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SEPTEMBER/OCTOBER 2015

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LEADERSHIP MATTERS



Thomas Chong, MSc,
P.Eng., FEC, PMP
President

IN MY LAST MESSAGE, I outlined the five priority issues on which PEO council agreed to move forward. We considered more than 30 suggested priorities for the next year, including some potential changes to the *Professional Engineers Act*.

By consensus, council agreed that following through on the recommendations of the Elliot Lake Commission of Inquiry must be our first priority. This one priority will require us to bring to conclusion the work of the Continuing Professional

Development, Competence and Quality Assurance (CPDCQA) Task Force. It will also involve work to create a performance standard for structural condition assessments of existing buildings and designated structures, as well as the development of criteria for designating specialists to do this work.

Council also agreed PEO must take advantage of opportunities to ensure it has the legislative authority to implement the Elliot Lake recommendations, should a chance to amend the *Professional Engineers Act* arise.

WE RESPECT

Council gave strong direction that we must continue to respect our members by keeping you informed and seeking your input throughout the process of developing our proposals for a PEO continuing professional development (CPD) program, as referenced in Elliot Lake recommendation 1.24.

As you are aware, our CPDCQA Task Force has been developing a proposal for a PEO CPD program. In May, it shared with council its vision for what a program that accounts for members' practice differences might look like. While the task force sees a mandatory program for PEO members, it does not mean everyone would need to take courses or other educational activities. Rather, all licence holders would be required to engage with the program to assess their risk and determine whether CPD or quality assurance measures need to be undertaken. Therefore, the impact on the great majority of our members will be minimal.

WE COMMUNICATE

In late July, the task force engaged Ipsos Reid to conduct a survey of members on the proposal. I hope you had the opportunity to provide your comments, as the task force will

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OUT THIS FALL.

present its full proposal, guided by your survey responses, to council in November.

I encourage you to keep an open mind and review the task force's recommendations objectively when they come out this fall. This group is working to develop a CPD program that would address the risk to the public inherent in each licence holder's field of practice in a meaningful way, not just a simple, window dressing-type solution. I think it's safe to say that the proposed program's impact for most PEO members will be minimal, while those who self-identify as having higher-risk practices would be required to do more.

WE INNOVATE AND MAKE A DIFFERENCE

Seeking act amendments for the Elliot Lake recommendations does not mean we will necessarily establish in our legislation a specialist designation that includes an exclusive scope of practice, as proposed in Elliot Lake recommendation 1.6.

At the council workshop in June, we heard a presentation that laid out several options for PEO in regard to this recommendation. These options were: to maintain the status quo (which council dismissed as presenting an unacceptable risk to PEO's credibility, since the basis of recommendation 1.6 was our own submission to the inquiry); using PEO's regulation-making powers to establish a structural engineering specialist designation (any exclusive scope of practice would emerge as other legislation requires PEO-designated specialists to do certain tasks); and writing regulations under PEO's act to provide an exclusive scope of practice for the PEO-designated specialists.

Following careful deliberations, council gave direction to the Legislation Committee and staff to:

- seek broader authority for mandating a CPD program (the act gives authority to PEO only to use its regulation-making powers to provide for continuing education for members);

[PRESIDENT'S MESSAGE]

IT IS IMPORTANT THAT MEMBERS BE PROVIDED A FORUM TO LEARN MORE ABOUT THE PROPOSALS BEFORE COUNCIL AND TO HAVE THEIR CONCERNS AND OPINIONS HEARD BY DECISION MAKERS AT PEO.

- seek authority to introduce exclusive scopes of practice (the act provides only for protecting the title of a PEO-designated specialist). Council was clearly in favour of PEO designating specialists to do structural assessments and complete structural adequacy reports. There was less agreement on PEO establishing exclusive scopes, although a small majority of councillors thought it strategic to acquire the necessary authority to do so, even if we might never use it;
- seek authority to require licence holder disclosure of certain information, such as disciplinary actions (PEO's regulation-making power does not cover writing regulations for such an obligation);
- ensure proper authority for posting public discipline-related information on PEO's website; and
- seek "housekeeping" amendments (related to the Elliot Lake recommendations).

The Legislation Committee has since developed policy for the proposed act amendments, which is scheduled to go to council for approval at its September meeting.

