pre-emptive and have stakeholder relations with the outside. For example, continuing professional development (CPD): We should already be growing the fruitful grounds for licence holders so that they understand that it's not a slight on them but a requirement that most regulators need to abide by."

WHAT ZUCCON FORESEES

Although a lot of PEO's changes under Zuccon's tenure were from within, some changes have been imposed on PEO by the provincial government. Notably, in December 2021, the province enacted the *Working for Workers Act, 2021,* which amends the *Fair Access to Regulated Professions and Compulsory Trades Act, 2006* (FARPACTA) to potentially force many Ontario regulators—including PEO—to eliminate their Canadian work experience requirement as part of their licensing processes (see "Province moves to eliminate Canadian work experience requirement for licensing," *Engineering Dimensions*, January/February 2022, p. 10). In addition, PEO will have to make a decision on an application for licensure within specific deadlines.

"FARPACTA is giving us a timeframe," Zuccon says. "It's where we were going; it's just that we weren't ready. The best part is that [the *Professional Engineers Act*] is designed for parallel processing. What we do currently is serial processing. We hold back a lot of the applicants: They apply early; they don't have all their academics; they haven't developed all their experience. It takes a long time to get through the system. FARPACTA wants us to define a completed application and then once we've received it, we have six months to make a determination."

Zuccon acknowledges the pressure he has experienced in the CEO/registrar position while leading PEO through unprecedented change. "I'm pretty much spent. You get to a point where you say, 'That's it. That's all I can give.'" His advice to his successor is to not be afraid to take the lead and make the necessary decisions.

PEO RECOGNIZES 6 OUTSTANDING PROFESSIONAL ENGINEERS

The recipients of PEO's 2022 Order of Honour are being recognized for their service to the profession.

By Nicole Axworthy

This year, PEO will induct three Officers and three Members into its Order of Honour (OOH), an honorary society that recognizes professional engineers and others who have rendered outstanding service to the engineering profession in Ontario, primarily through volunteering with the regulator. This year's honourees will be recognized at an exclusive viewing party on June 9 where awardees and members of PEO's Awards Committee will view a special awards video. The video will be available on PEO's YouTube page following the event.

OFFICERS

Mohinder Grover, PhD, P.Eng., FEC, a Member of the OOH since 2017, has been upgraded in status for his volunteer dedication to PEO's Willowdale-Thornhill Chapter and PEO's Experience Requirements and Licensure committees. Grover is a devoted mentor to EITs and international engineering graduates in their journey to become professional engineers, actively participating with PEO's Licensure Assistance Program (LAP) since 2012 and Skills for Change since 2004. Grover has also served as chair of the chapter's Awards Committee for more than five years.

Noubar Takessian, P.Eng., FEC, a Member of the OOH since 2013, has been upgraded in status for his continued volunteer service with the Willowdale-Thornhill Chapter. At the chapter, he held almost every executive position, including secretary, treasurer, vice chair and four consecutive years as chair. Takessian regularly reached out to all chapters in the region by attending their board meetings and events, including licence presentation ceremonies, engineering intern (EIT) events and National Engineering Month activities. He also successfully ran for PEO Council and served as an East Central Region councillor from 2016 to 2018.

Rob Willson, P.Eng., FEC, has been an active PEO volunteer since 2005, when he joined the Toronto Dufferin (now West Toronto) Chapter board, serving as secretary, vice chair and chair. From 2011 to 2015, he sat on Council as West Central Region councillor and served on the Finance, Executive, Enforcement and Discipline committees and the Peer Review Subcommittee of the Equity and Diversity Committee. In 2015, he was appointed chair of the Council Term Limits Task Force, and he continued his work on governance reform while serving on the Succession Planning Task Force.

MEMBERS

Tim Kirkby, P.Eng., FEC, has contributed decades of service to both the Upper Canada Chapter and PEO Council. At the chapter level, Kirkby has served in all chapter executive positions since 1988, including two terms as chair. On Council, Kirkby served as a lieutenant governor-in-council appointee from 2016 to 2020 and currently serves as Eastern Region councillor. He also served on several PEO committees and task forces, including Discipline, Finance, Government Liaison and Human Resources committees and the Public Information Campaign and Council Composition task forces. He continues his volunteer efforts as the PEO representative on the Ontario Association of Certified Engineering Technicians and Technologists Council.

Nanda Lwin, P.Eng., FEC, has served as Willowdale-Thornhill Chapter chair, inaugural Government Liaison Program chair and chapter representative to the 30 by 30 East Central Region Committee. During his four years as chapter chair, Lwin increased licence holder involvement, improved chapter licensing ceremonies, oversaw the chapter's 50th anniversary ceremony and led the transition to online meetings at the beginning of the COVID-19 pandemic. He also made significant improvements in how the chapter engages with the public and began discussions on founding an equity, diversity and inclusion committee with his chapter.

Liu Tai, P.Eng., has been a York Chapter volunteer since 2013. During his two-year term as chapter chair, he led his chapter to organize over 120 events for PEO licence holders. Other notable accomplishments during his time on the chapter executive include creating a Past Chair Advisory Committee for the chapter to support, guide and mentor incoming chapter executives; organizing the inaugural East Central Region Past Chair workshop in 2020; and encouraging collaboration between PEO chapters by giving presentation at Scarborough, Simcoe-Muskoka and East Toronto chapters.

NEM PANEL DISCUSSES FUTURE OF THE P.ENG.

Engineering leaders from across Canada participate in a virtual panel discussion on the future of engineering regulation in Canada.

By Adam Sidsworth

Ontario's engineering advocacy body kicked off a month-long celebration of engineering in Canada with a panel discussion on the future of engineering regulation in Canada. The Ontario Society of Professional Engineers (OSPE) hosted a virtual panel discussion entitled "The future of the P.Eng. licence" on March 1, which marked the beginning of National Engineering Month in Canada as well as Professional Engineers Day in Ontario.

The panel included then-PEO President Christian Bellini, P.Eng., FEC, and then-OSPE President and Chair Mark Frayne, P.Eng. Also present were Heidi Yang, P.Eng. (BC), FEC, chief executive officer of Engineers Geoscientists BC (EGBC); and Jay Nagendran, P.Eng. (Alberta), FEC, registrar and CEO of the Association of Professional Engineers and Geoscientists of Alberta (APEGA). They discussed efforts to modernize engineering regulation in their own provinces and the shared goals of Canada's 12 provincial and territorial regulators as the profession continues to evolve in the face of emerging technology and disciplines.

Nagendran observed that an engineering licence needs to have the flexibility to adapt as technology and society's needs evolve: "As things like autonomous vehicles evolve, so do artificial intelligence, 3D printers, green energy and virtual reality," he said. "Engineering graduates planning a 30- or 40-year career in engineering can expect to work in areas they aren't aware of yet."

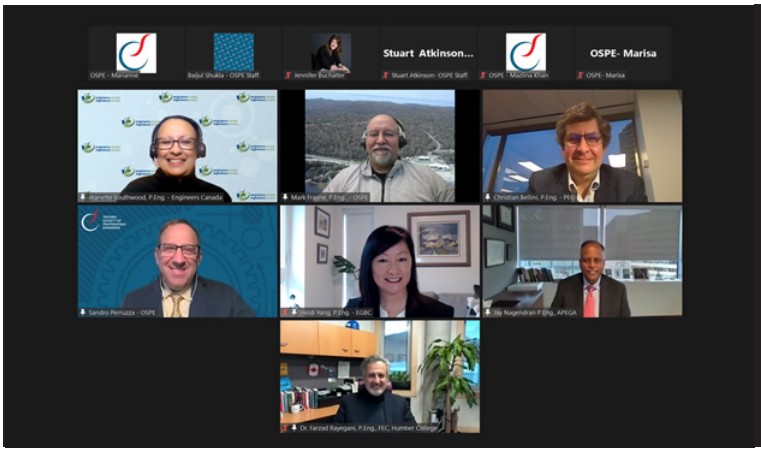
BITS & PIECES

With the establishment of Ford Motor Company of Canada, Ltd. in Windsor, ON, in 1904, Canada's automotive industry significantly expanded from the early days of the steam buggy. By 1913 there were approximately 50,000 motor vehicles in the country, and between 1918 and 1923, Canada became the world's second-largest vehicle producer and a major exporter of automobiles and auto parts.
Photo: dave_7

DEFINING ENGINEERING

The panelists, moderated by veteran journalist Steve Paikin, host of TVO's flagship current affairs program *The Agenda*, agreed that although Canada's engineering regulators are somewhat harmonized in the licensing process, the regulators lack an adequate and consistent definition of engineering and engineering regulation as the profession faces exponential growth in technology.

Bellini noted the vagueness of the definition of engineering in Ontario's *Professional Engineers Act*, which does not make clear the engineering responsibility in multi-discipline teams that exist in emerging technologies today. "When you're working on massive engineering projects in AI or in nanotechnology and you have contributors who are engineers and non-engineers,



The panel participants discuss the future of the P.Eng. The virtual talk, hosted by TVO's Steve Paikin, was one of the first events celebrating National Engineering Month.

[it's short sighted] to pick one person to be responsible for the work," said Bellini. "Changing the definition would allow us to be more focused on what we do and allow us to identify the areas where we are not that effective."

Frayne, however, warned: "We don't want to regulate out the innovation, but we want to make sure that the individuals doing it [understand] that [the regulators'] mandate is to protect."

THE EVOLUTION OF REGULATION

At one point during the discussion, Paikin probed Yang on the future of engineering and geoscience regulation in BC under the *Professional Governance Act* (PGA), which placed EGBC under the provincially run Office of the Superintendent of Professional Governance, along with four other self-regulated professions in the environmental sector (see "Engineers and Geoscientists BC begins entity regulation," *Engineering Dimensions*, March/April 2021, p. 12). Noting EGBC's dual role to both regulate and advocate on behalf of the engineering and geoscience professions in BC, Yang said that the PGA has offered them clarity and focus.

"One of the significant things is the introduction of a few regulatory tools long missing from our toolbox," Yang said, "and that is our ability to regulate engineering and geoscience firms and to have mandatory continuing educational requirements for our registrants."

ADAPTING TO CHANGE

The discussion moved to how the regulators were impacted by the COVID-19 pandemic and initial lockdown in 2020. Bellini admitted that PEO was initially caught off guard because several of its processes at the time were paper based, including its licence application process. However, he noted that within months, PEO had pivoted many of its paper-based processes to online.

Yang also observed that EGBC faced a similar challenge due to its reliance on paper-based processes. However, Yang noted that EGBC was able to partner with both PEO and APEGA to allow applicants for licensure to write their technical exams online. Technical exams are typically given to graduates of engineering programs not accredited by the Canadian Engineering Accreditation Board.

Recordings of many of the events of this year's National Engineering Month were subsequently placed online, including "The future of the P.Eng. licence" panel discussion.

UMBRELLA LEGISLATION A POSSIBILITY FOR APEGA

The engineering and geoscience regulator in Alberta could be placed under umbrella legislation with other professional regulators.

By Adam Sidsworth

The Alberta government has introduced a bill that, if passed, could place Alberta's engineering and geoscience regulator and 21 other non-health professional regulatory organizations (PROs) under the authority of one umbrella act.

Bill 23, the *Professional Governance Act*, will consolidate nine current acts into a single act that streamlines legislation and aligns with Alberta's *Labour Mobility Act* and *Fair Registration Practices Act*. "The bill would make it easier for self-regulating professions to safeguard Albertans' health, safety and economic interests by providing a more consistent and efficient framework to manage functions like governance, registration and professional conduct," the Alberta government says on its website.

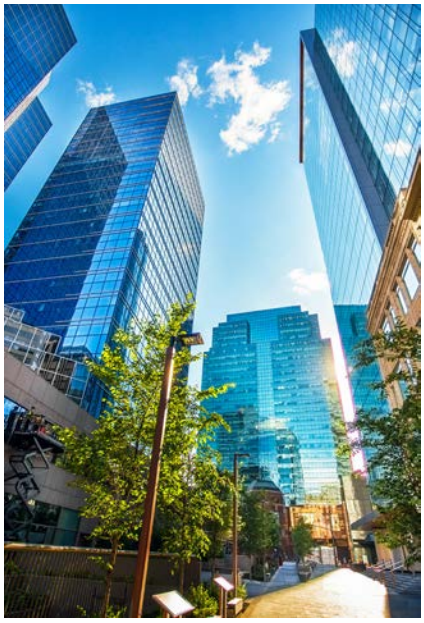
Alberta's 22 PROs develop regulations, standards of practice, codes of ethics and other related bylaws that govern their members and ensure the public interest is protected and public safety is maintained. However, 13 of those PROs receive their authority under the *Professional and Occupational Associations Registration Act*, an umbrella legislation that grants title protection and regulation-making authority. The remaining nine PROs, including the Association of Professional Engineers and Geoscientists of Alberta (APEGA), draw their authority from independent legislation. Bill 23 will bring the remaining nine regulators, including APEGA, under the umbrella legislation.

APEGA, which celebrated its 100th anniversary in 2020, currently derives its authority from the *Engineering and Geoscience Professions Act* and is, with more than 70,000 members, the largest association of self-regulated professionals in Western Canada. If Bill 23 is passed, it will require APEGA and the other affected PROs to align their core functions, including governance, registration and addressing professional misconduct; have profession-specific schedules to address unique needs; solidify the process of appointing public members to allow the public interest to be represented; and possibly allow a public administrator to be appointed should the PRO not fulfill its obligations or act in good faith.

STREAMLINING REGULATION

Alberta's move to streamline its approach to professional regulation in the province lies in its "Alberta's Recovery Plan," which launched in June 2020 to help the province rebound from the lockdowns caused by the global pandemic. Additionally, in September 2020, Alberta's labour and immigration ministry introduced its Streamlining Professional Legislation project, with APEGA and other regulators afforded the opportunity to provide input on streamlining professional legislation.

Indeed, the province has already moved to reduce barriers to labour mobility with the passage of the *Labour Mobility Act*, passed in December 2021, which sets the approval time of a maximum 20 days for approving applicants for licensure in over 100 regulated professions in Alberta, including engineering and geoscience, if they are already licensed in that profession in another Canadian jurisdiction (see "Alberta moves to quicken process for interprovincial licensing," *Engineering Dimensions*, January/February 2022, p. 14).



OTHER UMBRELLA LEGISLATION

Alberta's move to potentially place its engineering and geoscience regulator under umbrella legislation will likely differ from the model that placed BC's engineering and geoscience regulator under umbrella legislation. Under the *Professional Governance Act*, Engineers and Geoscientists BC saw its authority to regulate its duo professions placed under the authority of the Office of the Superintendent of Provincial Governance, a provincial oversight body which also oversees four other regulatory bodies (see "Mandatory professional development coming for BC engineers," *Engineering Dimensions*, May/June 2021, p. 12). However, unlike in Alberta, umbrella legislation in BC grew out of a 2017 provincial reliance review that evaluated the then-current legislation of qualified professionals in the natural resources sector as a result of environmental accidents, notably the Mount Polley mine disaster.

NEW STUDY EMPHASIZES IMPORTANCE OF CONSTRUCTION PROJECT PRE-PLANNING

The Construction and Design Alliance of Ontario released a new report on the importance of careful planning in the pre-project and design stages of construction projects.

By Adam Sidsworth

The Construction and Design Alliance of Ontario (CDAO) recently released its *Impacts of Pre-Project Investment & Quality of Documents* report, which states that errors that cost $100 to fix in the pre-planning stage could cost $1,000 to fix during the design stage and $10,000 to fix during construction.

The three-year study, co-sponsored by Mitacs and various construction-related advocacy and regulatory bodies, including the Ontario Association of Architects, the Association of Consulting Engineering Companies (ACEC)–Canada and ACEC–Ontario, focused on the relationship between project delivery efficiencies and project owners' investment in upfront pre-planning on design and consulting services.

"We were approached to see if there was research like this because we have to look at [construction projects] from the full lifecycle," says the study's principal investigator, Arnold Yuan, PhD, P.Eng., professor and chair of civil engineering at Ryerson University. "It's not just the design stage alone. It's also not design engineers alone. We really have to take a holistic view."

IMPROVING COLLABORATION

The study involved a literature review, online survey and in-person interviews with project owners, design consultants—chiefly engineers and architects—and general contractors and subcontractors. Industry stakeholders were questioned about projects completed between 2015 and 2020, and it was discovered that nearly half of all current projects are wasting more resources, including time, money and materials related to design issues than in previous years; and the quality of the design documents rated as poorer than average have delay increases nearly four times longer and cost overruns 1.5 times higher. Additionally, when there are more than average scope changes during the design stage, consultants will spend 40 per cent extra service time.

Ultimately, the study found that:

- Owners and other stakeholders need to commit more time to scoping for detailed clarity, completeness and accurate information of a request for proposal before taking a project to market;
- Owners need to budget more time and finances for design reviews, checks and verifications to be done at each stage of the design process; and
- Quality issues in the design document can be caused by an inadequate design duration, fees and information about existing conditions.

"The study demonstrates that significant opportunities exist for better collaboration and communication among owners, designers, general contractors and subcontractors, which will improve design document quality and construction productivity," the report states. "Further, the study results provide all project stakeholders with a basis for discussion about positive change in project delivery for public and private construction projects in Canada."

INVESTING TIME AND MONEY

Yuan, who wrote the report with Helen Zhuang, professor at the Angelo DelZotto School of Construction Management at George Brown College, emphasizes the difficulty in pre-planning for certain projects. "Many project guidelines were developed based on a green project assumption, meaning that you start with an empty space and develop something new," Yuan says. "But over the past 10 or 20 years, a lot of those projects involve brown projects, meaning that we have to deal with existing structures. You may find something complicated. It involves existing facilities and the compliance of new standards. These kinds of things add a lot of uncertainty and make it difficult for pre-project planning and scope management."

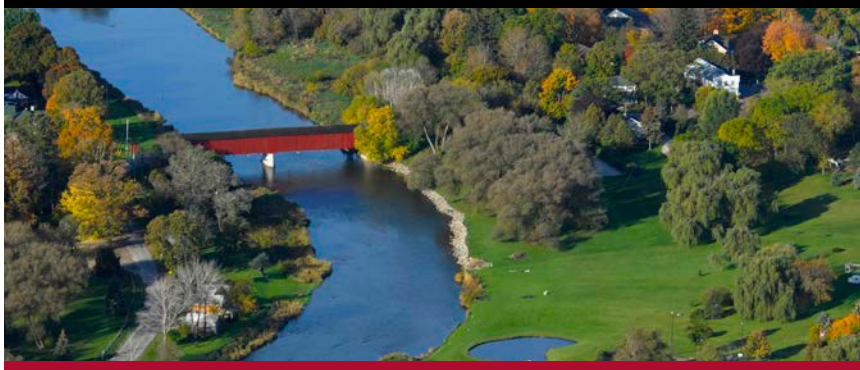
ACEC–Ontario Executive Director Bruce Matthews, P.Eng., chair of the steering committee for the study, concurs. "The overarching message is for project owners to invest more time and effort during the pre-project planning and design stages of a project," he says. "The orders-of-magnitude cost impacts of failing to do so should be a real wake-up call. Greater investment by owners in the pre-project planning and design stages means more—and better—work for engineers, pro-

viding engineers with adequate time, adequate information and adequate fees that will result in better quality output, lower risk of schedule delays and cost escalations and greater opportunity for innovation."

The report, Matthews says, supports an industry-wide transition to qualifications-based selection (QBS) procurement process advocated by ACEC–Ontario (see "CEO head urges provincial government to prioritize infrastructure spending," *Engineering Dimensions*, November/December 2018, p. 10). "A QBS approach results in a better scoping of the project, resulting in reduced schedule delay and cost escalation during delivery," Matthews emphasizes.

The report can be found on the CDAO's website.

BITS & PIECES



Built in 1881, the West Montrose Covered Bridge is Ontario's last-remaining covered bridge and has a 198-foot span across the Grand River. The roof supports the bridge's longevity by protecting its large timbers and trusses from the elements. Covered bridges were historically used to encourage horses, who are otherwise scared by the sound of rushing water, to cross. Photo: Saskia2586

TO THE MEMBERS OF THE ASSOCATION OF PROFESSIONAL ENGINEERS OF ONTARIO

Opinion

We have audited the accompanying financial statements of the Association of Professional Engineers of Ontario (PEO), which comprise the statement of financial position at December 31, 2021, and the statements of operations and changes in net assets and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies (collectively referred to as the financial statements).

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of PEO as at December 31, 2021, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Basis for opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards (Canadian GAAS). Our responsibilities under those standards are further described in the "Auditor's Responsibilities for the Audit of the Financial Statements" section of our report. We are independent of PEO in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of management and those charged with governance for the financial statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing PEO's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate PEO or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing PEO's financial reporting process.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with Canadian GAAS will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian GAAS, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of PEO's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on PEO's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause PEO to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Original signed by Deloitte LLP
Chartered Professional Accountants, Licensed Public Accountants
April 8, 2022

STATEMENT OF OPERATIONS AND CHANGES IN NET ASSETS, YEAR ENDED DECEMBER 31, 2021

	2021 $	2020 $
Revenue		
P.Eng. revenue	**19,825,037**	19,192,091
Application, registration, examination and other fees	**9,161,653**	8,069,121
Building operations **(Note 4)**	**2,477,426**	2,433,586
Investment income	**891,416**	839,194
Advertising income	**101,060**	105,359
Chapter revenues	**16,747**	33,358
	32,473,339	30,672,709
Expenses		
Staff salaries and benefits/retiree and future benefits **(Note 9)**	**12,924,820**	11,541,133
Building operations **(Note 4)**	**2,285,937**	2,196,630
Purchased services	**1,455,090**	958,697
Computers and telephone	**1,118,498**	1,137,393
Engineers Canada	**1,005,563**	1,024,502
Legal (corporate, prosecution and tribunal)	**951,635**	765,986
Amortization	**779,837**	1,152,613
Occupancy costs **(Note 4)**	**773,577**	846,019
Contract staff	**773,533**	502,825
Transaction fees	**728,732**	700,010
Consultants	**489,435**	454,680
Chapters **(Note 13)**	**343,301**	327,940
Postage and courier	**214,354**	210,455
Insurance	**148,165**	143,100
Professional development	**131,785**	109,858
Recognition, grants and awards	**78,566**	31,772
Office supplies	**72,508**	57,673
Printing	**48,721**	64,677
Volunteer expenses	**31,786**	109,056
Advertising	**27,550**	45,243
Staff expenses	**7,470**	18,857
	24,390,863	22,399,119
Excess of revenue over expenses before the undernoted	**8,082,476**	8,273,590
Council discretionary reserve expenses **(Note 8)**	**1,623,341**	388,086
Excess of revenue over expenses	**6,459,135**	7,885,504
Remeasurement and other items **(Note 6)**	**2,447,724**	(7,032,341)
Net assets, beginning of year	**25,580,860**	24,727,697
Net assets, end of year	**34,487,719**	25,580,860

The accompanying notes are an integral part of the financial statements.
Approved by the Council.

STATEMENT OF FINANCIAL POSITION, AS AT DECEMBER 31, 2021

	2021	2020
Assets	**$**	$
Current assets		
Cash	**11,319,333**	8,219,649
Accounts receivable	**700,544**	1,382,842
Prepaid expenses and deposits	**464,030**	475,843
Other assets	**171,319**	251,044
	12,655,226	10,329,378
Marketable securities	**19,885,232**	15,069,278
Capital assets **(Note 3)**	**29,689,774**	31,340,072
	62,230,232	56,738,728
Liabilities		
Current liabilities		
Accounts payable and accrued liabilities **(Note 15)**	**2,511,125**	2,513,546
Fees in advance and deposits	**11,730,592**	11,573,230
Current portion of long-term debt **(Note 5)**	**1,088,796**	1,088,796
	15,330,513	15,175,572
Long-term		
Long-term debt **(Note 5)**	**1,451,700**	2,540,496
Employee future benefits **(Note 6)**	**10,960,300**	13,441,800
	27,742,513	31,157,868
Commitments and contingencies **(Notes 12 and 16)**		
Net assets **(Note 7)**	**34,487,719**	25,580,860
Total liabilities and net assets	**62,230,232**	56,738,728

The accompanying notes are an integral part of the financial statements.
Approved by the Council.

STATEMENT OF CASH FLOWS, YEAR ENDED DECEMBER 31, 2021

	2021	2020
Operating activities	**$**	$
Excess of revenue over expenses	**6,459,135**	7,885,504
Add (deduct) items not affecting cash		
Amortization	**1,810,440**	2,269,255
Amortization—other assets	**79,725**	77,033
Employee future benefits expensed	**1,218,100**	713,400
Change in unrealized (gains) losses on marketable securities	**499,992**	507,308
Losses (gains) on disposal of marketable securities	**36,281**	46,294
	10,103,673	11,498,794
Change in non-cash working capital items **(Note 10)**	**849,052**	285,003
	10,952,725	11,783,797
Financing activities		
Repayment of mortgage **(Note 5)**	**(1,088,796)**	(1,088,796)
Contributions to employee future benefit plans	**(1,251,876)**	(1,181,800)
	(2,340,672)	(2,270,596)
Investing activities		
Net change in marketable securities	**(5,352,227)**	(4,319,777)
Additions to capital assets	**(160,142)**	(308,144)
	(5,512,369)	(4,627,921)
Increase in cash	**3,099,684**	4,885,280
Cash, beginning of year	**8,219,649**	3,334,369
Cash, end of year	**11,319,333**	8,219,649

The accompanying notes are an integral part of the financial statements.

NOTES TO FINANCIAL STATEMENTS

DECEMBER 31, 2021

1. NATURE OF OPERATIONS

The Association of Professional Engineers of Ontario (PEO or the association) was incorporated by an act of the legislature of the Province of Ontario. Its principal activities include regulating the practice of professional engineering and establishing and maintaining standards of knowledge, skill and ethics among its members in order to protect the public interest. As a not-for-profit professional membership organization, it is exempt from tax under section 149(1) of the *Income Tax Act*.

2. SIGNIFICANT ACCOUNTING POLICIES

These financial statements have been prepared in accordance with Canadian accounting standards for not-for-profit organizations and reflect the following accounting policies:

a) Financial instruments

PEO initially recognizes financial instruments at fair value and subsequently measures them at each reporting date, as follows:

Asset/liability	Measurement
Cash and marketable securities	Fair value
Accounts receivable	Amortized cost
Accounts payable and accrued liabilities	Amortized cost
Long-term debt	Amortized cost

Financial assets measured at amortized cost are assessed at each reporting date for indications of impairment. If such impairment exists, the financial asset shall be written down and the resulting impairment loss shall be recognized in the statement of operations and changes in net assets for the period.

Transaction costs are expensed as incurred.

b) Hedge accounting

PEO entered into an interest rate swap in order to reduce the impact of fluctuating interest rates on its long-term debt. The policy of PEO is not to enter into interest rate swap agreements for trading or speculative purposes.

The interest rate swap held by PEO is eligible for hedge accounting. To be eligible for hedge accounting, an instrument must meet certain criteria with respect to identification, designation and documentation. In addition, the critical terms of the derivative financial instrument must match the specific terms and conditions of the hedged item. The fair value of derivative instruments eligible and qualifying for hedge accounting is generally not recognized on the statement of financial position. Gains and losses on such instruments are recognized in the statement of operations and changes in net assets in the same period as those of the hedged item.

Interest on the hedged item is recognized using the instrument's stated interest rate plus or minus amortization of any initial premium or discount and any financing fees and transaction costs. Net amounts receivable or payable on the interest rate swap are recorded on the accrual basis of accounting and are recognized as an adjustment to interest on the hedged item in the period in which they accrue.

PEO may only discontinue hedge accounting when one of the following situations arises:

(i) The hedged item or the hedging item ceases to exist other than as designated and documented;
(ii) The critical terms of the hedging item cease to match those of the hedged item, including, but not limited to, when it becomes probable that an interest-bearing asset or liability hedged with an interest rate swap will be prepaid.

When a hedging item ceases to exist, any gain or loss incurred on the termination of the hedging item is recognized as an adjustment of the carrying amount of the hedged item.

When a hedged item ceases to exist, the critical terms of the hedging item cease to match those of the hedged item, or it is no longer probable that an anticipated transaction will occur in the amount designated or within 30 days of the maturity date of the hedging item, any gain or loss is recognized in net income.

c) Revenue recognition

Licence fee revenue, excluding the portion related to the building fund, is recognized as revenue on a monthly basis over the licence period. Building fund revenue is recognized as revenue at the commencement of the licence period. Other revenues are recognized when the related services are provided.

d) Donated services

The association receives substantial donated services from its membership through participation on Council and committees and as chapter executives. Donations of services are not recorded in the financial statements of the association.

e) Employee future benefits

Pension plans

The cost of PEO's defined benefit pension plans is determined periodically by independent actuaries using the projected benefit method prorated on service. PEO uses the most recently completed actuarial valuation prepared on the going concern basis for funding purposes for measuring its defined benefit pension plan obligations. A funding valuation is prepared in

accordance with pension legislation and regulations, generally to determine required cash contributions to the plan.

Other non-pension plan benefits
The cost of PEO's non-pension defined benefit plan is determined periodically by independent actuaries. PEO uses the most recent accounting actuarial valuation for measuring its non-pension defined benefit plan obligations. The valuation is based on the projected benefit method prorated on service.

For all defined benefit plans, PEO recognizes:
(i) The defined benefit obligation, net of the fair value of any plan assets, adjusted for any valuation allowance in the statement of changes in net assets;
(ii) The cost of the plan for the year.

f) Capital assets
Capital assets are recorded at cost. Amortization is calculated on the straight-line basis at the following annual rates:

Building	2%
Building improvements—PEO	5%
Building improvements—common area	3.3% to 10%
Building improvements—non-recoverable	10% to 20%
Computer hardware and software	33%
Furniture, fixtures and telephone equipment	10%
Audio visual	20%

The association's investment in capital assets is included as part of net assets on the statement of financial position.

g) Use of estimates
The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates. Accounts requiring significant estimates and assumptions include capital assets, accrued liabilities and employee future benefits.

3. CAPITAL ASSETS

	Cost $	Accumulated amortization $	2021 Net book value $	2020 Net book value $
Building	**19,414,668**	**4,972,660**	**14,442,008**	14,830,301
Building improvements—PEO	**8,961,068**	**4,684,278**	**4,276,790**	4,719,464
Building improvements—common area	**11,313,493**	**5,404,520**	**5,908,973**	6,341,300
Building improvements—non recoverable	**741,332**	**276,883**	**464,449**	564,050
Land	**4,366,303**	**—**	**4,366,303**	4,366,303
Computer hardware and software	**5,287,238**	**5,172,275**	**114,963**	392,806
Furniture, fixtures and telephone equipment	**1,519,400**	**1,403,112**	**116,288**	121,148
Audio visual	**1,008,315**	**1,008,315**	**—**	4,700
	52,611,817	**22,922,043**	**29,689,774**	31,340,072

4. BUILDING OPERATIONS

PEO maintains accounting records for the property located at 40 Sheppard Avenue West, Toronto, ON, as a stand-alone operation for internal purposes. The results of the operation of the building, prior to the elimination of recoveries and expenses related to PEO, are as follows:

	2021 $	2020 $
Revenue		
Rental	**845,047**	894,834
Operating cost recoverable—tenants	**1,356,532**	1,280,453
Parking	**153,425**	143,125
Miscellaneous	**122,422**	115,174
	2,477,426	2,433,586
Operating cost recoverable—PEO	**739,249**	751,733
	3,216,675	3,185,319
Recoverable expenses		
Utilities	**433,499**	470,173
Amortization	**542,709**	631,849
Property taxes	**425,396**	438,912
Payroll	**260,748**	258,166
Janitorial	**214,587**	198,312
Repairs and maintenance	**140,707**	98,802
Property management and advisory fees	**50,000**	50,000
Security	**31,355**	18,841
Administrative	**39,285**	23,006
Road and ground	**27,396**	20,548
Insurance	**30,575**	24,961
	2,196,257	2,233,570
Other expenses		
Interest expense on note and loan payable	**104,179**	137,119
Amortization of building	**388,293**	388,293
Amortization of deferred costs	**79,725**	77,033
Amortization of tenant inducements	**99,601**	96,500
Other non-recoverable expenses	**157,131**	15,848
	828,929	714,793
	3,025,186	2,948,363
Excess of revenue over expenses	**191,489**	236,956

4. BUILDING OPERATIONS CONT'D

For purposes of the statement of operations and changes in net assets, the operating costs recoverable from PEO of $739,249 ($751,733 in 2020) have been eliminated. The portion of costs allocated to PEO is reallocated from building operations and is included in occupancy costs on the statement of operations and changes in net assets.

	2021 $	2020 $
Building revenue per above	**3,216,675**	3,185,319
Eliminated PEO portion	**(739,249)**	(751,733)
	2,477,426	2,433,586
Building expenses per above	**3,025,186**	2,948,363
Eliminated PEO portion	**(739,249)**	(751,733)
	2,285,937	2,196,630

5. BUILDING FINANCING

On April 5, 2019, the association refinanced its outstanding loan of $5,443,952 with the Bank of Nova Scotia. The refinanced loan is secured by a first mortgage on the property located at 40 Sheppard Avenue West, a general security agreement and a general assignment of tenant leases. The loan is repayable in monthly installments of principal plus interest and bears a floating interest rate based on variable bankers' acceptances. The association entered into a swap agreement related to this loan, where the floating rate debt is swapped for a fixed rate debt at an interest rate of 3.47 per cent and settled on a net basis. The notional value of the swap is $5,443,952 with a start date of April 5, 2019, and a maturity date of April 5, 2024, on which date the loan will be fully paid.

6. EMPLOYEE FUTURE BENEFITS

The association's pension plans and post-retirement benefits plan covering participating employees (full time and retirees) are defined benefit plans as defined in section 3462 of the *CPA Canada Handbook* and accounted for as per section 3463. The pension plans provide pension benefits based on length of service and final average earnings. The post retirement benefits plan provides hospitalization, extended health care and dental benefits to retired employees. Participation in the pension plans and benefits plan (for post retirement benefits) has been closed to all new employees as of May 1, 2006. All employees joining after this date have the option of participating in a self-directed RRSP (registered retirement savings plan). During the year, the association recorded $335,478 ($290,806 in 2020) in employer contributions to the self-directed RRSP.

The funded status of the association's pension plans and post-retirement benefit plan using actuarial assumptions as of December 31, 2021, was as follows:

	Basic pension plan $	Supplemental pension plan $	Other non-pension benefit plan $	Total $
Accrued benefit obligation	**(34,556,700)**	**(2,311,900)**	**(11,206,100)**	**(48,074,700)**
Plan assets at fair value	**35,021,800**	**2,092,600**	**—**	**37,114,400**
Funded status—plan surplus (deficit)	**465,100**	**(219,300)**	**(11,206,100)**	**(10,960,300)**

6. EMPLOYEE FUTURE BENEFITS CONT'D

The funded status of the association's pension plans and post-retirement benefit plan using actuarial assumptions as of December 31, 2020, was as follows:

	Basic pension plan $	Supplemental pension plan $	Other non-pension benefit plan $	Total $
Accrued benefit obligation	(32,567,600)	(2,321,500)	(12,013,500)	(46,902,600)
Plan assets at fair value	31,456,200	2,004,600	—	33,460,800
Funded status – plan surplus (deficit)	(1,111,400)	(316,900)	(12,013,500)	(13,441,800)

PEO measures its defined benefit obligations and the fair value of plan assets related to the basic and supplemental pension plans for accounting purposes as at December 31 each year based on the most recently completed actuarial valuation for funding purposes. The most recently completed actuarial valuation of the pension plans for funding purposes was as of January 1, 2021. PEO measures its obligations related to its other non-pension benefit plan using an actuarial valuation for accounting purposes. The most recent actuarial valuation for accounting purposes was as of December 31, 2020, and projected forward to December 31, 2021.

Remeasurements and other items resulting from these valuations are reported directly in net assets in the statement of financial position and are reported separately as a change in net assets in the statement of operations and changes in net assets.

7. NET ASSETS

The net assets of the association are restricted to be used at the discretion of Council and includes the association's investment in capital assets of $27,149,278 ($27,710,780 in 2020).

8. COUNCIL DISCRETIONARY RESERVE

The Council discretionary reserve is an internal allocation from the operating reserve used at the discretion of Council to fund expenses related to special projects approved by Council. These figures include $415,766 ($272,039 in 2020) for salaries and benefits costs of full-time staff for time spent on these projects. Expenses from the discretionary reserve were incurred on the following projects:

	2021 $	2020 $
O365 migration	**385,551**	—
Aptify enhancements	**268,494**	—
IDDC project	**281,706**	—
Contractors for IT initiatives	**221,422**	—
HR and governance related matters	**160,347**	109,037
Anti-racism working group	**127,185**	—
Online application process	**63,818**	—
IT initiatives due to Covid	**55,833**	—
Human resources info system	**44,721**	—
30 by 30 task force	**13,977**	8,820
Council composition task force	**287**	—
Regulatory functions review	**—**	270,229
	1,623,341	388,086

9. FULL-TIME SALARIES AND BENEFITS

During the year, the association incurred a total of $13,340,586 ($11,813,172 in 2020) for salary and benefits costs for its full-time staff. Out of this amount, $415,766 ($272,039 in 2020) was directly attributable to special projects approved by Council and disclosed in Note 8.

10. CHANGE IN NON-CASH WORKING CAPITAL ITEMS

	2021	2020
	$	$
Accounts receivable	**682,298**	(615,817)
Prepaid expenses and deposits	**11,813**	(112,571)
Accounts payable and accrued liabilities	**(2,421)**	488,716
Fees in advance and deposits	**157,362**	524,675
	849,052	285,003

11. CUSTODIAL ACCOUNT

The association used to maintain a separate bank account for the Engineering Deans of Ontario (EDO), formerly known as the Council of Ontario Deans of Engineering (CODE). In 2021, the association handed over all of these monies to EDO and will no longer be holding any funds for it going forward. The monies were previously held in trust for EDO and not reported on the association's statement of financial position.

12. COMMITMENTS

The association has obligations under non-cancelable operating leases and agreements for various service agreements. The payments to the expiry of the leases and agreements are as follows:

	$
2022	2,518,710
2023	997,767
2024	77,525
2025	16,238
	3,610,240

13. CHAPTERS OF THE ASSOCIATION

During the year, the association paid chapter expenses totaling $343,301 ($327,940 in 2020) and also incurred additional costs of $375,285 ($371,362 in 2020) related to chapter operations, including staff salaries and benefits, and for various support activities. These amounts have been included in the various operating expenses reported on the statement of operations and changes in net assets.

14. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

Interest rate risk

PEO is exposed to interest rate risk, which is the risk that the fair values or future cash flows associated with its investments will fluctuate as a result of changes in market interest rates. Management addresses this risk through use of an investment manager to monitor and manage investments.

Liquidity risk

PEO's objective is to have sufficient liquidity to meet its liabilities when due. PEO monitors its cash balances and cash flows generated from operations to meet its requirements. As at December 31, 2021, the most significant financial liabilities are accounts payable and accrued liabilities, and long-term debt.

Currency risk

Currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate due to changes in foreign exchange rates. PEO's international and US equity pooled fund investments are denominated in foreign currencies, the value of which could fluctuate in part due to changes in foreign exchange rates.

15. GOVERNMENT REMITTANCES

Accounts payables and accrued liabilities includes $241,455 ($620,877 in 2020), with respect to government remittances payable at year end.