WE COLLABORATE

Traditionally, issues such as implementing a CPD program and requesting changes to the act have generated much conversation amongst our members, as well as a fair share of misinformation. That is why I have called for town hall meetings this fall so we can discuss, together, implementation of the Elliot Lake recommendations, as well as other current PEO issues. Under the theme of "You Talk, We Listen," these town hall meetings will be held in each of the five chapter regions: in Ottawa on September 29; in North Bay on October 6; in London on November 3; and in Toronto on November 9 and 12.

It is important that members be provided a forum to learn more about the proposals before council and to have their concerns and opinions heard by decision makers at PEO. So I

encourage you to join me and your professional colleagues as we strive to make PEO and the engineering profession stronger and more accountable. Please watch your inbox and the PEO website for further details on these meetings.

WE DELIVER

And, as a reminder, you can follow the progress on our work related to PEO's 2015-2017 strategic plan on our website. There is considerable detail in the strategic plan, comprehensive strategies document, and progress updates about the work we plan to be doing over the next several years to deliver the PEO of the future.

WE SHARE AND ARE RECOGNIZED

Recently, I was invited by the National Society of Professional Engineers (NSPE) to attend the organization's annual general meeting. The NSPE represents individual engineering professionals and licensed engineers across all disciplines in the US. I was honoured to be the first PEO president to address its House of Delegates Assembly, which consists of presidents and executive representatives from the 53 state and territorial societies. Soon thereafter, I attended the annual meeting of the State of Florida Society of Professional Engineers, where I addressed their State Board of Directors Assembly.

At both assemblies, I took the opportunity to promote PEO and educate our US colleagues on our unique system of professional governance. I highlighted that professional engineering is a self-regulated profession in Canada with at least three distinct characteristics, including:

1. democratic self-governance, where members of the profession elect a majority of the members of the governing council, which sets policy, determines the direction of the engineering profession and oversees its operation;
2. peer review, where many members are involved in the day-to-day work of regulating the profession, including admissions, enforcement, professional standards, complaints and discipline; and
3. independence from government, where we provide government and the public with unbiased advice on public policy related to the engineering profession.

In closing, I emphasized that professional engineers in Ontario share with their counterparts in America a commitment to advancing and promoting the engineering profession, to improving productivity and encouraging innovation and, above all, to protecting the health, safety and well-being of the public.

As always, I welcome your suggestions for improvement. Σ

ENGINEERING DIMENSIONS

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ROOM FOR IMPROVEMENT



Jennifer Coombes
Editor

NO MATTER THE PROJECT or process, just about everything can stand to be improved. Such is the case with PEO's support of the Discipline, Registration and Fees Mediation committees, and the Complaints Review Councillor.

Among the many recent improvements to PEO's tribunal system is the Registration Committee's use of Skype, which allows licence applicants to testify remotely. The use of this technology is a first for a North American profession's regulator and has been so successful it's now being considered for use by PEO's Discipline Committee.

Also, an often problematic step in convening PEO discipline panels has been alleviated. Since the specific composition of people on the panels is prescribed in the *Professional Engineers Act* (PEA), it had often been difficult to find people to fulfil a particular category of panel member: non-engineers. Previously, the only permitted source of such panelists was the five non-engineer councillors on PEO council. With a change to the PEA implemented in 2012, however, this difficulty was eased with the addition of members of an attorney general-approved pool of lawyers as acceptable non-engineers to sit on the panels. These lawyers' presence has the added benefit of bringing additional legal expertise to panels in their deliberations, as well as decision-writing support.

In "Order in the court: Better adjudication a key to better regulation" (p. 26), we take you through all of the work that's been done to enhance and streamline PEO's adjudicative processes.

PEO's quest for a formal continuing professional development (CPD) program is a topic that's been heating up this summer. The first step on this path has been taken: the Continuing Professional Development, Competence and Quality Assurance Task Force (CPDCQA TF) has

developed a proposal that would require increasing professional development activity the more risk a member's work presents to the public. Under the plan, CPD requirements for non-practising engineers would be minimal. (A backgrounder on the proposed plan can be downloaded from the Latest Updates section of www.peo.on.ca.)

The next step is, of course, to make sure this plan is the right one for PEO, P.Engs and the public that engineers serve and protect. That's where members will have their say. An Ipsos Reid survey was sent July 27 to all members; over 6700 responses were received. As we go to press the results are not yet available. When they are, the CPDCQA TF will incorporate this information into a revised plan, which it will present to council.