16. CONTINGENCIES

PEO has been named in litigation matters, the outcome of which is undeterminable and accordingly, no provision has been provided for any potential liability in these financial statements. Should any loss result from these claims, which is not covered by insurance, such loss would be charged to operations in the year of resolution or earlier if the loss is likely and determinable.

CEO/REGISTRAR'S FINANCIAL REPORT

FOR THE YEAR ENDED DECEMBER 31, 2021

PEO generated an excess of revenue over expenses of $6,459,135 for the 2021 fiscal year as compared to a budgeted gain of $15,157. This was due to a reduction in expenses of $5,822,518, or 19 per cent, lower than budget as discussed below in the cost management section. In addition, there was an increase in revenues of $802,801, or 2.5 per cent, versus budget.

The excess of revenue over expenses was offset by Council discretionary reserve expenses of $1,623,341, resulting in a net excess of revenue over expenses of $6,459,135 as indicated above.

The investment in capital assets for the year was $160,142 ($308,144 in 2020). At the end of the year, the closing balance in cash and investments was $31,204,565 ($23,288,927 in 2020) and net assets increased to $34,487,719 ($25,580,860 in 2020).

REVENUE

Total revenue in 2021 was $32,473,339, which is 2.5 per cent above budget. The increase included a P.Eng. revenue increase of $1,006,436, or 5 per cent; an investment revenue increase of $341,416 due to favourable market conditions, which included increased portfolio market value and gain on disposal of investments; and chapter revenue of $16,747. Decreases in revenue were experienced in application, registration, exam and other fees of $447,232, or 5 per cent, including professional practice exams, technical exams and the national exam program; a decrease in building revenue of $90,626; and lower advertising revenue versus budget by $23,940 due to unfavourable market conditions.

COST MANAGEMENT

Total expenses before costs for Council special projects were $24,390,863, which is $5,822,518, or 19 per cent, below budget due to COVID-19 pandemic restrictions in 2021 as well as various cost-saving measures. Major expense variances from the budget include:

- Staff salaries and benefits/retiree and future benefits were $3,245,337 lower than budgeted;
- Purchased services were $1,007,084 lower than budgeted;
- Chapters were $721,794 lower than planned;
- Volunteer expenses were $412,299 lower than planned;
- Occupancy costs were $245,305 lower than budgeted; and
- Postage and courier were $138,044 lower than planned.

2021 BUDGET VARIANCES BY BUSINESS UNIT

Communications

Expenditures were $190,011, or 13 per cent, below budget. The key variances include lower-than-budgeted communications newspaper and magazine advertising costs ($70,130) and other communications departmental printing ($20,000); lower *Engineering Dimensions* magazine costs in 2021, including lower-than-budgeted costs to produce *Engineering Dimensions* ($39,639) and lower *Engineering Dimensions* advertising ($39,521); lower postage and courier ($14,662); and lower freelance writing ($6,000). Branding costs were also lower versus budget, including speaker fees, news releases and sales commissions ($11,929). This was offset by higher salaries and benefits ($12,135).

Corporate Services

Expenditures were $2,623,359, or 23 per cent, below budget. Variances within the department include lower-than-budgeted costs for employee future benefits with deferred solvency costs ($717,477); lower chapter operations spending due to pandemic travel and gathering restrictions as well as the change in the spending policy whereby spending is now paid directly by PEO rather than paid in allotments ($597,908); lower staff salaries and benefits ($518,314); lower facility costs, including office maintenance and PEO share of rent ($236,330); lower event spending, such as the Order of Honour ($114,514), the AGM ($112,970), Regional Councillors Committee ($66,103), Regional Congress ($50,643), Volunteer Leadership Conference ($46,524), Government Liaison Program ($49,601), Chapters Leadership Conference ($58,701) and Ontario Professional Engineering Awards ($33,786) primarily due to lower travel, meals and accommodations costs related to continued pandemic restrictions; lower staff and volunteer training costs ($112,865), such as professional development courses and workshops; lower printing and mail services costs due to lower facilities copier and supplies usage ($56,061); and lower HR compensation costs, such as publications, subscriptions and HR compensation analysis ($52,575). These were partially offset by higher benefits administration ($134,379); 40 Sheppard costs, such as bad debt expense on a tenant ($128,550); and HR staff employment planning costs ($105,860).

Executive

Expenditures were $69,738, or 4 per cent, below budget. Key variances include lower-than-budgeted costs for legal expenses ($143,798); Engineers Canada support and activities ($42,065); lower volunteer and staff expenses, including accommodation and mileage for representing PEO at various events ($11,685); and lower Audit and Finance committee costs, including travel and accommodation ($8,585).

Finance
Expenditures were $397,603, or 18 per cent, below budget in 2021. This was due to lower-than-budgeted costs for salaries and benefits ($396,569); lower postage expense due to transition to electronic communication ($22,659); lower Audit and Finance committee travel spending ($8,630); and lower bank service charges ($6,799). This was offset by higher credit card commissions ($20,813); and higher investment consultant fees ($19,283).

Information Technology
Expenditures were $101,989, or 4 per cent, below budget. Variances include lower-than-budgeted staff salary and benefit costs ($102,044); and lower information systems network costs ($110,780), including lower service maintenance contracts, internet connect costs and software support contracts. These were partially offset by higher data security costs, including IT consulting fees and a support contract ($53,865); and higher desktop-related spending, including non-capital hardware and software costs and mobile telephone spending ($46,422).

Licensing and Registration
Expenditures were $1,700,282, or 28 per cent, below budget in 2021. This was due to lower-than-budgeted costs for professional practice exam marking and setting due to outsourcing ($795,680); lower staff salaries and benefits ($767,925); lower document management centre costs, including scanning and offsite storage ($116,578); lower P.Eng. experience requirement interview expenses ($76,661); lower costs for committees and groups, primarily due to pandemic related mileage, accommodation, meals, parking, train/car/taxi and air/train decreases, including the Experience Requirements Committee ($21,157), the Academic Requirements Committee ($16,076), Consulting Engineers Designation Committee ($14,100) and the Licensing Committee ($4,084); lower costs for issuing P.Eng. licences, including postage and courier ($30,456); academic assessment costs ($13,059); and lower P.Eng. seals ($12,124). These were partially offset by higher technical exam marking and setting costs due to outsourcing ($206,669).

Regulatory Compliance
Expenditures were $189,745, or 8 per cent, below budget. Variances include lower-than-budgeted staff salary and benefits ($438,053); lower human rights challenges legal costs ($25,000); lower Complaints Committee costs, including catering, tribunal fees and travel expenses ($22,726); and lower Enforcement Committee costs ($4,716). This was partially offset by higher discipline prosecution costs that include independent legal counsel ($133,962); higher enforcement costs, including prosecution, investigations and independent legal counsel ($100,460); and higher complaints investigation costs, including outsourced experts, prosecution, costs to obtain PVO and other legal fees ($42,368).

Tribunals and Regulatory Affairs
Expenditures were $549,791, or 26 per cent, below budget. A key variance was lower-than-budgeted spending on salaries and benefits ($419,807). Other variances include lower Practice Evaluation and Knowledge (PEAK) program costs, which include software support and other consulting costs ($54,275); lower Professional Standards Committee spending, including travel, catering and administrative law counsel ($25,267); decreased complaints review councillor costs ($14,728); lower Registration Committee costs ($16,318), including travel expenses; and decreased Discipline Committee costs, including tribunal fees, legal and travel ($10,100).

Council-directed Initiatives
For 2021, the net expenditures for projects approved by Council amounted to $1,623,341. Spending includes $385,551 for O365 migration, $268,494 for Aptify enhancements, $281,706 for IDDC project, $221,422 for contractors for IT initiatives, $160,347 for HR and governance related matters, $127,185 for anti-racism working group, $63,818 for online application process, $55,833 for IT initiatives due to COVID-19 pandemic, $44,721 for human resources info system, $13,977 for 30 by 30 Task Force and $287 for Council Composition Task Force.

Building operations
The building generated $3,216,675 in revenue, including PEO's share of recoverable expenses but excluding the base rent that would have been paid if PEO had paid market rent for its space. Total recoverable expenses were $2,196,257 and other expenses totalled $828,929, thereby creating an excess of revenue over expenses of $191,489 (after all expenses, including loan interest), as compared to a budgeted excess of $410,666. Total PEO building operations revenue was lower than budgeted by $250,760, or 7.2 per cent, due to lower operating cost reimbursement revenue. Total building operations expenses were under budget by $143,994, or 6.2 per cent. PEO's share of expenses totalled $739,249. These costs were reclassified from building operations to occupancy costs in the financial statements. Since PEO is a not-for-profit organization, it received a preferred property tax

rate (residential rate instead of commercial rate), thereby reducing PEO's overall occupancy costs. Total occupancy costs for 2021 were $773,577, which includes security, storage and other occupancy costs. PEO's total accommodation expense (including interest) was $877,756.

PEO occupied 39,100 square feet at December 31, 2021. The market rent of this space is approximately $17 per square foot and operating costs are $20.59 per square foot. Therefore, PEO's equivalent costs for rent and operating costs would have been $1,469,769 for 2021, leading to a net value to PEO of $592,013.

CAPITAL EXPENDITURES

Capital expenditures for the year totalled $160,142 compared to $308,144 in 2020.

Base building improvements totalled $110,382, which are recoverable from tenants. Improvements included costs for a fire protection sprinkler assessment ($10,418), waterless urinals ($28,832), a security upgrade ($27,574), terminal packing unit heat pumps ($31,114), fire system updates and repairs ($8,557), and a parking garage structure assessment ($3,990). In addition, there were several projects in progress, including an LED lighting upgrade ($42,988) and furniture to be installed ($6,772).

All of PEO's capital expenditures in 2021 were funded from PEO's cash surplus.

CONCLUSION

In 2021 PEO faced the continued challenge of the COVID-19 pandemic that significantly affected our operations. Through these difficult circumstances the association was able to manage its affairs responsibly producing a surplus for the year to carry out its regulatory mandate in the public interest. **e**

SUMMARY OF DECISION AND REASONS

On allegations of professional misconduct under the *Professional Engineers Act* regarding the conduct of BRIAN P.M. RIGGS, P.ENG. (Riggs), a member of the Association of Professional Engineers of Ontario (PEO), and Riggs Engineering Ltd. (REL), a holder of a certificate of authorization (C of A) from PEO.

HEARING ON THE MERITS

A panel of the Discipline Committee of PEO held a hearing on the merits in this matter remotely on July 12, 13 and 14, 2021, via Zoom. Riggs and REL were not present and not represented, but the panel found that they were given appropriate notice of the hearing.

Riggs was the licence holder responsible for the services provided under REL's C of A. Overholt Excavating Services Ltd. (Overholt) hired REL to design a retaining wall on the complainant's property (the Property). Riggs prepared a drawing for the retaining wall, which he signed and sealed in 2011. Overholt constructed the retaining wall based on Riggs's design. In 2014, the complainant noticed that the wall was failing, and in 2015 the complainant submitted a complaint to PEO. Riggs was uncooperative with the PEO investigator.

The PEO investigation concluded that Riggs's drawing failed to meet the standard of a reasonable and prudent practitioner. The panel found that Riggs and REL:

(a) prepared inadequate design drawings amounting to professional misconduct as defined by sections 72(2)(a), (b), (d) and (j) of Regulation 941: General under the *Professional Engineers Act, R.S.O. 1990, c. P.28*; and

(b) failed to cooperate with the Complaints Committee's investigation, amounting to professional misconduct as defined by section 72(2)(j) of Regulation 941.

The panel's reasons for its decision included the following: an Expert Report stated that, among other things, the retaining wall lacked adequate support and stiffness and that it was entirely possible that the retaining wall could be a safety concern for the occupant. The evidence was that stones at the Property were sunken down, a staircase was destroyed and the retaining wall was falling and moving. Although prior to the design of the retaining wall, other professionals recommended that Riggs design a system using helical pier tie-backs, he instead designed a Steel Sheet Pile anchor system, which was deficient in this case. Riggs's drawing was also deficient as it did not contain enough information to perform a peer review.

Riggs failed to cooperate with PEO Complaints Committee's investigation. In particular, PEO's investigator made approximately 18 attempts to contact Riggs throughout the course of the investigation. Despite this, Riggs only provided one document to PEO's investigator—the design drawing. He also made commitments to PEO's investigator that were often unfulfilled.

As a result, the panel ordered the following:

1. Revocation of Riggs's licence and REL's C of A pursuant to section 28(4)(a) of the act;

2. A summary of the findings and order of the Discipline Committee regarding both the hearing on the merits and the penalty hearing shall be published with names pursuant to sections 28(4)(i) and 28(5) of the act; and

3. Costs in the amount of $25,000 shall be paid jointly and severally by Riggs and REL pursuant to section 28(4)(j) of the act.

Charles McDermott, P.Eng., chair of the Discipline Panel, signed the Decision and Reasons in the hearing on the merits on September 7, 2021, on behalf of the other panel members: Alisa Chaplick, LLB, LLM, and Gary Thompson, P.Eng. In addition, McDermott signed the Decision and Reasons in the penalty hearing on December 13, 2021, on behalf of Chaplick and Thompson.

PEO PUBLICATIONS AND RESOURCES

Professional Engineers Ontario has a number of resources, including practice bulletins, brochures, learning modules and fact sheets, available for free on its website at peo.on.ca/knowledge-centre. The following regulatory documents and practice guidelines are available in PDF form on PEO's website.

REGULATORY DOCUMENTS

- The *Professional Engineers Act*, R.S.O. 1990, Chapter P.28
- Ontario Regulation 260/08
- Ontario Regulation 941/90
- By-Law No. 1

PRACTICE GUIDELINES

General—Engineer

- Assuming Responsibility and Supervising Engineering Work Guideline (2018)
- Conducting a Practice Review (2014)
- Guideline for Engineers Conducting Performance Audits and Reserve Fund Studies (2021)
- Guideline on Human Rights in Professional Practice (2009)
- Preparing As-Built and Record Documents Guideline (2020)
- Professional Engineering Practice (2020)
- Professional Engineers Reviewing Work Prepared by Another Professional Engineer (2011)

Use of Seal

- Use of the Professional Engineer's Seal (2022)

Legal/Discipline

- Guideline on Forensic Engineering Investigations (2016)
- Making a Complaint: A Public Information Guide (2011)
- The Professional Engineer as an Expert Witness (2011)

Construction/Building

- Design Evaluation & Field Review of Demountable Event & Related Structures Guideline (2020)
- Guideline for Professional Engineers Providing General Review of Construction (2021)
- Professional Engineers Providing Land Development/ Redevelopment Engineering Services (1994)
- Professional Engineers Providing Mechanical and Electrical Engineering Services In Buildings (1997)
- Professional Engineers Providing Services for Demolition of Buildings and Other Structures (2011)
- Professional Engineers—Temporary Works (1993)
- Structural Condition Assessments of Existing Buildings and Designated Structures (2016)
- Structural Engineering Design Services for Buildings Guideline (2016)

Transport/Roads/Municipal

- Professional Engineers Providing Services for Municipalities (Rev. 1998)
- Professional Engineers Providing Services in Transportation and Traffic Engineering (1994)
- Professional Engineers Providing Services with Respect to Road, Bridges, and Associated Facilities (1995)

Software/Computers

- Developing Software for Safety Critical Engineering Applications (2013)
- Professional Engineers Using Software-Based Engineering Tools (2011)

Mechanical/Electrical/Industrial

- Professional Engineers Providing Reports for Pre-Start Health and Safety Reviews (2001)

Geotechnical/Environmental

- Engineering Evaluation Reports For Drinking Water Systems (2014)
- Environmental Site Assessment, Remediation and Management Guideline (2020)
- Guideline for Providing Engineering Services Under O.Reg. 1/17 and Part II.2 of the EPA (2021)
- Professional Engineers Providing Acoustical Engineering Services in Land-Use Planning (Rev. 1998)
- Professional Engineers Providing Geotechnical Engineering Services (1993)
- Providing Reports on Mineral Projects (2020)
- Services of the Engineer Acting Under the Drainage Act (1998)
- Solid Waste Management (2017)

National Guidelines

- Principles of Climate Change Adaptation for Engineers
- Guideline on Sustainable Development and Environmental Stewardship for Professional Engineers (2016)

PEO turns 100

In celebration of PEO's 100th year on June 14, we're taking you down memory lane to share how the regulation of engineering in Ontario—and PEO itself—has evolved to what it is today.

By Marika Bigongiari & Adam Sidsworth

IT WAS THE 1920s,

a postwar era of burgeoning development and economic prosperity, when the Association of Professional Engineers of Ontario (APEO) (now known as Professional Engineers Ontario, or PEO) was created. Indeed, it was a lively decade for Canadian engineering that saw unprecedented development in construction, manufacturing and technology; a years-long boom, when innovation was the spirit of the day. There was explosive growth in the production of automobiles, as well as buses, trucks, tractors and equipment that were now self-propelled, courtesy of the internal combustion engine. More cars meant increased demand for somewhere to drive them, which led to a road boom and the beginning of Ontario's highway system, as well as bridges and infrastructure to support them. Major developments in electricity, including the construction of new hydro-electric plants, fed a growing appetite for power by the mining and pulp and paper industries and other large-scale factories. New power sources served a sprawling mass communications infrastructure, with the proliferation of radio and telephones. The railway system spread out. The aircraft industry took off. And cities grew outwards and upwards.

With these opportunities came a growing sense of responsibility. In the wake of two deadly engineering disasters—the collapse of the Quebec Bridge during its construction in 1907, killing 75 workers, and again in 1916, killing 13 more—the need for official engineering oversight was becoming increasingly recognized. Although some who worked as engineers had formal university training, it was not uncommon for many to learn on the job—including during the First World War, where thousands served as military engineers. And there was a lack of official oversight for projects, big and small. In addition, frustration was brewing with the realization that unskilled workers often out-earned engineers, as well as a growing rivalry between civil engineers and surveyors, who obtained licensing in Ontario in 1892 and generally earned a higher salary because of their professional status.

Increasingly, there was a desire among engineers for professional recognition. This wasn't a new concept—it dates to 1887, when a group of civil engineers formed the Canadian Society of Civil Engineers (CSCE) (now known as the Engineering Institute of Canada). Although the CSCE was granted a federal charter, it did not have licensing powers, since licensing was a provincial responsibility under the 1867 *British North America Act*. Although many attempts were made to draft licensing legislation in the decades that followed, these efforts were met with strong resistance.

Finally, after a period of intense political pressure, PEO was established with the passage of the first act related to professional engineering in Ontario in 1922, allowing for the creation of a voluntary association to oversee registration of engineers. At that time, PEO membership was not mandatory for those practising engineering. It wasn't until the act was amended in 1937 that the profession became closed, granting PEO the more robust regulatory powers we know today. What began more than 100 years ago as a desire among engineers to gain professional recognition grew into a symbol of professional qualification and trust through the professional engineering licence.

A BRIEF TIMELINE

1922–APEO is established with the passing of the first version of the *Professional Engineers Act* (PEA); APEO is granted the right to control use of the term "registered professional engineer" and its abbreviations but lacks licensing powers.