Members will get another chance to voice their opinions about the plan, as well as other issues related to the Elliot Lake Commission of Inquiry, this fall. President Thomas Chong, P.Eng., FEC, will host five town hall meetings—one in each region—starting September 29 (p. 15). Annette Bergeron, P.Eng., chair of the CPDCQA TF, will be on hand to explain the proposed plan. Registrar Gerard McDonald, P.Eng., will also discuss PEO's progress on specialist designations.

On another note, the November 21 Ontario Professional Engineers Awards (OPEA) gala is fast approaching. Don't forget to get your tickets at www.ospe.on.ca/page/2015_opea. In the meantime, see page 9 for profiles of the 2015 OPEA recipients who will be honoured. Σ

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Professional Engineers Ontario

THIS ISSUE: The business of self-regulation requires vigilance in the pursuit of procedural transparency and fairness. Here we look at PEO's tribunals and what is being done to ensure volunteer adjudicators have all the tools they need to make the right decisions.

ENFORCEMENT HOTLINE

Please report any person or company you suspect is practising engineering illegally or illegally using engineering titles. Call the PEO enforcement hotline at 416-224-9528, ext. 1444 or 800-339-3716, ext. 1444. Or email enforcement@peo.on.ca.

Through the *Professional Engineers Act*, Professional Engineers Ontario governs licence and certificate holders and regulates professional engineering in Ontario to serve and protect the public.



RISK-BASED APPROACH, FLEXIBILITY CENTRAL PRINCIPLES OF CPD PROGRAM DEVELOPMENT

By Michael Mastromatteo

PEO's Continuing Professional Development, Competency and Quality Assurance Task Force (CPDCQA TF) is proposing a tiered, risk-based approach for a program to ensure PEO members' ongoing professional competence.

The task force was struck in March 2014 and directed by PEO council to prepare a plan for a comprehensive program of continuing professional development and quality assurance, with a strong focus on competency. The program is envisioned as a "made-in-Ontario" solution to competence assurance, reflecting a balance between practising and non-practising licence holders.

To date, PEO is the only engineering regulator in Canada not to have some form of mandatory CPD (see "Continuing professional development on PEO horizon," *Engineering Dimensions*, May/June 2014, p. 24).

Task force Chair Annette Bergeron, P.Eng., FEC, said August 7 that a risk-based approach to a CPD program is a natural way to proceed.

"Our proposal from the task force is that any program be risk-based, with the advantage that non-practising engineers will simply take a refresher element on ethics," Bergeron said.

She added that whatever form the program might take, practitioners will have flexibility in how they fulfill its requirements. "The biggest misconception out there," she said, "is that PEO is going to be creating a whole university of courses that members will be mandated to take. That's not the approach we are taking at all."

Bergeron will present the task force's work to date and seek input to it at a series of PEO president's town hall meetings to be held in each of the regulator's five regions from late September to mid-November (see p. 15). The meetings will discuss key issues for engineering self-governance, including continuing professional development and the other recommendations from the Elliott Lake Commission of Inquiry. The feedback gathered at the meetings will help to ensure the best possible recommendations go forward to council and will inform council's decision making on them.

PEO working with AG and housing ministry on BUILDING SAFETY RECOMMENDATIONS

By Michael Mastromatteo



PEO IS WORKING WITH Ontario government officials to implement some of the safety recommendations stemming from the Elliot Lake Commission of Inquiry.

At a July 27 meeting with officials from the attorney general's (AG's) office and the Ontario housing ministry, PEO provided the "implementation status" for the Elliot Lake inquiry recommendations that require PEO action.

Eleven recommendations from the inquiry into the June 2012 partial collapse of the rooftop parking deck of the Algo Centre Mall call on the engineering regulator to strengthen its regulatory practices, provide more transparent practitioner information to the public, set standards for structural assessment of existing buildings and the resulting reports, and require sharing of information about building assessments.

PEO representatives attending the July 27 meeting were PEO Registrar Gerard McDonald, P.Eng., President-elect George Comrie, P.Eng., FEC, and Johnny Zuccon, P.Eng., FEC, deputy registrar, tribunals and regulatory affairs.

The meeting also included an update from the Ontario housing ministry, which created its Building Safety Technical Advisory Panel in response to the Elliot Lake inquiry.