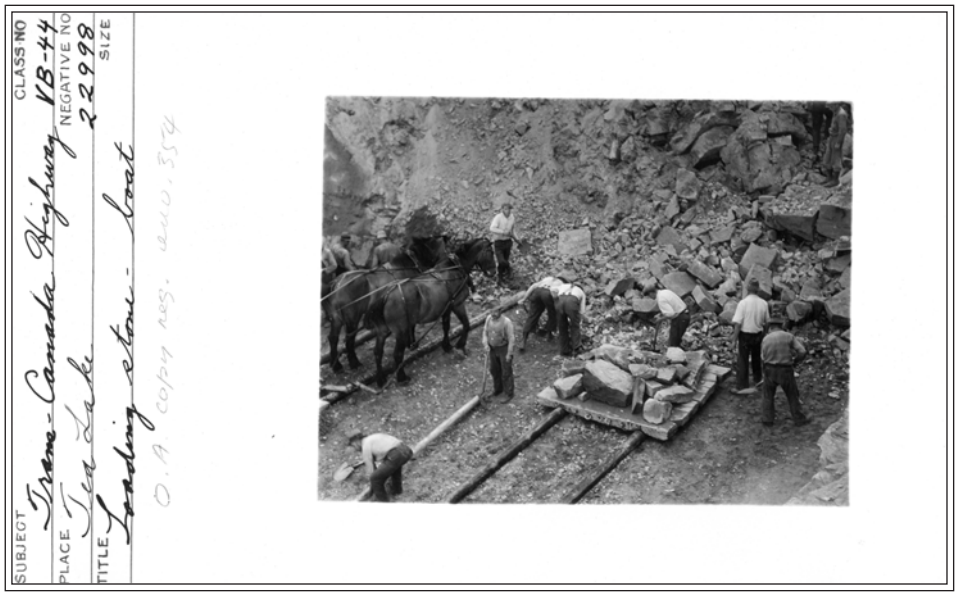
1937–A revised act gives APEO licensing powers and restricts the profession to qualified practitioners who are given an exclusive scope of practice, right to practise and licence. However, mining and chemical engineers are exempt from requiring licensure until 1968.

1944–The P.Eng. designation is introduced by APEO's Executive Committee.

1957–APEO introduces a program for accrediting and certifying engineering technicians and technologists.

1961–Council decides to spin out the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) as an offshoot of PEO after engineering technicians and technologists express a desire for their own organization. OACETT is incorporated a year later, but PEO retains certification authority until 1984.

The 1907 collapse of the Quebec Bridge saw 75 workers lose their lives. The tragic accident, and a second collapse in 1918 that killed 13 more, fuelled a growing recognition among engineers for the need for more official oversight.
Photo: Frères Neurdein



Construction underway on the Trans-Canada Highway in Simcoe, ON, 1925, a massive project stemming from the 1920s road boom in the province. The 7,821-kilometre highway allows continuous travel across Canada and is the second-longest national highway in the world.
Photo: Archives of Ontario

1969–The PEA gives APEO control of titles such as consulting engineer and its variations.

1984–A new act substantially changes the definition of professional engineering, establishing new classes of licences and expanding the definitions of others, including the temporary licence, provisional licence, limited licence and certificate of authorization.

1993–APEO adopts a simplified common name, dropping the "A" to become Professional Engineers Ontario, and unveils a new logo.

2000–Ontario Society of Professional Engineers is founded, officially separating PEO's regulatory activities from the newly formed organization's member-advocacy focus.

2010–Engineer-in-training (now called engineering intern) program is introduced to assist engineering graduates with licensure.

2015–A licensed engineering technologist class of PEO's limited licence becomes active after an amendment to the act.

2022–Regulations under the PEA are amended to allow PEO to implement a mandatory continuing professional development program for professional engineers to maintain their licence.

THE CREATION OF ENGINEERING LICENCES

PEO ensures every person licensed as a professional engineer in Ontario meets stringent academic, experience and professional standards. Since PEO's inception, the types of engineering licences and designations it issues has grown to include:

Professional engineer: The professional engineer (P.Eng.) licence represents the highest standard of engineering knowledge, experience and professionalism, and only those who are licensed by PEO can call themselves a "professional engineer" or "P.Eng."—which is individualized to each province and territory in Canada. Requirements for licensure have changed widely since PEO was given licensing powers in 1937. Today, it requires meeting academic and experience requirements and passing the National Professional Practice Exam.

Temporary licence: PEO offers temporary licences that can be issued on a project and discipline basis for up to 12 months to professionals from outside the country who are not licensed by PEO, for the purposes of carrying out engineering work in Ontario on a temporary basis. Holders must possess qualifications equal to those required for a P.Eng., or wide recognition in a specific field of engineering. Collaboration with a PEO licence holder is required.

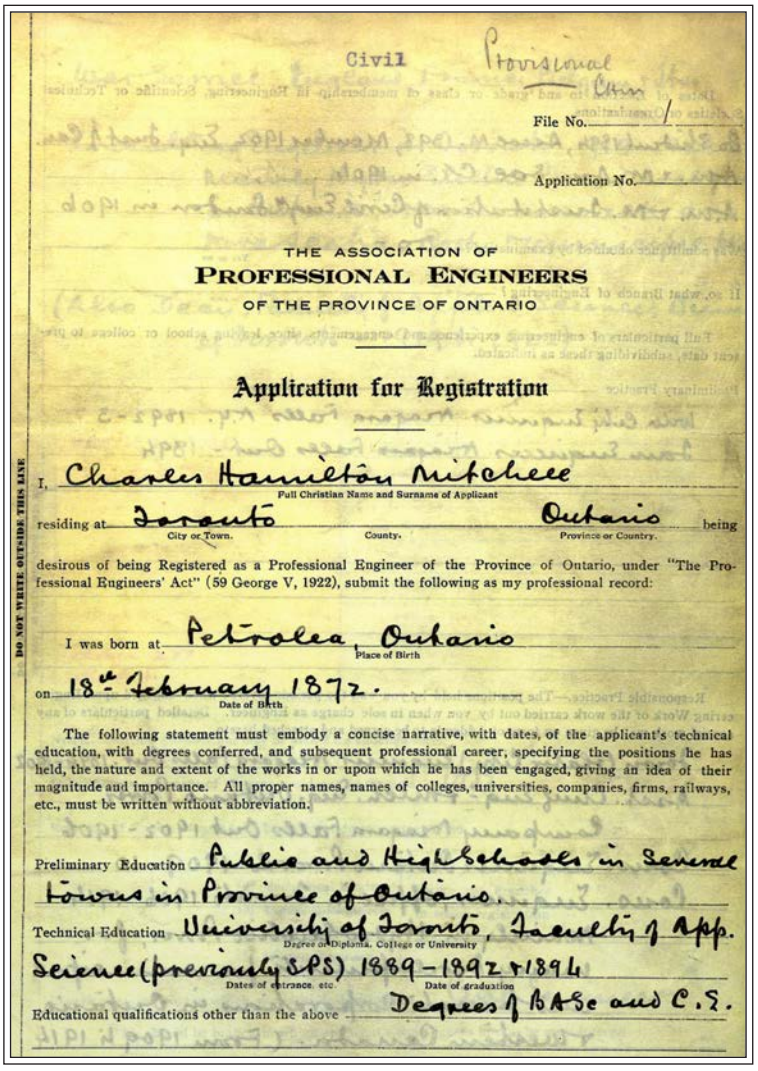
Provisional licence: A provisional licence may be issued to a P.Eng. applicant who has satisfied all PEO's licensing requirements except for the minimum 12 months of Canadian engineering experience. A provisional licence authorizes the holder to practise professional engineering in Ontario only under the supervision of a PEO-licensed P.Eng.

Limited licence: A limited licence (LEL) is issued to an individual who has at least eight years of specialized experience and has developed competence in a certain area of engineering. The practice of professional engineering is limited to the services specified in the limited licence.

Licensed engineering technologist: This class of PEO's limited licence permits a limited licence holder who is also a certified engineering technologist and member of OACETT to use the protected title of licensed engineering technologist and the LET designation.

Certificate of authorization: All entities in the business of offering or providing professional engineering services directly to the public (sole practitioners, partnerships and incorporated companies) in Ontario are required to hold a certificate of authorization (C of A).

Consulting engineer: This designation is not a licence but rather a protected title under the PEA that can only be used by individuals designated by PEO.



Civil Provisional

File No. /

Application No.

THE ASSOCIATION OF
PROFESSIONAL ENGINEERS
OF THE PROVINCE OF ONTARIO

Application for Registration

DO NOT WRITE OUTSIDE THIS LINE

I, Charles Hamilton Mitchell
Full Christian Name and Surname of Applicant

residing at Toronto (City or Town.) Ontario (County.) (Province or Country.) being

desirous of being Registered as a Professional Engineer of the Province of Ontario, under "The Professional Engineers' Act" (59 George V, 1922), submit the following as my professional record:

I was born at Petrolea, Ontario
Place of Birth

on 18th February 1872.
Date of Birth

The following statement must embody a concise narrative, with dates, of the applicant's technical education, with degrees conferred, and subsequent professional career, specifying the positions he has held, the nature and extent of the works in or upon which he has been engaged, giving an idea of their magnitude and importance. All proper names, names of colleges, universities, companies, firms, railways, etc., must be written without abbreviation.

Preliminary Education Public and High Schools in Several Towns in Province of Ontario.

Technical Education University of Toronto, Faculty of App. Science (previously SPS) 1889-1892 & 1894
Degree or Diploma, College or University — Dates of entrance, etc. — Date of graduation

Educational qualifications other than the above Degrees of BASc and C.E.

Charles Hamilton Mitchell was PEO's first president, as well as its first registrant, in 1922. Mitchell, a civil engineer and Brigadier General in the Canadian Forces during the First World War, was also a long-time dean of engineering at the University of Toronto.

When PEO was formed in 1922, annual fees were set at $5, with a $10 initiation fee. That year, $5 would buy a wooden rocking chair, table lamp or lady's dress hat from the Eaton's spring/summer catalogue.

THE EVOLUTION OF THE *PROFESSIONAL ENGINEERS ACT*

Ontario's engineers were not a regulated profession during the first two decades of the 20th century, yet by the early 1920s, the momentum had begun to shift. The Quebec bridge collapses proved to be the impetus for the establishment of engineering regulation in many of Canada's provinces. But it may not have been the only seed. With the end of the First World War in 1918, Canada's soldiers, sailors and airmen began to demobilize, and among them were 40,000 military engineers. Indeed, when PEO Council began meeting on August 9, 1922, many early PEO councillors and members bore military titles.

That is no surprise, for the original 1922 PEA made it relatively easy for military engineers to get their engineering licence. Section 10(1) of the PEA stated that any Ontario resident practising engineering for at least five years could get their PEO licence without any examination, so long as they applied within one year of the passage of the act; and section 22 stated that anyone employed as an engineer in Ontario and who served overseas during the First World War for Great Britain or any of its allies could get the privileges of PEO membership upon return to Canada. Other Ontario residents could receive a PEO licence should they pass prescribed exams.

Under the act, PEO Council remained the core decision-making body of who would receive their licence, with councillors representing the five engineering disciplines (chemical, mining, civil, electrical and mechanical) making the decisions on who would be admitted to that particular branch of engineering. Provisions were made to award licensure to graduates of university engineering programs without having to write an exam. (However, a formal education was not required.) Additionally, those already registered as an engineer in another province could have their licence transferred to PEO, yet people from outside Canada had to have at least 10 years' experience or equivalent qualifications and could be designated only as a "consulting specialist."

Council was also the judicial authority that convicted members of breaching the act. "The Council may, in its discretion, reprimand or censure or suspend or expel any member guilty of unprofessional conduct or of gross negligence or of continued breach of the bylaws of the association, or any member convicted of a serious criminal offence by a court of competent jurisdiction," the 1922 act read. Yet what accounted as unprofessional conduct, gross negligence or a serious criminal offence remained undefined until 1948.

The 1922 act also defined engineering as a long list of specific activities that included, among other things, the construction of public utilities, railways, cranes, drainage works, machinery, steam engines and sewage work. But there was an overriding limitation with the original act: It did not provide an exclusive right to practise engineering to PEO licence holders. It merely granted licence holders the right to call themselves "registered professional engineers" or any abbreviation thereof.

AN ATTEMPT TO CLOSE THE ACT

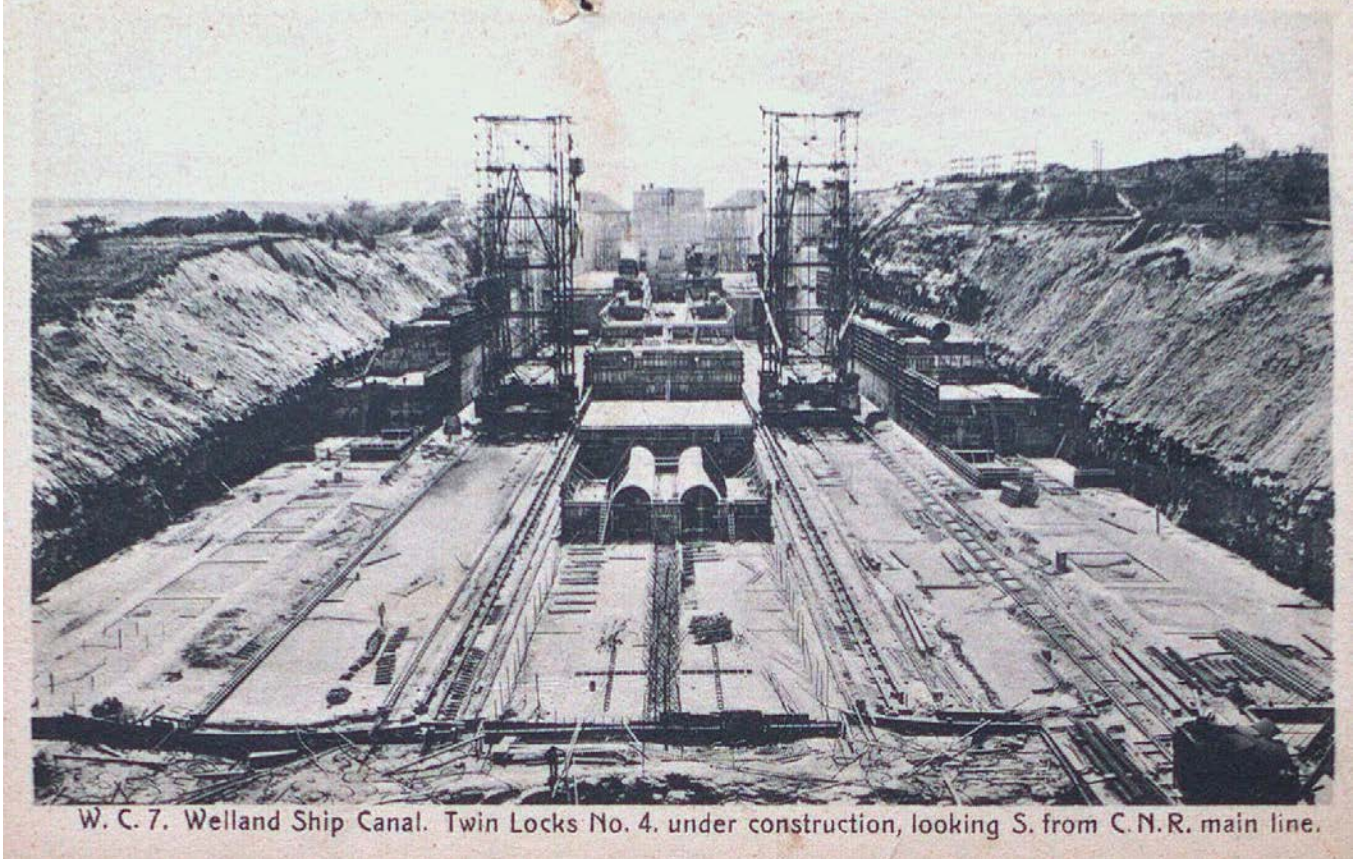
Attempts to limit the right to practise engineering to PEO licence holders proved a 15-year process. As early as the January 1932 Council meeting, Council read into its minutes a proposed amendment to the PEA to limit the right to practise engineering to PEO licence holders. What followed were five years of meetings between PEO and various provincial cabinet ministers, including the premier; the attorney general, who advised PEO to have an MPP sponsor a private member's bill; and the minister of mines, who became involved because of the objections of the Ontario Mining Association over mining engineers needing to be licensed to practise.

The act was finally amended on March 25, 1937, giving licensed engineers an exclusive right to practise—almost. Mining engineers, along with chemical engineers and anyone assisting an engineer, were exempt from needing a licence. Military engineers were also exempt from licensure.

THE CODE OF ETHICS IS FORMALIZED

The 1946 amendments to the PEA introduced a few significant changes. Notably, PEO now had the power to include a Code of Ethics in its bylaws, along with definitions of, among other things, professional misconduct and gross negligence in the act; these had previously been noticeably absent. Additionally, Council now had to step back from the Board of Examiners, a PEO committee tasked with providing and marking exams for those whose lack of appropriate engineering experience required examination.

H.D. Anger, a former PEO attorney who had played a pivotal role in getting the 1937 amendment introduced and passed in the legislature, told PEO's then-registrar, W. McKay, P.Eng., that "Council has no power to direct the Board of Examiners as to the scope and method of examination, that any examination must be by the Board of Examiners or deputed members thereof and that neither Council nor the Executive Committee has any power to conduct examinations." The act was also now moving closer to recognizing engineering as a profession and not a trade, with Anger arguing in the same letter that it was clearly no longer enough to be a chemist or geologist to become an engineer. A combination of experience and education makes one an engineer.



The extension of the Welland Ship Canal in Ontario, completed in 1932, was one of the biggest engineering jobs in Canada. The canal connects Lake Ontario and Lake Erie and forms a key section of the St. Lawrence Seaway and Great Lakes Waterway. Shown here is twin lock No. 4 under construction, looking south from the Canadian National Railway main line, in Thorold, ON. Photo: F.H. Leslie Limited

MINING AND CHEMICAL ENGINEERS REQUIRE LICENCES

Although some minor act amendments were passed by the legislature in the early 1950s and early 1960s, the next substantial change wasn't until 1968 and 1969, when mining and chemical engineers were finally required to have licences to practise. Additionally, Council's structure changed with the introduction of regional councillors, a result of PEO's introduction of the chapter system in the 1950s. And notably, licensing requirements opened up, with non-residents of Ontario now allowed to apply for PEO licensure with the same qualifications as Ontario residents. However, six years of engineering work experience were now needed (up from five), and a PEO-licensed engineer now had to be a minimum 21 years of age. And, notably, PEO's role in discipline was further defined.

NEW CLASSES OF LICENCES ARE INTRODUCED

In 1976, the province's Law Reform Commission reviewed the statutes governing self-regulation of some professions, including engineering, with an eye to simplifying professional regulation. PEO established the Professional Organizations Committee, which made dozens of recommendations related to the protection of vulnerable interests, fairness of regulation, the feasibility of implementation and public accountability of regulatory bodies. They included:

- An updated definition of engineering that moved away from listing specific activities to "any act of designing, composing, evaluating, advising, reporting, directing or supervising" that safeguards life, health, property or public welfare;
- Allowing engineering work to be done by non-licence holders under the supervision of a practitioner;
- Updated regulations that allowed for an expanded definition of professional misconduct;
- A restructured Council;
- Statutory committees that took over some Council activities, such as discipline; and
- The introduction of limited licences to allow non-engineering graduates to practise engineering with a limited scope that matches their work experience and skillsets.

However, a controversial legacy of the 1984 amendment is the industrial exception, which allows some engineering work to be done on production machinery in some industrial facilities. The 2010 amendments to the PEA were included in the *Open for Business Act*, and within it was a clause to close the industrial exception. Although the legislation passed the legislature, the government withheld royal assent for the specific clause to close the exception, and in 2016 the province announced that the industrial exception would not be closed.

They Also Serve - 1943
1943 Council of the Association of Professional Engineers Ontario. Contributions by APEO members during World War II included the invention of the anti-gravity suit, to prevent Air Force pilot blackouts, and the development of synthetic rubber.

An image of PEO's Council, complete with an original caption boasting of Ontario's engineers' contributions to the Second World War.

MEMBERSHIP OVER THE YEARS

1923	1033
1938	2371
1947	6177
1954	11,772
1961	20,010
1979	44,770
1989	56,805
1993	59,240
2000	68,712
2008	76,008
2014	83,752
2022	92,755

THE CHANGING STRUCTURE OF COUNCIL

Council is the decision-making governance body of PEO. Its duties have evolved over the years—from approving applications for licensure and hearing discipline cases to approving regulations and bylaws—yet it has been setting the agenda for PEO for 100 years.

Because engineering is a self-regulated profession in Ontario, licence holders are granted the privilege of choosing the majority of councillors on Council. Today's Council structure has been stable since 1984, when the last major amendment to the PEA was introduced. During PEO's annual Council elections, licence holders vote for:

- One president-elect, who assumes the presidency in their second year and past president in their third year of service;
- One elected vice president;
- Three councillors-at-large; and
- 10 regional councillors, consisting of two councillors from specific geographic regions from across Ontario.

Additionally, Council has several non-elected positions:

- Up to five lieutenant governor appointees who are licensed engineers;
- Up to three lieutenant governor appointees who are not PEO licence holders and represent the public; and
- One appointed vice president, who is a current councillor named as vice president by their fellow councillors.

The current structure differs dramatically from the original Council structure, which was based on the traditional engineering disciplines. The 1922 PEA specifically stated that Council would consist of:

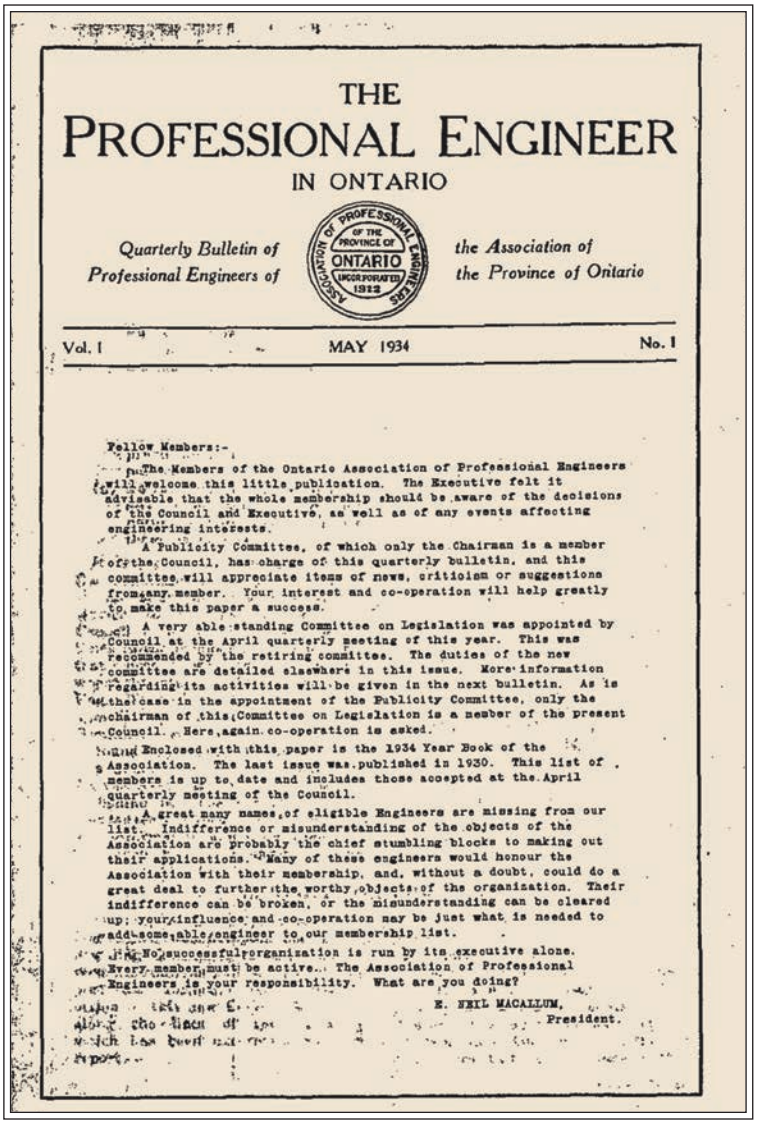
- One president and one vice president, both of whom are elected; and a past president, who transitions from the presidency in their second year; and
- Three councillors for each of the five engineering disciplines (electrical, mechanical, mining, chemical and civil), two of whom are elected and the third who is appointed by the lieutenant governor.

The focus on the five engineering disciplines was practical: Council made decisions about licence applicants who could qualify for licensure, and it was the three councillors in each discipline who decided who qualified for licensure and who needed to write technical exams. Licence holders at the time would enlist in one discipline, although they could list a secondary discipline so long as they had the experience. However, during elections, licence holders could only vote for one councillor representing a single discipline.

COUNCIL STRUCTURE REFLECTS CHAPTERS

By the 1950s PEO had developed the chapter system to allow PEO to better communicate with licence holders. The chapters developed gradually, and by the 1968 and 1969 PEA amendments, the Council structure was expanded to reflect chapters' role. Specifically, Council now had 10 regional councillors; two elected from each of the province's five geographic regions. Additionally, two councillors-at-large were now elected for a two-year term. And Council had two additional members appointed by the lieutenant governor—a lay member of the

The Professional Engineer started as a quarterly bulletin before increasing to a monthly frequency. It was first published in May 1934 with a message from Council, who felt that "the whole membership should be aware of the decisions of the Council and Executive [Committee], as well as of any events affecting engineering interests." In 1984, the requirement for an official publication was emblazoned into the *Professional Engineers Act*.



THE
PROFESSIONAL ENGINEER
IN ONTARIO

Quarterly Bulletin of Professional Engineers of the Association of the Province of Ontario

Vol. I MAY 1934 No. I

Fellow Members:-

The Members of the Ontario Association of Professional Engineers will welcome this little publication. The Executive felt it advisable that the whole membership should be aware of the decisions of the Council and Executive, as well as of any events affecting engineering interests.

A Publicity Committee, of which only the Chairman is a member of the Council, has charge of this quarterly bulletin, and this committee will appreciate items of news, criticism or suggestions from any member. Your interest and co-operation will help greatly to make this paper a success.

A very able standing Committee on Legislation was appointed by Council at the April quarterly meeting of this year. This was recommended by the retiring committee. The duties of the new committee are detailed elsewhere in this issue. More information regarding its activities will be given in the next bulletin. As is the case in the appointment of the Publicity Committee, only the chairman of this Committee on Legislation is a member of the present Council. Here again co-operation is asked.

Enclosed with this paper is the 1934 Year Book of the Association. The last issue was published in 1930. This list of members is up to date and includes those accepted at the April quarterly meeting of the Council.

A great many names of eligible Engineers are missing from our list. Indifference or misunderstanding of the objects of the Association are probably the chief stumbling blocks to making out their applications. Many of these engineers would honour the Association with their membership, and, without a doubt, could do a great deal to further the worthy objects of the organization. Their indifference can be broken, or the misunderstanding can be cleared up; your influence and co-operation may be just what is needed to add some able engineer to our membership list.

No successful organization is run by its executive alone. Every member must be active. The Association of Professional Engineers is your responsibility. What are you doing?

E. NEIL MACALLUM,
President.

public and a barrister or solicitor with at least 10 years of standing at the Ontario bar.

Although Council now included regional councillors, the role of the discipline-based councillors in approving licences for applicants remained in place until the 1984 act, when regulation changes introduced the statutory committees that took over many of Council's previous responsibilities, such as approving applicants for licensure.

PEO COMMITTEES PLAY KEY ROLES

For the first few decades of PEO's existence, many of PEO's committees were advocacy focused because PEO did not formally devolve its advocacy role until 2000. By the January 1926 Council meeting, Council had formed many committees, such as Membership, which encouraged unlicensed engineers to join (a licence to practise engineering in Ontario wasn't mandatory until 1937); Information, which researched the engineering profession; Liaison, which maintained relationships with external engineering organizations; and Regional Organization, an early version of the chapter system that organized members into the four geographic districts (Toronto, Northern, Lakes and Central). In subsequent decades, committees were struck to explore publicity, medals for licence holders, employment opportunities for recent engineering graduates and providing insurance to engineers.

The passage of the 1984 amendments to PEA introduced PEO's statutory committees:

- Executive Committee (EXE), composed of senior members of Council, which had tasks by Council to exercise power or perform any duty of Council with the exception of amending or revoking a bylaw or regulation (the EXE has existed for most of PEO's history);
- Academic Requirements Committee (ARC), which assesses the academic qualifications of applicants for licensure referred to the committee;
- Experience Requirements Committee (ERC), which principally determines if applicants for licensure meet the necessary engineering work experience and recommends to the ARC how to assign examinations;
- Registration Committee (REC), which holds hearings between the registrar and applicants for licensure who have been refused a PEO licence;
- Complaints Committee (COC), which does the initial review of complaints against licence holders;
- Discipline Committee (DIC), which determines cases of possible professional misconduct or incompetence against licence or C of A holders; and
- Fees Mediation Committee (FMC), which mediates disputes regarding fees between engineers or engineering firms and their clients.

The creation of these committees devolved many of Council's hands-on functions and expanded the role of engineer volunteers not on Council. Take the case of discipline: Prior to 1984, a licence holder accused of wrongdoing would first face the Practice and Ethics Committee, which had been originally appointed by Council in the mid-1940s as the Special Committee on Ethics as PEO investigated the right to define, among other things, professional misconduct, gross negligence and the Code of Ethics. Depending on what the committee decided, the licence holder could then face Council, which could convict the engineer. The creation of the COC and DIC introduced

a formalized tribunal process outside of Council. Likewise, prescribing examinations to licence applicants previously fell under the Board of Examiners, who had the authority to design the testing, but once the applicant successfully passed the exams, their name was forwarded to Council for licence approval.

Until recently, Council didn't completely devolve from regulatory activities, with many of the statutory committees having a current PEO councillor mandated to serve on them. This became an issue for PEO in 2019, when PEO voluntarily undertook an external audit of its performance as Ontario's engineering regulator. The auditors wrote: "Members of the COC and DIC should not be drawn from members of Council. The members of these committees must be able to make judgments independent of the interests of PEO Council." As part of PEO's Governance Roadmap to enhance Council's governance effectiveness, as of the 2022 Annual General Meeting councillors no longer serve on non-governance committees unless required by the PEA. PEO will work with the province to update the PEA to reflect Council's governance directions.

CPD A LONG-TIME FOCUS OF PEO COMMITTEES

By the 1960s, PEO had begun to view engineering as a profession akin to law and medicine. Indeed, by then, Council had begun actively investigating Ontario undergraduate engineering programs' curricula, with the Accreditation Committee reporting at the April 1960 Council meeting that it would ideally like to see 1958 and 1959 engineering graduates of the then-named University of Western Ontario register with PEO after obtaining four years of engineering work experience.

By the end of the decade, PEO had formed the Professional Development Committee (PDC), which had a mandate to explore minimum standards and knowledge needed by engineers. A May 1969 report by its subcommittee on professional attitudes noted that a professional engineer needs an ability to handle math and science and an ability to find solutions. The PDC wrote another report in May 1969 entitled "Survey on Programs of Professional Education for Professional Engineers in Ontario," in which it reported on its 1965 survey of 150 industrial employers, with 11 companies responding that they had internal continuing education requirements for their engineers. Additionally, it surveyed consulting firms in 1968 and found that over 75 per cent of respondents were not participating in continuing education, despite the fact that over 71 per cent had access to educational development and 75 per cent felt that PEO should assist them with accessing continuing education. The report recommended that PEO's publication, then titled *Digest*, run a regular column outlining continuing education opportunities available to engineers in their region. "The service should be free of charge and available to all, providing the subject matter is relevant to engineers," the report recommended.

Continuing professional development remained a topic of discussion at PEO throughout the subsequent decades, but it wasn't until 2017 that the voluntary Practice Evaluation and Knowledge (PEAK) program became available to licence holders. However, participation rates remain low, and PEO is currently in the process of developing a mandatory program based on PEAK for all licence holders that will launch in January 2023.

FORMING PEO CHAPTERS

Born out of a desire to improve intra-association communication, particularly between licence holders and Council, PEO's chapters have a long history that can be traced almost all the way back to PEO's beginnings. Although organized groups of professional engineers existed in various forms for decades, and despite close co-operation between these groups and PEO Council, no official recognition was possible until 1960, when licence holders approved the formation of chapters via referendum.

But as early as 1925, PEO appointed chairpersons to represent four geographical districts and 36 regional advisors throughout the province to represent the district in which they resided. At its April 1954 meeting, the Professional Status Committee reported to Council recommendations concerning the geographical groups of licence holders—groups that Council had previously approved. The committee stated that, under the appropriate circumstances, such groups could serve a useful purpose and proposed a policy that included the type of assistance the organization should provide, general conditions for the groups' establishment and continued recognition and the adoption by the groups of a constitution that included, among other things, furthering the objectives of PEO.

It became increasingly evident that there was an appetite among licence holders to participate more fully in PEO's affairs. This was highlighted by a brief submitted to Council by the Niagara Group of Professional Engineers in 1959 recommending that representation on Council be based on geographical area rather than by branch. The Area Groups Committee was formed to determine steps to improve communication between licence holders and Council; its April 1960 report recommended that chapters be formed, resulting in a 1960 referendum. PEO then embarked on an active program of chapter formation, and 31 chapters were founded by 1961. By the end of 1962 there were 39 chapters with facilities available to almost every licence holder in the province.

When 28 chapter chairpersons sat with Council and took an active part in its deliberations at its meeting on October 20, 1961, *The Professional Engineer* (PEO's official journal at the time) touted the event as a historic milestone, describing it as the development of a new communications link. The meeting was viewed as a practical working example of the function of the chapters in relation to Council.

Before settling into its current home at 40 Sheppard Avenue West in 2009, PEO was headquartered at several different locations over the decades, including this one from 1950 to 1974 at 236 Avenue Road in Toronto.

Although chapter chairpersons were not permitted to vote at Council meetings, they were invited to take part in Council discussions and encouraged to express their opinions; they were also free to place items on the Council meeting agenda and make written submissions to Council.

The first major assignment to the chapters by Council was a study of the existing PEA with a view to recommending any revisions and/or additions the chapter membership considered necessary. Consideration of the chapter system's future led to the inclusion of a provision for the election of councillors on a regional basis in the 1968 and 1969 version of the PEA. Consequently, in 1969, the chapters were grouped into five regions and meetings of a regional congress committee for each region that included regional councillors was put in place to facilitate sharing the views of licence holders at regular Council meetings.

The 1964 Chapter Manual distributed to chapter officers describes the basic purpose of chapters as being "the maintenance of good communications between the Council of the association and its members." Chapters were seen early on as a medium through which licensees could make their voices heard in the administration of the profession, as well as providing a forum where professional matters could be discussed. However, it was understood that chapters did not speak for the profession in an official capacity.

Each PEO licence holder who resided in Ontario was assigned to a chapter based on their residential address, and a portion of their annual fees was assigned to chapter operations. Members received notices of all meetings of their chapter and, once per year, a set of three-inch by five-inch index cards with the name and address of each chapter member was forwarded to the chapter secretary for the purpose of keeping an up-to-date chapter membership list.

Today, 36 chapters represent the local presence for PEO in five regions across the province. They continue to promote the value of engineering to local communities, provide a link between licence holders and Council and encourage licence holders to participate in PEO governance and regulatory activities. Chapters also organize licence certificate ceremonies, host technical seminars and social events and offer professional networking opportunities. However, Council recently evaluated the role of chapters as part of PEO's ongoing enterprise-wide transformation and is currently applying a risk assessment to determine which chapter activities should be eliminated or operationalized based on their legal, financial or reputational risk to PEO.

Claudette MacKay-Lassonde, P.Eng., became PEO's first woman president in 1986, at a time when the number of women licensed engineers was far fewer than it is today. She is remembered as a change maker and champion of women in engineering.

1986: PEO's FIRST WOMAN PRESIDENT TAKES OFFICE

Claudette MacKay-Lassonde, P.Eng., became PEO's first woman president in 1986, when the percentage of women licensed engineers was far fewer than it is today. Her presidential mandate included increasing public awareness of the contributions of engineers and the role of PEO, an initiative begun by her predecessor, Nicholas Monsour, P.Eng., FEC, and mandated by the PEA as one of the regulator's objectives. MacKay-Lassonde thought that it was clear the public was unaware of the myriad ways the work of engineers touched people's lives and that it was important to bring visibility to the profession. She also hoped to instill pride in engineers about their work and their role in society. During her presidency, MacKay-Lassonde was manager of Ontario Hydro's load forecast department. She was named an Officer of PEO's Order of Honour in 1995.

MacKay-Lassonde, who passed away in 2000 after a battle with cancer, is remembered as a staunch defender of women in engineering and as someone who, in the wake of the tragic events that saw 14 women murdered at L'École Polytechnique in Montreal in 1989, held the profession to a higher standard; she was an unfaltering believer in change.

After receiving an undergraduate degree in chemical engineering from L'École Polytechnique in 1971, and despite earning a master's in nuclear engineering in 1973, MacKay-Lassonde watched her male counterparts get job offers while she struggled to gain interviews. She finally broke into the field with a position at Bechtel Power Corporation in San Francisco, a company that had an affirmative action program in place to address the lack of women in the field. MacKay-Lassonde worked tirelessly to remove such barriers and, in so doing, opened the door for women engineers to become Council president in the years that followed her tenure, including:

M. Jane Phillips, PhD, P.Eng., FEC, 1993
Christine A. Bell, P.Eng., FEC, 1997
Catherine Karakatsanis, P.Eng., FEC, 2009
Diane L. Freeman, P.Eng., FEC, 2010
Annette Bergeron, P.Eng., FEC, 2013
Nancy Hill, LLB, P.Eng., FEC, 2019
Marisa Sterling, P.Eng., FEC, 2020

THE CREATION OF A DISCIPLINE TRIBUNAL

Most PEO licence holders today likely have a good understanding of the discipline process: PEO receives an allegation that a licence holder committed professional misconduct as defined in Regulation 941 of the PEA or incompetence as defined in section 28(3) of the PEA. PEO staff investigate the complaint and report to the COC, who then deliberate before possibly forwarding the matter to the DIC, a tribunal that has the power to find the licence holder innocent or guilty and possibly levy a sentence. However, this process is relatively new in PEO's history, having been established in the 1984 act amendment. Prior to 1984, Council itself heard discipline cases.

Section 33 of the original 1922 version of the PEA allowed:

- Council to reprimand, suspend, censure or expel any licence holder found guilty of professional misconduct, gross negligence, breach of PEO's bylaws or conviction of a serious criminal offence;
- The accused licence holder to provide evidence to Council in their defense once PEO's registrar or secretary received a formal complaint and to not be suspended or expelled until Council has heard both the complaint and evidence from the licence holder;
- Council powers under the *The Public Enquiries Act* to compel witnesses to give evidence under oath; and
- Any licence holder found guilty to appeal to the Supreme Court of Ontario and continue to practise pending the appeal.

The 1922 PEA also provided a clause allowing for financial penalties of a few hundred dollars for non-licensed members of the public who called themselves an engineer. (They could still practise—a limitation of the original act.) But it is difficult to ascertain if every case of professional misconduct, gross negligence or other offence by a PEO licence holder made it into the Council records. The records of cases tried by Council omit many details about the complaints. Take the accusation of professional misconduct against one member in 1935: Council agreed to withdraw the charge against the engineer, but the details were not written into the Council minutes. One thing seems to be clear though: the original PEA lacked definitions of professional misconduct, gross negligence and a serious criminal conviction.

1947 ACT AMENDMENTS

It was the 1947 amendment to the PEA that allowed PEO to prescribe a Code of Ethics within its bylaws and to define professional misconduct, gross negligence and serious criminal offence. Throughout 1947, the Practice and Ethics Committee developed definitions, which required approval by Council. Indeed, the October 1950 Council minutes relate the prosecution by Council of a licence holder under the new definitions.

The process of the discipline hearing remained unchanged until the 1968 and 1969 act amendments, when the revised act formalized how Council could hear a discipline case. A Discipline Committee was drawn from Council, had to be headed by either the president or vice president and was mandated to hear the case in a spelled-out format. And this remained the discipline process until the 1984 act change.