ONTARIO PROFESSIONAL ENGINEERS AWARDS

celebrate
leaders and
volunteers

By Nicole Axworthy



PEO is expected to contribute to the upcoming government communication piece scheduled to be released on October 14, the first anniversary of the release of the inquiry's report. Officials with the AG's office said the government plans to move forward with the recommendations, noting that Attorney General Madeleine Meilleur is scheduled to visit Elliot Lake in mid-October to make the update announcement.

Irwin Glasberg, assistant deputy minister to the AG, said the province has noted PEO's efforts to assist with implementation of the recommendations. He said the AG is also aware that PEO and the housing ministry are working together in areas of mutual interest.

The Elliot Lake Inquiry report calls on government and other stakeholders to report progress on implementing key safety recommendations by October 2015.

Brenda Lewis, director of the housing ministry's building development branch, pointed out four key areas where PEO and the ministry are working together—the performance standard, the specialist designation, professional development and the definition of prime consultant, which will include architects. All groups agreed to keep moving forward and continuing to exchange information as developments unfold.

PEO's implementation of Elliot Lake-related recommendations was a major part of the agenda of the June 18 to 20 PEO council retreat in Niagara-on-the-Lake (see President's Message, July/August 2015, p. 3). In addition, PEO President Thomas Chong, P.Eng., FEC, and Registrar McDonald have scheduled meetings with Ontario Progressive Conservative Party Leader Patrick Brown and Labour Minister Kevin Flynn, MPP (Oakville), for September 8. PEO will brief Brown on the regulator's work on the Elliot Lake inquiry recommendations and other PEO issues.

PEO actively responded to the Elliot Lake collapse even before the inquiry report was issued. In November 2012, it issued a professional practice bulletin on structural engineering assessments of existing buildings, which will now form the basis for its practice standard for such assessments.

This year marks the 68th anniversary of the Ontario Professional Engineers Awards, a program that honours engineers for their professional achievements. Since 2005, the awards have been presented jointly by PEO and the Ontario Society of Professional Engineers.

This year, 11 awardees will be honoured, and a new award category, the Engineering Project or Achievement Award, will be presented for the first time. The new award recognizes teams of engineers that have had a significant and positive impact on society, industry and/or engineering (see "Ontario Professional Engineers Awards adds engineering project award," *Engineering Dimensions*, November/December 2014, p. 14).

The awards gala takes place on Saturday, November 21 in Toronto. For ticket information, visit www.peo.on.ca.

PROFESSIONAL ENGINEERS GOLD MEDAL

Cristina Amon, ScD, P.Eng., dean, faculty of applied science and engineering, University of Toronto (U of T), became the first female dean of U of T's engineering school in 2006, with responsibility for the administration of over 750 faculty, researchers and staff, an annual operating and research budget that currently exceeds \$250 million, and the success of more than 5000 undergraduate and 2000 graduate students. Under her leadership, the faculty has become a global intellectual hub for interdisciplinary research and education. Amon spearheaded several programs, including new undergraduate majors and minors, the professional master's degree, and PhD and mentorship programs. An accomplished researcher and recognized as one of Canada's 25 Most Influential Women in 2012,



Cristina Amon, ScD, P.Eng.

her work addresses thermal transport in nanoscale semiconductors, energy systems and biomedical devices. She has garnered international acclaim for her pioneering contributions to engineering education, concurrent thermal designs, innovation in electronics cooling and transient thermal management of wearable computers.

ENGINEERING MEDAL—ENGINEERING EXCELLENCE

Sushanta Kumar Mitra, PhD, P.Eng., associate vice president, research, York University, and his team conceived a method of detecting *E. coli* in contaminated water within two to 60 minutes based on the level of contamination. Called the Mobile Water Kit, it is a groundbreaking engineering feat for the rapid detection of deadly, water-borne pathogens. Similarly, Mitra developed mechanisms for applying his research findings in microfluidics and micro/nanofabrication to help detect a specific biomolecule that helps in the early detection of several vector-borne diseases, like listeriosis and dengue. Mitra also pioneered a technique that provides a better understanding of the oil recovery process. Called Reservoir-on-a-chip, the technology maps pores in dense minerals and creates a micro-scale replica of them, enabling researchers to see for the first time how oil is transported through tiny pores, at a scale too small for the human eye to see.

Jeanette Southwood, P.Eng., FEC, principal, global sustainable cities leader, and Canadian urban development and infrastructure sector leader, Golder Associates Ltd., has, throughout her career, demonstrated vision and leadership with a focus on urbanization, sustainability and resilience. In addition to being an invited speaker and panellist at conferences and workshops, Southwood has authored or contributed to articles, book chapters, technical papers and presentations. At Golder, a global employee-owned firm of more than 8000, Southwood is a principal senior owner. A dedicated leader

also in her volunteer work, she has served on boards and committees of local, provincial and national organizations. In her early career, Southwood received the OPEA Engineering Medal in the Young Engineer category for demonstrating exceptional achievements and excellence.

Brian Isherwood, P.Eng., founder, Isherwood Geostechnical Engineers, has been making a significant impact on the excavation and underground industry in Ontario, and pioneered the specialty field of geostechnical engineering. Isherwood and his firm have been responsible for the excavation shoring, underpinning and foundations of many prominent structures, including the CN Tower, Rogers Centre (then known as SkyDome) and Pearson International Airport. Isherwood introduced the use of inclinometer monitoring to support the observational method of designing excavation shoring in 1973, which soon after was adopted as an integral part of his services in minimizing construction risks and saving costs. In the 1990s, he was confronted with one of the largest and most challenging projects of his career: the extension of the Toronto Transit Commission's subway system. His firm's share of the designs included cut-and-cover tunnels for the Sheppard line, cut-and-cover rail tracks, launch and exit shafts for the tunnel boring machines, as well as most stations on the Sheppard line.

ENGINEERING MEDAL—MANAGEMENT

Michael A. Butt, P.Eng., chairman and chief executive officer, Buttcon Limited, has committed over 50 years to the construction industry, building his own companies while championing change and innovation within the engineering profession. Working in Barbados as managing director with Mitchell Construction Canada, he introduced Canadian materials and construction methods, brought in the first hydraulic crane, introduced the use of drywall and initiated critical path method scheduling. In 1979, he started Buttcon Limited, a 100 per cent employee-owned Canadian general contractor that he has grown into a \$150-million-a-year entity. The company has successfully completed many high-profile projects, including Ryerson University's athletic centre, the restoration of Queen's Park and the conversion of Maple Leaf Gardens into a multi-purpose facility that includes a Loblaws grocery store.

ENGINEERING MEDAL—RESEARCH AND DEVELOPMENT

Andrew Daugulis, PhD, P.Eng., professor of chemical engineering and research chair, biochemical and cell culture engineering, Queen's University, has changed the way microbial cells are cultivated in toxic environments, transforming long-used chemical processes into environmentally sustainable, biological ones. A technology platform known as two-phase partitioning bioreactors (TPPBs), now adopted by research groups in more than 20 countries, is based on work by Daugulis. The use of TPPBs eliminates the toxicity associated with the accumulation of valuable bioproducts within fermentation systems, a long-sought-after objective applicable across many industrial processes. Although this area of specialization can be challenging because it is multi-disciplinary, Daugulis has consistently demonstrated the versatility of TPPBs to provide clean, innovative technologies as efficient as the physical-chemical ones in removing pollutants, but also offering significant health and safety benefits for the environment. With more than 200 peer-reviewed articles published in international journals, Daugulis is one of the most prolific and often cited researchers in his field.

M. Hesham El Naggar, PhD, P.Eng., associate dean, research, faculty of engineering, and research director, Geotechnical Research Centre, Western University, is considered a leading authority on soil dynamics, machine vibrations and foundations, and earthquake engineering. He was the lead developer and co-author of a computer program called DYNA6, used to calculate and analyze the response and design of foundations subjected to different types of dynamic loading. The software has since been adopted by more than 200 organizations worldwide and is becoming the standard tool in Canada for designing foundations to resist dynamic loads resulting from earthquake and machine vibrations. He also developed an approach to predict the bearing capacity of piles using the Statnamic load test—a faster and more economical test for assessing the load-carrying capacity of deep foundations than that used previously.

ENGINEERING MEDAL—YOUNG ENGINEER

Seth Dworkin, PhD, P.Eng., associate professor, mechanical and industrial engineering, Ryerson University, has already established a reputation as a leader in high-performance computation of combustion, with his research cited as some of the most rigorous science published on the formation and oxidation of soot. Dworkin has been at the top of his field since graduating summa cum laude and first in his class from mechanical engineering at McMaster University. His findings in computational combustion led to numerous published journal articles, and industry-funded research and consulting projects within the Canadian aerospace and alternative energy industries. In 2015, Dworkin was granted tenure and promoted to associate professor of mechanical and industrial engineering at Ryerson University after only three years as an assistant professor. With his team at Ryerson, Dworkin uses state-of-the-art, high-performance computing techniques to simulate combustion systems and the pollutants

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WHO WILL YOU NOMINATE?