THE DISCIPLINE PROCESS IS FORMALIZED

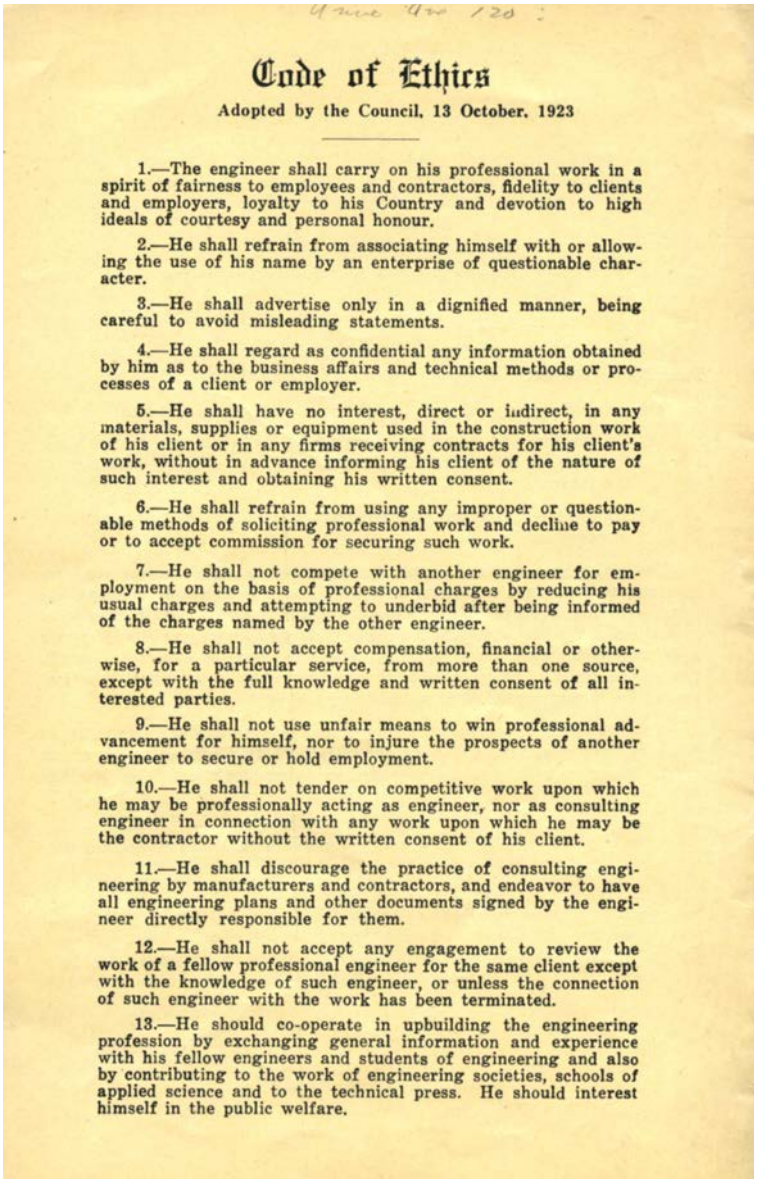
With the amendments to the PEA in 1984, discipline was largely taken away from Council's domain. The 1984 act changes were in part brought in to simplify and democratize PEO's administration, and with it the statutory committees were drawn, including the COC and DIC. The COC can be viewed akin to the police because it is the first step in investigating a matter; and the DIC, a formalized tribunal, can be seen as analogous to a court of law in a criminal case because it prosecutes licence holders within a tribunal setting. Both committees draw their members largely from volunteer licence holders, although provisions to allow for current councillors to serve on them remained in place—a source of criticism in later years, particularly when PEO underwent its 2019 external regulatory review. However, at this year's annual general meeting in April, councillors were only named to non-governance committees if required by the PEA.

THE CREATION OF PEO's CODE OF ETHICS

PEO's Code of Ethics is an eight-point guideline to which Ontario's engineers must conduct themselves. Located in section 77 of the PEA, the code states, among other things, that engineers must act fairly and with devotion to professional honour and integrity, regard their duty to public welfare as paramount, co-operate with other professionals on a project and interact with other licence holders with courtesy and good faith. However, a code of ethics was missing from the original 1922 act.

The first attempt to add a code of ethics for licence holders was in 1923, when, in July of that year, Council formed a special committee to develop a code. By September of that year, the committee had tentatively approved a 13-point Code of Ethics. Among the 13 points are:

- Carry on their professional work "in a spirt of fairness to employees and contractors, fidelity to clients and employers, loyalty to country and devotion to high ideals of courtesy and personal honour";
- Advertise their services in a dignified and honest manner;
- Refrain from questionable methods to solicit professional work, including not bribing for work;



Code of Ethics

Adopted by the Council, 13 October, 1923

1.—The engineer shall carry on his professional work in a spirit of fairness to employees and contractors, fidelity to clients and employers, loyalty to his Country and devotion to high ideals of courtesy and personal honour.

2.—He shall refrain from associating himself with or allowing the use of his name by an enterprise of questionable character.

3.—He shall advertise only in a dignified manner, being careful to avoid misleading statements.

4.—He shall regard as confidential any information obtained by him as to the business affairs and technical methods or processes of a client or employer.

5.—He shall have no interest, direct or indirect, in any materials, supplies or equipment used in the construction work of his client or in any firms receiving contracts for his client's work, without in advance informing his client of the nature of such interest and obtaining his written consent.

6.—He shall refrain from using any improper or questionable methods of soliciting professional work and decline to pay or to accept commission for securing such work.

7.—He shall not compete with another engineer for employment on the basis of professional charges by reducing his usual charges and attempting to underbid after being informed of the charges named by the other engineer.

8.—He shall not accept compensation, financial or otherwise, for a particular service, from more than one source, except with the full knowledge and written consent of all interested parties.

9.—He shall not use unfair means to win professional advancement for himself, nor to injure the prospects of another engineer to secure or hold employment.

10.—He shall not tender on competitive work upon which he may be professionally acting as engineer, nor as consulting engineer in connection with any work upon which he may be the contractor without the written consent of his client.

11.—He shall discourage the practice of consulting engineering by manufacturers and contractors, and endeavor to have all engineering plans and other documents signed by the engineer directly responsible for them.

12.—He shall not accept any engagement to review the work of a fellow professional engineer for the same client except with the knowledge of such engineer, or unless the connection of such engineer with the work has been terminated.

13.—He should co-operate in upbuilding the engineering profession by exchanging general information and experience with his fellow engineers and students of engineering and also by contributing to the work of engineering societies, schools of applied science and to the technical press. He should interest himself in the public welfare.

PEO introduced its first version of the Code of Ethics in 1923; however, the original code was unenforceable until the 1946 amendment to the *Professional Engineers Act*, which incorporated the code into PEO's bylaws. The updated Code of Ethics was approved by licence holders in a referendum and formally adopted in 1948.

- Not underbid another engineer on a project after being informed of the other engineer's bid; and
- Not review another engineer's work without the knowledge of that engineer.

Council ultimately approved those 13 points, which became PEO's Code of Ethics that October.

Two years later, the Code of Ethics had grown to 15 points when, on the advice of PEO's solicitor, Council added: "He shall not in any other respect act in a manner unbecoming to a professional engineer." Surprisingly, no engineer had been prosecuted for breaking the code in 1939. However, a report included in the January 1940 Council meeting minutes noted that "our Code of Ethics is not covered in our act or bylaws and is strictly not enforceable by law but may be used as a guide in disciplining or suspending members."

By 1947, the Code of Ethics became embedded within the PEA, with the April 1947 Council minutes reporting that the attorney general had added an amendment to the PEA allowing PEO to include a code of ethics within its bylaws. PEO developed a Code of Ethics that was drafted and approved by licence holders in a referendum that same year. The Code of Ethics, adopted in 1948, was similar to the 1923 code, although it was organized into six points in five broad categories: "general," "duty of the professional engineer to the public," "duty of the professional engineer to employer," "duty of the professional engineer to other professional engineers" and "duty of the professional engineer to himself." And, notably, some of the points in the 1948 Code of Ethics are still found in the modern Code of Ethics, including engineers being told not to testify at a tribunal or court case if they do not have sufficient expertise, to hold public welfare as paramount and treat other professional engineers with courtesy.

THE CODE OF ETHICS IS MODIFIED IN 1984

By the mid-1970s, the Ministry of the Attorney General was working with some regulators, including PEO, to simplify professional self-regulation. The resulting amendment to the PEA in 1984 allowed for a regulation change that simplified PEO's Code of Ethics. Specifically, some parts of what had been listed in the 1948 code were incorporated into the amended 1984 definition of professional misconduct, an offence for which a licence holder could potentially face discipline. Additionally, a definition of incompetence, another potentially disciplinary offence, had also been added. As PEO's then-manager of legal affairs, Eric Newton, noted in *Engineering Dimensions* in 1985: "The definition of professional misconduct had been expanded to include many of the items which were formerly in the Code of Ethics, such as conflict of interest matters and advertising. It should be noted that the Code of Ethics as amended is also included in the regulation, but a breach of such would not result in a charge of professional misconduct."

In 1993, APEO dropped the "A" from its name and began using the simplified business name Professional Engineers Ontario (PEO)

ONTARIO's ENGINEERING ADVOCACY BODY IS BORN

PEO regulates the profession of engineering, while the Ontario Society of Professional Engineers (OSPE) advocates for it—two important but distinctly different roles. But for the first eight decades of PEO's existence, the regulator did both. In fact, right up until OSPE's founding in 2000, advocacy-related activities were thoroughly enmeshed in PEO's operations. A browse through any 20th-century issue of the regulator's publications, including *Engineering Dimensions* and its previous incarnations, reveals pages rife with professional advice, like how to write a resume or negotiate a better salary, as well as job postings, endless advancement announcements and a multitude of social events.

Increasingly, it was viewed as a conflict of interest for Ontario's engineering regulator to be responsible for protecting the public interest while also lobbying for the interests of engineers. As with the case for other professions, such as medicine and law, there was a demonstrated need to have not only a body that would ensure the highest standards of practice for the profession but one that could also represent the interests of its members. OSPE's creation stemmed from the need to separate the two, so it could become the voice for the profession. Although it took some time to get there, as far back as PEO's beginnings there was discussion about the need for an organization exclusively devoted to member services. However, debate intensified in the 1960s and 1970s with the amendment of the *Ontario Labour Relations Act* to permit collective bargaining for engineers, as well as the creation of the PEO chapter system in 1961.

Matters were further complicated by PEO's responsibility under the PEA for disciplining members guilty of professional misconduct. In recognition of the incongruity of trying to reconcile regulatory activities like this with advocacy, PEO moved to separate some of its special interest divisions into discrete entities in the 1970s, with the aim of eventually spinning them into separate organizations: Consulting Engineers of Ontario (now the Association of Consulting Engineering Companies–Ontario) in 1975 and PEO's Salaried Engineers Division (now the Canadian Society of Professional Engineers) in 1979.

After prompting from then-Ontario Attorney General Ian Scott and decades of debate that came to a head in the 1990s, PEO moved forward with a plan to create a separate body that would be responsible for working in the interest of engineers. However, not all licence holders were onboard with the idea. A 1993 survey of members conducted as part of a fundamental review of the organization found that 56 per cent of engineers did not see the need for a separate member services organization. Notwithstanding, in 1993, the regulator changed its working name from APEO to PEO, emphasizing its role as a licensing body rather than an association of member engineers.

Despite seemingly lukewarm uptake for creating a separate advocacy body, PEO formed the Advocacy Member Services Task Group in 1997 to further investigate the concept. Later that year, the task group presented its report to Council, who approved in principle the idea of creating an independent advocacy organization subject to confirmation by PEO licence holders. Consequently, PEO conducted two referenda: The first, in 1998, showed 72 per cent of licensees supported the idea of creating a separate advocacy body; the second, in 2000, showed 81 per cent in favour —paving the way for the bylaw amendments that would make the new member-interest advocacy body a reality. Although the consensus was not unanimous, most licence holders wanted to see an advocacy body that would lobby the government to promote their interests and defend their professional rights.

OSPE was created jointly by PEO and the Canadian Society of Professional Engineers, the national advocacy group, and it became a legal entity in April 2000. The 2000 referendum also saw licence holders vote to allow PEO to raise its annual fees and pass a portion of the increase to OSPE to start its operations. Between January 2001 and December 2003, OSPE received $30 per active licensed engineer annually to fund its work, plus a one-time transfer of $933,277, which represented the cost of running immediately transferred programs for the first three years. At the time of its creation, programs such as Employment Advisory Service, Ontario Engineering Competition, National Engineering Week (now National Engineering Month), and Women in Engineering Advisory Committee were transferred from PEO to OSPE. After the first three years, the funding relationship ended as specified in the PEA schedule. PEO does not currently financially support OSPE, and the organizations are separate legal entities with distinct mandates.

The founding of OSPE was a milestone event for the profession; with its creation, professional engineers now had two sources of support. PEO remained the delegated authority from the government to protect the public interest, safety and well-being through licensing and regulation of the practice of engineering. And OSPE was born as a member-interest professional society to act as a voice for the profession; a separate body with the ability to advocate for its members to a much freer degree than Ontario's engineering regulator.

In its first few decades, PEO was as much an advocacy body and social club as it was a regulatory body. On September 22, 1961, the Professional Engineers' Wives Association hosted multiple events, including sponsoring this Eaton's Spring Fashion Presentation at the Eaton Auditorium in Toronto.

In February 1954, PEO hosted the Professional Engineers' Art Exhibit at the Odeon Toronto movie theatre, where 65 works of art by over 40 licence holders were presented. In some years, licence holders' art was exhibited at PEO's annual general meeting.

PEO EVENTS THROUGH HISTORY

Until PEO's devolution of advocacy responsibility to OSPE in 2000, PEO simultaneously hosted events to celebrate both the accomplishments of licence holders and PEO's regulatory responsibilities. Throughout the decades, PEO hosted many eclectic events, such as:

- The February 1954 Professional Engineers' Art Exhibit, which happened at the Odeon Toronto Theatre and featured 65 works of art by over 40 licence holders;
- The two-night engagement of Guy Lombardo and His Royal Canadians in October 1956 for PEO-held dances. On October 29, the band played at the Royal York Hotel in Toronto and October 30 at the Chateau Laurier in Ottawa, ON;
- The Professional Engineers' Wives Association hosted two events in March 1960, including co-sponsoring the Eaton's Spring Fashion Presentation at the Eaton Auditorium in Toronto and a talk by Professor J. Tuzo Wilson at the Unitarian Church in Toronto about his visits to the Arctic and Antarctic, as well as China, Russia and other Iron Curtain countries;
- PEO's production of *The Truesteel Affair*, an ethics training video that premiered at PEO's 1983 Annual General Meeting. The movie was circulated to chapters and won the Gold Camera award at the US Industrial Film Festival; and
- Council workshops were once held in the hometown of the presiding PEO president and included extracurricular activities in addition to workshop activities for councillors. The 1985 workshop, in Sarnia, ON, included a buffet dinner and a bus tour for councillors' spouses in nearby Michigan.

PEO's ANNUAL GENERAL MEETINGS

From its inception, PEO has held its annual general meeting (AGM) to swear in the incoming Council and report on PEO's activities throughout the previous year. In modern times, the date of the AGM has fluctuated between late April and early May. However, for the first few decades, the AGM occurred in late January. (The switch to an AGM later in the year happened in the late 1950s.) Indeed, at PEO's third AGM, which was held at PEO's then-headquarters on King Street West in Toronto, a little over 70 delegates attended, where the focus of many of the speeches were on changing the PEA to allow for more protection for the engineering profession (the original version of the PEA did not make an engineering licence mandatory to practise) while protecting the public interest.

But throughout the years, the AGM became a more lavish affair; in its early years, it was most often held at Toronto's Royal York Hotel. Take the case of the 1953 AGM, held on January 24 of that year. PEO's then-publication, *The Professional Engineer*, reported on the event in its February 1953 issue. "Annual Meeting – Record Attendance" read the headline on the front page. Attendees included presidents from the other provincial engineering

regulators and the Dominion Council of Professional Engineers (now Engineers Canada), and the keynote speaker was British engineer Sir Robert Watson-Watt, a pioneer of radio direct finding and radar technology. Watson gave a speech titled "Is the customer always right?" which focused on the engineer's role as an advisor and consultant. Additionally, in an apparent aim to foster a sense of community among licensed engineers, the AGM included an exhibition of art by PEO licence holders. The exhibit "attracted much interest and evoked highly complementary reports from art critics of the press who reviewed the exhibition," reported *The Professional Engineer*.

By the 2010s, the AGM had evolved into a two-day event, as evidenced in PEO's last in-person AGM in 2019, which witnessed an all-day Volunteer Leadership Conference on Friday and the Order of Honour gala on Friday evening; followed by the Saturday-morning AGM, a strictly business event which swore in the next term's Council, reported on the previous year's accomplishments to licence holders and the public and allowed licence holders to introduce motions that could be considered by Council. And immediately following the AGM was the luncheon, which featured keynote speaker CBC host Nora Young, who spoke about the effects of ethical concerns in the data boom; and the presentation of the S.E. Wolfe and V.G. Smith Awards to two incoming licence holders who earned the highest marks for reports and technical exams written as part of the licensing process.

For the last three years, PEO has transitioned the AGM to a virtual event minus the luncheon, keynote speakers and awards gala. The scaling down of the annual event is due, in part, to the COVID-19 pandemic that shut down in-person events for a time and the refocusing of PEO operations to strictly regulatory activities.

AWARDS PROGRAMS

PEO has recognized licence holders throughout the years with award presentations, many of them granted on a nearly yearly basis. Perhaps the most prestigious of PEO's award programs is the Order of Honour, which recognizes professional engineers and others who have rendered conspicuous service to the profession by volunteering their time with PEO. It is a three-tiered program, with award winners being named as a member, officer or companion. The middle rank of officer was first awarded to licence holders in 1964, while the lower rank of member and higher rank of companion were introduced in 1980. A fourth category, honourary, also first awarded in 1980, is given to non-licence holders who have contributed to the engineering profession.

Normally held during the weekend of the AGM, the 2020 and 2021 Order of Honour awards transitioned to an online event due to the COVID-19 pandemic, when it was presented with the G. Gordon M. Sterling Award, granted to an engineering intern who volunteers in a leadership capacity. Also recognized at the event were the recipient of the President's Award, given to a non-engineer who increases public recognition of the engineering profession; and the S.E. Wolfe and V.G. Smith Awards, which had transitioned away from the AGM luncheon.

Another awards program is the Ontario Professional Engineers Award (OPEA), which was first granted in 1947 to C.D. Howe, P.Eng., a one-time PEO member who served in the wartime cabinet of Prime Minister William Lyon MacKenzie King. Throughout the years, many PEO licence holders were recognized through the OPEA for their outstanding engineering achievements, including, in 1979, Elsie MacGill, P.Eng., the first woman licensed as an engineer in Ontario. However, as a result of the 2019 and 2020 activity filter conducted by PEO, the OPEA came to be seen as more of an advocacy activity. Indeed, for the last two decades, the OPEA was co-sponsored with OSPE. By 2021, PEO bowed out, with the last OPEA presentation co-hosted by PEO in November 2020. The OPEA will continue to be presented to Ontario's engineers exclusively by OSPE.

TODAY'S TRANSFORMATION EFFORTS

A lot has happened in the past 100 years. For Ontario's engineering regulator, and indeed, the world, change has been the constant. The province has seen dizzying periods of development and economic booms, but it has also been touched by war, economic depression and global pandemics. Throughout it all, PEO's commitment to regulate professional engineering to safeguard the public has remained steadfast. Changing times demand flexibility and agility, and PEO has risen to the challenge. Today, PEO is engaged in a multi-year, enterprise-wide transformation—considered the biggest change initiative in its 100-year history.

In 2018, PEO voluntarily commissioned an extensive and independent external regulatory performance review to identify how it could be more efficient, transparent and objective in making regulatory determinations; and in 2019, an action plan was put in place to address the review's recommendations. The regulator's resulting transformation strategy is built on three critical pillars: operational effectiveness, organizational alignment and governance renewal.