The Ontario Professional Engineers Awards recognize professional engineering excellence in innovation, leadership and entrepreneurship, and honour contributions to society as well. For 2015, an exciting new award category has been added to recognize a project or achievement by a team of professional engineers that has had a significant impact on society, industry or engineering.

OPEA eligibility requirements and nomination forms are available at www.peo.on.ca.

The nomination deadline is Wednesday, February 24, 2016.

they emit, and numerical analysis to solve problems related to Canadian industry and the global environment.

CITIZENSHIP AWARD

Bill Goodings, P.Eng., was a volunteer from 2002 to 2010 with the Canadian Executive Services Organization (CESO), a Canadian volunteer-based international development charity, following over 50 successful years as a practising civil engineer and a leading authority on solid waste management. He, along with his wife, June, served CESO by carrying out assignments in the Philippines, Bolivia, Honduras and Sri Lanka and helped thousands of people in 16 small towns and villages. Goodings was also a devoted volunteer prior to his retirement. He served his local community by being a scout master, a cub leader and a church elder. He has participated on many

committees, task forces and boards for numerous engineering organizations, including the Compost Council of Canada, the Ontario Society of Professional Engineers, Consulting Engineers of Ontario and, until recently, the Ontario Professional Engineers Foundation for Education.

Claire M.C. Kennedy, P.Eng., LLB, partner, Bennett Jones LLP, is recognized as one of Canada's leading tax lawyers, and has also distinguished herself as an extraordinary volunteer and leader in the engineering community. She is active in supporting her alma mater, U of T, and has held a variety of volunteer positions within the school, including president of the Engineering Alumni Association, and founder and chair of its most successful outreach program, BizSkule, a networking and C-suite speaker series for engineers in entrepreneurship and management. She has also been involved in raising funds for U of T's department of chemical engineering and applied chemistry, personally raising more than \$20,000 for a micronutrient project to aid developing countries. Kennedy was also selected to serve as a warden for the Ritual of the Calling of an Engineer for Camp One (Toronto), which emphasizes professional integrity and responsibility to young engineers as they embark on their careers.

ENGINEERING PROJECT OR ACHIEVEMENT

Years of research, patience and innovative engineering led to the creation of the world's first hands-free mooring (HFM) system for deep-water locks in 2014 by the St. Lawrence Seaway Management Corporation. The innovation was designed to improve safety, reduce transit times and increase competitiveness of this all-water trade corridor. Development of this pioneering technology started in 2005 and was completed eight years later with a production-ready system. HFM was a complex project, having to overcome many obstacles and incorporate solutions for a wide variety of vessels and environmental conditions. It also involved key design, operational and programming changes that challenge the very foundation of how vessels are processed in locks. Deployment of HFM technology is now underway. It is scheduled to be fully implemented into all 16 of the seaway's high-lift locks by the summer of 2016.

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Now that *Engineering Dimensions* has gone digital, you can manage your magazine subscription options with the click of a button.

Want to update your email address or switch back to the print copy? Simply go to www.peo.on.ca and click on the Pay Fees/Manage Account services tab. Your subscription options can be changed in your online profile.

PRESIDENT BRINGS ENGINEERING message to US audience

By Michael Mastromatteo

PEO PRESIDENT THOMAS CHONG, P.ENG., FEC, brought Ontario's engineering message to a new audience July 18 with his address at the annual meeting of the National Society of Professional Engineers (NSPE) in Seattle, Washington.

It marks the first time a PEO president has spoken at the society's House of Delegates assembly. NSPE—the national body of the state engineering societies—works with the state licensing boards to promote the value of professional engineering licensure throughout the United States.

Chong outlined the role and mandate of PEO to his US engineering audience, and described some of the Ontario regulator's current priority areas.

Chong also cited democratic self-government, peer review and independence from government as the three key distinctions between Canadian and US engineering regulation.

"We, in Ontario, Canada, share in common with our counterparts in America a commitment to advance and promote the engineering profession, to improve productivity, to encourage innovation and, above all, to protect the health and safety of the public," Chong said at the NSPE meeting.

Engineers Canada was represented at the NSPE meeting by former PEO CEO/registrar Kim Allen, P.Eng., FEC, chief executive officer, and President Digvir Jayas, P.Eng., who also addressed the delegates.