Since then, significant improvements have been made in licensure, digitization and organizational alignment, and Council has nearly completed a four-phase Governance Roadmap to achieve meaningful governance renewal. Other notable highlights include operationalizing the work of the 30 by 30 Task Force put in place in 2018 to support Engineers Canada's goal to raise the percentage of newly licensed engineers who are women to 30 per cent by 2030; and forming an Anti-Racism and Anti-Discrimination Exploratory Working Group to recommend how to best prevent issues of racism and discrimination in all aspects of PEO's work as a regulator, organization and employer. Additionally, a mandatory continuing professional development program for licence holders, based on its current voluntary program, will be implemented in early 2023 to further PEO's mandate by ensuring licence holders meet standards of learning and professional competence and conduct.

With change comes growth, and on its 100th birthday, PEO is doubling down on its commitment to achieve its change vision of becoming a professional, modern regulator that delivers on its statutory mandate to serve and protect the public interest. **e**

An unidentified man and woman pose in front of the cairn at Deeks Quarry in 1940.

An Engineering LEGACY

The *Sons of Martha* cairns were constructed to commemorate engineering achievements and are a direct link to the creation of professional engineering in Canada. By Ross Anderson, P.Eng.

The stones of the cairn at Deeks Quarry in North Grenville, ON, are dark and greasy with moss. The woods intrude. The roadway, accessible only by foot or with bicycles, motorcycles or small off-road vehicles, is strewn with shotgun shell casings from target practice on the unmarked cairn on the far side of the derelict quarry.

A cairn is a term that describes stones piled up as a memorial or landmark. And the North Grenville cairn has a noble history—one that intertwines with the 100-year history of professional engineering in Ontario. Although its bronze plaques were salvaged and safeguarded for over 30 years by a former worker at the quarry before they were turned over to the Merrickville and District Historical Society, the stone cairn on which they were affixed hasn't fared as well.

A TRAGIC PRELUDE

Following the War of 1812, there was concern about the shared river border between Canada and the United States—the St. Lawrence River between Kingston, ON, and most of the way downriver to Montreal, QC. The Rideau Canal was intended to provide an alternate route, internal to Canada, from the Great Lakes to the Atlantic Ocean. It was built by Lieutenant-Colonel John By of the Royal Engineers and opened in 1832. At that time, engineering was often viewed as a trade or craft. Magnificent structures were built by people skilled in the art, but disasters happened when they stretched beyond their experience with new materials and new challenges.

The first bridge-building attempt in Quebec City, QC, resulted in a collapse in 1907, and 75 workers were killed. John Galbraith, the first professor of the Ontario School of Practical Science (SPS), later the University of Toronto's (U of T's) faculty of applied science and engineering, of which Galbraith was the first dean, was part of the royal commission into the disaster. Sadly, a second attempt to build a bridge in Quebec City resulted in another collapse in 1916, during which 13 people lost their lives.

ENGINEERING BECOMES A PROFESSION

There was growing recognition that engineering could no longer be viewed as a craft. The materials, projects and expectations were changing too quickly for experience to be the sole root of proficiency; education and professionalism would be required for this new age. The Legislative Assembly of Ontario had already created a professional school dedicated to engineering education, the SPS as part of U of T, in 1873. In 1918, the Canadian Society of Civil Engineers, originally founded in 1887, was renamed the Engineering Institute of Canada (EIC). Ontario's *Professional Engineers Act*, which regulates the licensing of engineers and engineering services, was introduced in 1922—and, pursuant to the act, PEO was founded on June 14, 1922. This year marks the 100th anniversary of the establishment of professional engineering in Ontario.

The same year the act was established, a pivotal meeting took place in which seven past presidents of the EIC—who would later become the Corporation of the Seven Wardens—gathered in Montreal to discuss engineering professionalism. An action item from the meeting declared that Professor Herbert E.T. Haultain, civil engineer and dean of the faculty of applied science and engineering at U of T, would contact British author and poet Rudyard Kipling to develop an oath and ritual to consolidate the professional obligation of graduating engineers in Canada. Kipling was approached because of the esteem engineers held for his 1907 poem, *Sons of Martha*.

One of the poem's noted fans was Henry Falconer McLean, or Harry, who was born of Canadian parents in Bismarck, ND, in 1883, moved to Toronto in 1905 to work for Toronto Construction Co. Ltd. and would play a key role in the engineering profession's development. McLean, who made a name for himself in construction projects in Toronto, Montreal and Halifax, NS, earned a reputation for completing large jobs safely, on time and on budget. He was instrumental in organizing overseas deployment of skilled railway workers and materiel in 1915, which contributed to Canada and its allies securing victory in the First World War.

McLean owned and operated Deeks Quarry, which supplied crushed rock ballast for railway track beds, and where, in 1925, he erected a stone cairn as a memorial to employees who had been killed or injured at the site. A bronze plaque was affixed to each side of the cairn, on which was written the *Sons of Martha* poem.

THE CALLING OF AN ENGINEER

On April 25, 1925, the inaugural Ritual of the Calling of an Engineer ceremony was conducted in Montreal, with six practising engineers taking the obligation. The next week, three of the newly obligated engineers travelled to Toronto to conduct the ritual there. Fourteen graduating engineers received their iron rings on May 1, 1925, and U of T became Camp 1. John Fairbairn, chief engineer of Canadian Pacific Railway, a graduate of SPS and one of the seven past presidents of EIC, came to McLean with a request to both ensure the survival of the Corporation of the Seven Wardens and sustain the iron ring ceremony, and, in support of that goal, McLean donated $15,000 (the equivalent of $243,000 today). McLean and Fairbairn would go on to meet with Kipling—who had handwritten seven copies of *Sons of Martha* for the occasion—at the Ritz-Carlton Hotel in Montreal in 1930.

A NOTABLE LEGACY

McLean went on to become a true nation builder. First and foremost, he was a railway builder and built railways into the far north of Ontario, Manitoba and Quebec, opening those regions for mining, pulp production and hydroelectricity development. His methods were revolutionary and quickly adopted by other contractors. But it was McLean who got the big jobs done, and his resume includes many large railway and hydroelectric projects.

McLean erected cairns at eight locations in Canada in memory of workers who died or were injured in those projects. The Deeks Quarry cairn was the first in 1925, but all have plaques emblazoned with the *Sons of Martha* poem and are known as the *Sons of Martha* cairns. After Deeks Quarry, a concrete cairn was erected in Moosonee, ON, after the last spike was driven in the completion of the railway to James Bay in 1932. That same year, another concrete cairn was erected at the Abitibi Canyon Generating Station, in Cochrane District, ON. The last cairn in Ontario was erected at the Hawk Lake quarry, near Kenora, in 1946. Other cairns were erected in 1929 at Grand Falls, NB; Sherritt Junction, MB, near Flin Flon in 1929; Pictou County, NS, in 1929; and in Quebec City in 1931. McLean never graduated from an engineering school, but he was an important friend of engineering and an advocate for professional engineers. The cairns not only commemorate great engineering achievements, but they are also a direct link to the development and promotion of professional engineering in Canada. **e**

Ross Anderson, P.Eng., is an executive on the board of PEO's Thousand Islands Chapter.

RESURRECTING THE FIRST CAIRN

An ambitious project initiated by PEO's Thousand Islands Chapter aims to resurrect the derelict North Grenville cairn and celebrate its history and the history of professional engineering in Ontario. With local community involvement, the chapter is renovating the cairn and constructing an identical one using stone from Deeks Quarry, in nearby Merrickville, ON. The project is scheduled for completion later this year.

Twenty years ago, a proposal was made to move the cairn to Merrickville, where Henry McLean eventually made his home. Although the Municipality of North Grenville wished for the cairn to remain where it is and resolved to give it a historical designation, it never followed through on that resolution. The chapter's restoration team recently made a presentation to North Grenville municipal council, which committed to make the historical designation that will include securing the site and providing better public access. The team has also proposed to work with the town to refurbish the cairn, which has been vandalized over the years.

The Thousand Islands Chapter also made a presentation to the Village of Merrickville-Wolford to secure a location for a replica cairn. The municipality and the Village of Merrickville-Wolford are supportive and agreed to provide a site in downtown Merrickville, adjacent to the Rideau Canal lock and blockhouse. The memorial will include the replica cairn and an historical information board, as well as a life-size sculpture by a local sculptor depicting the meeting of Henry McLean and Rudyard Kipling when they discussed the Ritual of the Calling of an Engineer.

The chapter is currently raising funds for the project through a GoFundMe crowdfunding campaign.

AN OTTAWA ENGINEER TAKES ON AIR QUALITY

Air pollution deleteriously affects the health and welfare of people worldwide. Here in Canada, retired Ontario engineer Jake Cole, P.Eng., leads the BreatheEasy program on a mission to raise awareness about the dangers of poor air quality.

By Marika Bigongiari

"We need to start making air quality (AQ) a priority," asserts retired civil engineer Jake Cole, P.Eng. In his early days as a Carleton University engineering student working on construction projects, he recalls voicing concerns about the dust and exhaust from heavy machinery. His long-time personal interest in health and the environment was sparked, like many, by Rachel Carson's *Silent Spring*, a book largely credited for igniting the environmental movement that followed its publication in 1962. Cole parlayed this passion into an engineering career as a public servant, including work in renewable energy development, energy efficiency, reducing environmental footprints and improving human health. Now retired, Cole continues to be an advocate for the environment and human health as leader of the volunteer-run AQ project BreatheEasy in Ottawa, ON.

Cole is surprised by the general lack of awareness about air pollution among Canadians. "It is probably one of the most important contributors to our health, both for keeping us healthy and for making us sick," he notes. Indeed, high levels of air pollution can increase mortality and the risk of developing asthma, emphysema and a multitude of chronic diseases, as well as negatively affect development and IQ in children. According to Cole, government health agencies have a responsibility to provide guidance and information so people can better understand AQ and its health impacts, make informed decisions and protect themselves. "People should consider where they work, live or play and whether the air they're breathing in those places is safe. It very well may not be," says Cole. "They should be able to find out easily."

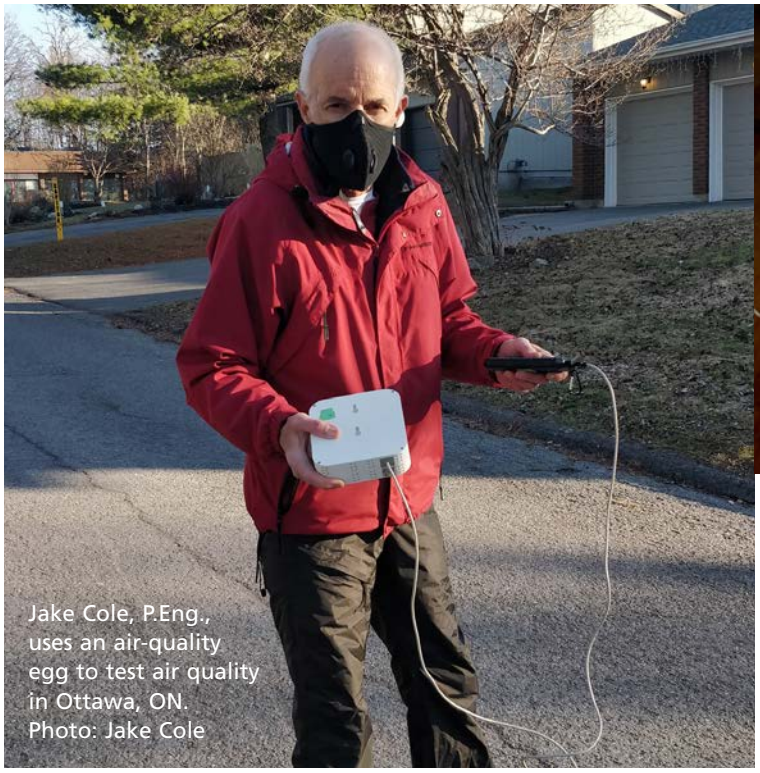
He's certainly an authority on the subject. As a former environment director at the Canadian Coast Guard, Cole led Canada's R-2000 Energy Efficient Home program, which was developed by Natural Resources Canada more in the early 1980s to encourage the construction of energy-efficient homes. He also represented Canada on renewable energy projects with the International Energy Agency and led a health and wellness program at Fisheries and Oceans Canada. His lengthy history of volunteerism also includes working with the Canadian Organic Growers, a national organization that promotes organic food, as well as past co-chair of the non-profit group Prevent Cancer Now. But in addition to having practical knowledge about and experience working with environmental issues, Cole cares deeply about human health.

MEASURING AIR QUALITY

BreatheEasy is a citizen science initiative driven by volunteers at the Sierra Club Canada Foundation, a grassroots organization devoted to ecosystem conservation and restoration. The project, funded by the Ottawa Community Foundation and carried out in co-operation with Ecology Ottawa, is tracking AQ throughout Ottawa. The primary aim is to raise awareness about the impact of AQ on health, as well as influence government policy. "Most assume our AQ is pretty good, and while our nation's capital is not among the most polluted major cities in the world, it does have many AQ hotspots where the air is not healthy," Cole explains.

BreatheEasy volunteers fan out across the city with easy-to-use handheld AQ monitors—called air-quality eggs—that can quickly give an accurate reading on local AQ. After the data is collected and summarized, it is used to build a map of the city, identifying AQ hotspots and greenlighting others. They measure fine inhalable particles known as PM2.5, with approximate diameters of 2.5 micrometers (μm) and smaller. Particulate matter contains microscopic solids or liquid droplets so small they can be inhaled and cause serious health problems; particles less than 10μm in diameter can penetrate the lungs and bloodstream, and those less than 2.5μm in diameter pose the greatest danger. "This pollutant is considered the most significant, with the biggest impact on our health," Cole says. Other pollutants of note include nitrous dioxide and ozone. Cole and team have also examined what other cities are doing around the world to improve their AQ, providing useful examples of what could be done at home.

The group has identified several typical sources of concern: industrial pollution, high traffic areas where there are heavy trucks or idling school buses, wildfires and construction of all types. They also identified less obvious sources, such as a wood-burning stove that can create a localized hotspot in a neighbourhood or a gas-fired lawn mower that can produce as much air pollution as 11 full-sized cars driving at highway speeds. The construction of a high-rise apartment building as an infill in an existing residential area is another area of note, and a particularly surprising finding revealed that outdoor pollution generated by wildfires burning in northern Ontario last summer significantly affected indoor AQ as well. Invariably, PM2.5 particles enter indoor spaces through doors, windows and leakiness in a building envelope that is not well sealed. "Unless residents were using a good indoor air purifier, they did not escape that bad air that covered our city and, indeed, our region, during that time by staying inside," Cole points out.



Jake Cole, P.Eng., uses an air-quality egg to test air quality in Ottawa, ON.
Photo: Jake Cole

Jake Cole, P.Eng., built this simple indoor air purifier using a box fan and a high-quality furnace filter for about $70 using the method outlined in a CBC *Marketplace* investigation (see sidebar).
Photo: Jake Cole

WHAT ENGINEERS CAN DO

BreatheEasy's initial findings support the federal government's view of the state of AQ in the country. According to a 2021 Health Canada report, approximately 15,000 people die prematurely each year in this country from air pollution. "That's about the same number that died from COVID-19 in Canada in 2020," says Cole, who notes that 500 AQ-related deaths occur in the Ottawa area. And although projects like BreatheEasy are starting to make AQ better understood, Cole says engineers can help by building AQ monitoring into building projects during site preparation, construction and operation; by acting as authorities on the technical elements of new laws and practices, such as building codes, that providez protection from air pollution for the public and the trades; and by developing good domestic air monitor solutions.

The World Health Organization (WHO) states that air pollution is one of the biggest environmental threats to human health, alongside climate change, causing 4.2 million premature deaths worldwide in 2016. In recognition of this global issue, WHO tightened its standards for acceptable limits of air pollutants in 2021, making them 50 per cent more stringent than before. Cole is hopeful Health Canada will follow WHO's lead and update its AQ standards. "Beyond changing its standards and guidelines, I think Canada, and all levels of government, must make cleaner, healthier air a higher priority," says Cole. "We are hoping our ongoing project will help trigger that action." Meanwhile, the BreatheEasy team continues its work to identify hotspots and educate locals on why it matters, so they can take steps to protect themselves. **e**

The opinions expressed by Jake Cole are his opinions only and may not necessarily reflect the opinions of the Sierra Club Canada Foundation.

WANT TO LEARN MORE?

Environmental expert Jake Cole, P.Eng., recommends the following resources on air quality.

READ

The Invisible Killer: The Rising Global Threat of Air Pollution—and How We Can Fight Back, by Gary Fuller, 2019: An examination of one of the biggest global crises facing us today—the drastic worsening of air pollution—and what we can do about it

Choked: Life and Breath in the Age of Air Pollution, by Beth Gardiner, 2019: A look at the human toll of air pollution, the scientists who have transformed our understanding of its effects on the body and ordinary people fighting for a cleaner future

Clearing the Air: The Beginning and the End of Air Pollution, by Tim Smedley, 2019: The full story of what air pollution is, which chemicals are the dangerous ones and where they come from

WATCH

Something in the Air, a CBC documentary presented by *The Nature of Things*.

Is an $800 purifier best to clean your home's air? CBC's *Marketplace* tested five top air filter brands and their claims and demonstrates a do-it-yourself solution

BROWSE

BreatheEasy program
air-quality egg learning system

CLARIFYING SEALING REQUIREMENTS

The updated *Use of the Professional Engineer's Seal* guideline reflects new amendments to Regulation 941 that clarify how practitioners use their seal.

By José Vera, P.Eng., MEPP

The upcoming amendments to Regulation 941, which come into effect on July 1, help clarify how professional engineers use their seal. Although the amendments do not represent a significant change, they further spell out existing sealing requirements that were previously found in the *Use of the Professional Engineer's Seal* guideline or already existed in case law. In other words, these existing requirements will now be codified in section 53 of Regulation 941, bringing greater clarity to when practitioners should affix their seals on engineering documents and what procedures must be followed when sealing. Below is a summary of the key amendments.

1. Practitioners must clearly indicate the purpose of the document they are sealing.
Previous versions of the *Use of the Professional Engineer's Seal* guideline recommended that practitioners indicate the purpose of the document they are sealing as a best practice. This best practice could be achieved by writing down a description in the sealed document such as, for example, "For Permit," "For Construction" or "For Connections Only." Section 53 of Regulation 941 has now been amended to make it a mandatory requirement to indicate the purpose of the sealed document, since a sealed document without a clearly indicated purpose can be potentially misused for another purpose.

Using sealed documents for a purpose other than its intended purpose is a potentially dangerous practice. For example, PEO has received reports from municipalities of "For Permit" drawings being used "For Construction." This practice can have grave ramifications, since permit drawings do not have the required information needed for construction. Consequently, sealed engineering documents can only be used for their intended purpose. Clearly indicating the intended purpose of a sealed document helps prevent its misuse.

2. Practitioners should not seal draft or incomplete documents.
PEO has received reports of sealed drafts or incomplete documents being issued to clients. This is a dangerous practice because placing reliance on a draft or incomplete document can result in serious consequences and present a risk to the public due to missing or insufficient critical information. Previous versions of the *Use of the Professional Engineer's Seal* guideline noted that draft documents should not be sealed. However, a guideline is considered soft law; Regulation 941 is hard law. Consequently, section 53 of Regulation 941 has now been amended to clearly indicate that practitioners should not seal draft or incomplete documents. The purpose of this new hard requirement is to protect the public.

3. Sealing an engineering document is akin to assuming professional responsibility.
In Canadian case law, the use of an engineer's seal is a matter of professionalism and not an independent source of civil liability. In *Edgeworth Construction Ltd. v. N. D. Lea & Associates Ltd.*, the Supreme Court of Canada noted: "The seal attests that a qualified engineer prepared the drawing. It is not a guarantee of accuracy. The affixation of a seal, without more, is insufficient to found liability for negligent misrepresentation."

Therefore, it was beneficial to codify this principle into section 53 of Regulation 941 to ensure the purpose of the professional engineer's seal is crystal clear, since PEO's practice advisory team frequently receives questions from practitioners who mistakenly associate the use of the seal with civil liability. Consequently, section 53 has been amended to note that the practitioner's seal on a document is an indication that the practitioner has assumed professional responsibility for the engineering content of the sealed document.

4. Practitioners can seal engineering documents that are solely internal, but they don't have to.
Previously, section 53 stated that the use of seal only applied to engineering documents provided as a service to the public. This wording caused considerable confusion because it was often being misinterpreted that sealing only applied to entities with a certificate of authorization. This was never the case, since the obligation to seal was always conferred on the practitioner. Furthermore, in *Hilton Canada Inc. v. Magil Construction Ltd* it was determined that authorities can develop a policy of reasonable reliance on sealed engineering documents.

By signing and sealing a document, a practitioner attests that others may place reasonable reliance on its engineering content for its specified purpose. This means that if an authority, such as a municipality or a ministry, places reasonable reliance on an engineering document, the practitioner assuming responsibility for the work must seal the document, even if that practitioner is an in-house engineer. Only engineering documents that are used solely for internal purposes do not have to be sealed. However, in-house engineers can still choose to seal internal documents for accountability and traceability purposes.

IN CANADIAN CASE LAW, THE USE OF AN ENGINEER'S SEAL IS A MATTER OF PROFESSIONALISM AND NOT AN INDEPENDENT SOURCE OF CIVIL LIABILITY.

5. Practitioners must take reasonable measures to ensure their seals are not misused.
Previous versions of the *Use of the Professional Engineer's Seal* guideline recommended appropriate security measures to minimize the risk of practitioners' seals used without their consent. Both PEO and other authorities have reported cases of fraudulent seals being used. Consequently, practitioners now have an explicit obligation in section 53 of Regulation 941 to take reasonable steps to prevent their seal from being affixed to a document without their consent.

The five key amendments on the use of seal requirements found in section 53 are consistent with previous guidelines on the use of seal, Canadian case law and the sealing requirements from the other provincial engineering regulators in Canada. These amendments do not represent a major change; rather, they add clarity to already existing requirements. Detailed information on these amendments can be found in section 53 of Regulation 941. Practitioners who have questions on these new amendments can contact PEO's practice advisory team at practice-standards@peo.on.ca. **e**

José Vera, P.Eng., MEPP, is PEO's director, licensing.

COUNCIL EVALUATES ROLE OF CHAPTERS

By Marika Bigongiari

Council is continuing to work through Phase 4 of PEO's Governance Roadmap, a significant portion of which is the evaluation of the role of PEO chapters. The application of an activity filter to all PEO's activities in 2019 suggested that chapters and their related activities do not fit under Council's governance role or PEO's regulatory mandate.

At its February meeting, Council approved a motion that will see the continuation of chapters as currently referenced in PEO's regulations and bylaws. However, Council also endorsed a process recommendation by the Governance and Nominating Committee (GNC) to deal with chapters' activities and outputs, along with all other activities and outputs that were determined to be neither governance nor regulatory. Of the 93 activities examined in the activity filter, 35 were deemed unrelated to Council governance or PEO's regulatory mandate.

GNC, whose mandate includes addressing chapters, has proposed that all activities that fall under the "neither" category be addressed based on their legal, financial or reputational risk. Since responsibility for the chapters falls under the purview of Council, GNC was directed to oversee a risk assessment. The risk assessment and mitigation strategy will be conducted in consultation with chapters with a view to eliminating or adapting high-risk outputs and operationalizing others so more effective organizational control is maintained.

In addition to evaluating chapters, Council also created transition plans for its four governance committees, so each has a clear annual operational strategy. Phase 2 of the Governance Roadmap saw the formal approval and implementation of four new governance committees: Regulatory Policy and Legislation, Audit and Finance, Human Resources and Compensation and Governance and Nominating. With each committee experiencing turnover annually as outgoing councillors leave and incoming councillors join, this is an important step towards achieving continuity. "The transition plans lay out the roadmap for the next year for the governance committees," says Liz Maier, PEO's vice president, organizational effectiveness. "The chapters and Phase 4 will be part of their roadmap—and the committees will have to come before Council and make recommendations."

COUNCIL COMPOSITION STILL PENDING

Although Phase 4 of the Governance Roadmap is underway, a significant item from Phase 3 remains outstanding: Council composition. During Phase 3, Council implemented councillor attributes, which define the qualities of councillors who would be most effective on the board (see "PEO updates election process to help licence holders running for Council," *Engineering Dimensions*, January/February 2022, p. 31). However, Council size—which is a defined item of Phase 3—was not addressed at that time. Maier says that Council will revisit Council composition following the completion of Phase 4 this month, and it will be an important part of PEO's strategic plan this year.

"Composition will be one of our strategic pillars," says Maier, who acknowledges that, although big strides have been made by Council towards achieving governance transformation, the board is not quite there yet. "We can only move at the pace the board is ready to accept change, and that's okay. In most transformations, you need to adapt to the readiness of the organization. As we continue, we'll approach things one at a time."

THE ROAD TO GOVERNANCE REFORM

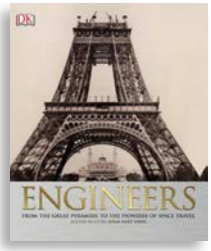
In November 2020, Council approved a timed workplan to support the completion of the two-year Governance Roadmap. The roadmap was initially approved by Council in March 2020 for the achievement of its governance reform objectives, and the associated workplan commits Council to reaching key milestones at specific dates over the course of two years, with an end date set for mid-2022.

The workplan highlights reviewing and improving governance effectiveness in four phases:

- Phase 1: Council policies, enhancing its effectiveness through regulatory and governance mandates;
- Phase 2: PEO committees, with an aim to improve their structures and mandates;
- Phase 3: Council composition and renewal, including its selection process; and
- Phase 4: Chapters, volunteers and other areas, with an aim to review their governance effectiveness.

The Governance Roadmap and workplan were drafted and implemented by Governance Solutions Inc. as part of PEO's response to the 2019 external review of its regulatory performance. The review made 15 recommendations and highlighted areas for improvement for the regulator, some of which concerned governance. Implementing the roadmap marks an important step towards making Council more effective and appropriately focused on high-level strategy as it continues to work through governance reform and PEO's enterprise-wide transformation. **e**

READ



Engineers: From the Great Pyramids to the Pioneers of Space Travel by DK, 2015: The story of the brilliant minds that have constructed our man-made world, from the ancient pyramids to modern spaceflight

The Engineering Book: From the Catapult to the Curiosity Rover, 250 Milestones in the History of Engineering by Marshall Brain, 2015: A detailed look at 250 engineering milestones that celebrate the profession's knack for solving real-world problems

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The Engineering Buzzcast
A podcast that aims to bridge the gap between students, academics and professionals

My Best Friend's an Engineer
Co-hosts Lexi and Libby discuss being women in STEM in their 20s and how to thrive in male-dominated career fields.

The following events may have an in-person and/or online component. See individual websites for details.

MAY 24–25
International Conference on Chemical and Environmental Science, Hamilton, ON

MAY 24–25
International Conference on Heat Transfer and Fluid Flow, Hamilton, ON

MAY 24–25
International Conference on Science, Technology, Engineering and Management, Hamilton, ON

MAY 26
International Conference on Electrical and Control Engineering, Toronto, ON

MAY 26
International Conference on Electrical, Electronics, Communication and Robotics Engineering, Toronto, ON

MAY 26
International Conference on Electrochemistry, Toronto, ON

ATTEND

JUNE 24
PEO Council Meeting, Toronto, ON

JUNE 26
International Conference on Electronics Circuits and Systems, Toronto, ON

JUNE 26
International Conference on Electronics, Information and Communication, Toronto, ON

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Engineering Reimagined
An exploration of how, like engineers, everyday people are reimagining the future and their roles in it

Teach the Geek
Engineer Neil Thompson dives into the topic of public speaking for those working in and around STEM.

The Structural Engineering Channel
A podcast that keeps structural engineering professionals up to date on technical trends in the field

WATCH

I Want to Be an Engineer
An introduction to three women engineers who, in 1983, opted for "non-traditional" jobs

The Internal Combustion Engine
An animated explanation of how the internal combustion engine works

Engine 371
An animated look at the building of Canada's transcontinental railroad

THE ASSOCIATION HAS RECEIVED WITH REGRET NOTIFICATION OF THE DEATHS OF THE FOLLOWING MEMBERS (AS OF MARCH 2022).

ALFORD, Peter Brian
Denver, CO

ALIKHAN, Khader
Orleans, ON

ALLEN, James Glenn
Cardinal, ON

AMARNATH, Pranatharthi Haran
Toronto, ON

ANDERSON, James
Brampton, ON

ANTONIONI, Terrence
Lively, ON

ARSENAULT, Donald Anthony
Oakville, ON

ATTWOOD, Wayne Christopher
North Bay, ON

AUGUSTUS, John Harold
Burlington, ON

BABBIE, Fred Ronald
Toronto, ON

BADNER, Allan
Maple, ON

BAGSHAW, Sean David
Cobourg, ON

BALL, Kenneth Frank
Port Dover, ON

BARBER, Andrew
Cobble Hill, BC

BARNES, Paul Jeffrey
Toronto, ON

BARTNIK, Stanislaw
Mississauga, ON

BECK, Andreas Paul
Oakville, ON

BELL, Richard Thomas
Toronto, ON

BENJAMIN, Abraham
Kitchener, ON

BODIE, Lloyd Leslie
Toronto, ON

BOIVIN, David Laurier
Verdun, QC

BOYD, Robert
Milton, ON

BROWN, Bruce Irwin
London, ON

BROWN, Robert Ellis
St. Thomas, ON

CAMPBELL, Hugh Alexander
Peterborough, ON

CAMPBELL, James Hay
Waterloo, ON

CAMPBELL, Paul Finkle
Halifax, NS

CASKEY, Michael Donald
Dunrobin, ON

CHAFFEY, Charles Elswood
Toronto, ON

CHAKRAVARTI, Aditya Pada
Nepean, ON

CHAPMAN, Alan Stanley John
Kanata, ON

CHAUDHARI, Abdul Latif
Embrun, ON

CHEUNG, Albert Chun-Yuen
Mississauga, ON

CHEUNG, Gilbert Siu Wong
Richmond Hill, ON

CHICK, Bruce Hamilton
Kanata, ON

CLOUTIER, Mark Claude Kitchener
Sudbury, ON

CORBETT, Charles Patrick
Exeter, ON

CRAWFORD, Roger Garton
Waterloo, ON

CROUSE, Robert Ivan
Burlington, ON

CSEFF, John
Milton, ON

CUSHMAN, Peter
Newmarket, ON

CZEGEL, Leslie
Brampton, ON

DAVIDSON, James Westman
Inverary, ON

DAY, Lee Edwin Hart
Sarnia, ON

DEASON, Gregg
Ajax, ON

DENNIS, Monte Campbell
Amherstview, ON

DEOGON, Narinder Singh Kartar
Mississauga, ON

DJURDJEVIC, Miodrag
Toronto, ON

DROMEY, Gordon
St. Catharines, ON

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Brampton, ON

DYKSTRA, Laura Dawn
Bancroft, ON

FEDORUK, Roy Maftey
Mississauga, ON

FISHER, Glen Thomas
Ottawa, ON

FISHER, James George
Kitchener, ON

FULTON, Robert Judson
Mississauga, ON

GILL, Edward Murray
Hamilton, ON

GILLIS, Ronald John Hugh
Sydney, NS

GREEN, Roger
Waterloo, ON

GRINDLEY, Robert S.
Mississauga, ON

HAWLEY, Gordon Amos
Oakville, ON

HEIKKILA, Sonja Chantal
Orleans, ON

HOBBS, Clement Francis
Scarborough, ON

HOEKSTRA, Arnold Peter
Trenton, ON

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King City, ON

JACINTO, Ronald Allan Sa
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Ottawa, ON

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LEE, Chang Soo
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MITRA, Parthasarathi
Etobicoke, ON

MONTOUTO, Jose
Richmond Hill, ON

MOORE, Robert
London, ON

MOROS, Mykola
Etobicoke, ON

MORRIS, Robert James
Hamilton, ON

MORRISON, David John Andrew
Toronto, ON

MOVER, Yuri Alexander
Thornhill, ON

NAKAGAWA, Douglas Tomio
Mississauga, ON

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Montreal, QC

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Sudbury, ON

NORBETT, Bogdan Stanley
Mississauga, ON

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Belleville, ON

PIGOTT, David Nevil
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PRESTWICH, Neil Arthur
Newmarket, ON

RANDALL, Ronald George
Port Dover, ON

ROBINSON, David Curry
North Bay, ON

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Markham, ON

ROSS, Robert Bruce Latham
North York, ON

ROY, Supriya
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RUDINSKAS, Victor Edwin
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COUNCIL APPROVES ANTI-RACISM AND EQUITY CODE

By Nicole Axworthy

546TH MEETING, APRIL 8, 2022

At its April meeting, Council approved a four-part motion regarding PEO's anti-racism and anti-discrimination work, including a new Anti-Racism and Equity (ARE) Code that codifies certain commitments to advance PEO's fairness, human rights and public interest obligations under the law. Council committed PEO to abide by the code and ensure it is prominently posted on PEO's website and easily accessible by the public and licence holders.

As part of the motion, Council tasked the Anti-Racism and Anti-Discrimination Exploratory Working Group (AREWG) to collaborate with PEO staff, committees and people resources to appropriately deal with the supplementary feedback from the consultations related to the draft ARE code that took place earlier this year. The consultations attracted 125 participants, including strong support and feedback from key stakeholders and oversight bodies such as Engineers Canada, Office of the Fairness Commissioner and Ontario Human Rights Commission.

Council tasked the AREWG to complete the remaining work of Phase 3 that Council approved at its November 2021 meeting (see In Council, *Engineering Dimensions*, January/February 2022, p. 33) and report related progress and recommendations to Council. Additionally, in recognizing the constitutionally protected right of Indigenous populations to self-determination, Council tasked the AREWG with developing policy approaches through an Indigenous lens through consultations with a cross-section of Indigenous perspectives in Ontario, and update Council on its progress by the 2023 Annual General Meeting.

GENDER-NEUTRAL LANGUAGE

In a separate motion, Council approved the development of a policy regarding gender-neutral and -inclusive language based on current best practices. Council directed the CEO/registrar to develop the policy for Council approval and the Regulatory Policy and Legislation Committee to ensure current gender-neutral language is used in PEO documents.

AUDITED FINANCIAL STATEMENTS APPROVED

At its April meeting, Council approved the audited financial statements for the year ended December 31, 2021, and the auditor's report as presented at the meeting (and available on pages 18 and 29 of this issue). In a separate motion, Council also recommended that Deloitte LLP be appointed as PEO's auditor for 2022. This recommendation was brought to the 2022 Annual General Meeting to be voted on by members.

ENGINEERS CANADA DIRECTION

Council provided direction to PEO's representative on the Engineers Canada (EC) board for voting on items at EC's annual meeting of members (AAM) on May 28. Council voted in favour of the member representative supporting the approval of the amendment to the EC bylaw, which would add registered geoscientists and geoscientists in training as exceptions under the definition of "registrant." A recent review of the bylaw by EC's Governance Committee found that the definition failed to exclude geoscientists and geoscientists in training, meaning that associations that regulate both engineers and geoscientists would imply that they would be subject to a higher per capita assessment fee (PCAF).

Council also supported the approval of the 2024 PCAF reduction from $10.21 to $8 per registrant, which is based on the projected revenue and expenses for EC for the years 2022, 2023 and 2024 and will take effect as of January 2024. The PCAF is a key source of revenue required to support EC's operational work.

Council also directed the member representative to vote against a motion to reduce the size of EC's board. Although EC initially defeated a motion to recommend the Governance Committee's plan to reduce the board size from 23 directors to 16, Engineers Nova Scotia put forward this motion for the member regulators to vote on instead because it was the members who passed the initial motion to review the board size as part of a governance review.

ENGINEERS CANADA CANDIDATE

At its April meeting, Council approved a motion to re-nominate Nancy Hill, P.Eng., LLB, FEC, to serve a further two-year term on the EC board as an Ontario director commencing at the 2023 EC AAM, conditional on her being chosen as president-elect at the May 2022 EC board meeting. For her to be eligible to serve as EC president in 2023–2024 and past president in 2024–2025, she must also be an EC director during those years. The motion by Council will allow Hill to stand as a candidate in the upcoming election for the position of president-elect for EC.

NEW GUIDELINE APPROVED

At its April meeting, Council approved the publication of the *Pre-Start Health and Safety Review Guideline* as presented at the meeting and directed the CEO/registrar to publish the guideline and notify members and the public of its publication through PEO communications. The same motion also stood down the subcommittee that prepared the guideline. In 2019, the Professional Standards Committee was instructed by Council to revise the existing guideline, originally published in 2001. **e**

AD INQUIRIES Your business card here will reach 86,000 professional engineers. Contact: Dovetail Communications, Leesa Nacht, 905-707-3521, lnacht@dvtail.com.

Deadline for July/August 2022 is June 9, 2022. Deadline for September/October 2022 is August 5, 2022.

Walter Bilanski was one of a kind

Bob Somek, P.Eng.,
Fort Erie, ON

The University of Guelph had its certification in engineering as a four-year program in 1968. As our dean said when I enrolled in the early 1970s: "We have no reputation...you must make it." There were only 250 students for all four years, and yes, we did make it, thanks to professors like Walter Bilanski, PhD, P.Eng. (see "Remembering Walter Bilanski, PEO's only four-time president," *Engineering Dimensions*, November/December 2021, p. 45).

One of my fondest memories in the School of Engineering was Walter Bilanski, our material science professor in second year. One day in the material science lab, our class of 35 students found trays of peaches. Bonus! We helped ourselves but found out later it was one of his experiments on fruit ripeness (fruit that would not bruise when the tree was shaken into a net below). One day I was in the R&D shop and found what looked like a riding mower with vibrating blades in the front. I asked the tech what this was. He said it was a strawberry picker. I asked how it was working out and was told that they were currently just making jam. One thing I always remember him saying to us: "In case of doubt, just set it to zero and differentiate."

Rest in peace, Walter. You will be missed.

Profession's inaction on climate change

George Sweetman, P.Eng.,
Hamilton, ON

I like the mindset in the current issue of *Engineering Dimensions* magazine of "Repair, regenerate, restore" (March/April 2022). But I remain embarrassed by our profession's lack of action and advocacy on the issue of climate change.

In response, I offer the following:

An Engineer Looks in the Mirror
Like a 4-year-old,
we sit waiting to be told.
But on our resume
and in the proposal, we say
we are proactive innovators,
solution-oriented initiators.
So how is it we remain resolved,
to not become involved.
For we shall not be absolved
when our children
ask, 'Why did you not do it then?'
For we had the chance and missed it
but still will not allow others to fix it.
Our code demands public welfare be paramount
But our actions defend the shareholder bank account

AD INDEX

LETTERS TO THE EDITOR are welcomed, but must be kept to no more than 500 words, and are subject to editing for length, clarity and style. Publication is at the editor's discretion; unsigned letters will not be published. The ideas expressed do not necessarily reflect the opinions and policies of the association, nor does the association assume responsibility for the opinions expressed. Emailed letters should be sent with "Letter to the editor" in the subject line. All letters pertaining to a current PEO issue are also forwarded to the appropriate committee for information. Address letters to editor@peo.on.ca.

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Mandatory continuing professional development is coming in 2023

PEO's current voluntary PEAK program is transitioning to a mandatory program that will begin in January 2023. The program is designed to help licence holders maintain their professional knowledge, skills and competence as engineers and is in keeping with PEO's regulatory, public protection mandate as set out in the *Professional Engineers Act*.

As of January 2023, all licence holders (both practising and non-practising) must comply with the program. More information can be found at **www.peopeak.ca**.

Professional Engineers Ontario

PEAK
REACHING NEW HEIGHTS