PEO President Thomas Chong, P.Eng., FEC, at the July 18 annual meeting of the National Society of Professional Engineers

New president for Quebec's engineering regulator

By Michael Mastromatteo



Jean-François M. Proulx, ing., P.Eng., was elected president of OIQ August 27.

Engineer Jean-François M. Proulx, ing., P.Eng. (Alberta), senior associate at GORD Associates Consulting, was elected August 27 by the Ordre des ingénieurs du Québec's (OIQ's) board of directors as the organization's new president, following the resignation of its former president Robert Sauvé, ing., FEC. Proulx's term will end at OIQ's next annual general meeting (AGM) in June 2016.

The director of infrastructure management for the Port of Montreal for the last nine years, Sauvé announced his resignation as president of Quebec's engineering regulator August 12. He was elected to the president position in June 2014 for a two-year term.

In an August 12 statement released by OIQ, Sauvé said he plans to concentrate fully on his work with the Port of Montreal infrastructure department.

Sauvé came to the OIQ presidency at a difficult time for the 60,000-member-strong organization.

During his time as president, Sauvé oversaw a restructuring of the OIQ, whose reputation was damaged by recent scandals involving some Quebec-based engineering firms.

"I leave with the feeling that I have fulfilled my duties. The course has been plotted, control has been restored, trust has been re-established and a solid team is in place to carry out the plans," Sauvé said in the statement.

In an August 27 press release, Proulx says he is excited to take over from his predecessor. "I intend to continue the work begun last year to transform the OIQ and align the organization with all of its stakeholders."

Under a motion adopted by members at OIQ's June 2014 AGM, the president who will take office in June 2016 will be elected by members through universal suffrage.

ESSCO LOOKING TO PROVIDE MORE VALUE TO UNDERGRADUATE COMMUNITY

By Melissa Buckley and Michael Mastromatteo

Ontario's student engineering society is developing a long-term strategy aimed at increasing its value to the undergraduate community.

The Engineering Student Societies' Council of Ontario (ESSCO) is an association of the engineering societies from 14 Ontario universities. PEO has provided financial and material support to the organization through its partnership with ESSCO.



Carleton University engineering student Jake Lipohar is ESSCO president for the 2015-2016 term.

ESSCO recently completed a five-year strategic plan that will see the organization concentrate on longevity and adding value to Ontario's 24,000-strong engineering student community.

As well, ESSCO wants to understand what the average Ontario engineering student experiences on a daily basis. Through a survey, the group will produce and share data with the community at large in hopes of increasing the quality of education and the livelihood of classmates.

ESSCO's new president, Jake Lipohar, an architectural conservation and sustainability engineering student at Carleton University, says the strategic plan gives the association a clear vision of what it hopes to accomplish over the next five years. "We are in a great place to make effective changes that can strongly affect students across the province," Lipohar says.

When ESSCO was founded, its initial objectives were to improve curriculum, quality of teaching, and costs, particularly relating to textbooks. Recently, ESSCO has focused on providing engineering students professional development outside the classroom in addition to academic advocacy.

ESSCO's mission statement has been refined to "ESSCO promotes unity, continuity and visibility among Ontario engineering students."

Melissa Buckley, vice president of communications (chemical engineering, University of Waterloo), says the organization is now establishing a board of advisors to provide it "non-binding" advice. The board will be made up of experienced engineering graduates who have had significant professional experience and/or have had major roles within the ESSCO community.



The ESSCO executive includes Ezekiel Areghan, vice president, services (left), and Zachary Muma, vice president, finance and administration. Missing from the photos is Melissa Buckley, vice president, communications.

“We have several interested parties and expect to achieve this goal during our upcoming term,” Buckley says.

To help ESSCO improve its understanding of engineering education and how it might improve advocacy for Ontario’s engineering students, the group will produce regular academic reports based on data collected through surveys, she adds.

An administrative survey will collect data on services that each faculty provides to its undergraduate students. Data collection is expected to begin in the fall 2015 term.

ESSCO is also getting involved with new initiatives, such as the Engineers Without Borders Change Lab, which tackles the question: How can we develop engineering graduates with the characteristics and skills to tackle the challenges of tomorrow?

Former ESSCO president Liam Morrow was part of the initial invitation and launch phases and the current executive team plans to stay involved.

ESSCO is also setting up a charity fund geared to sponsoring conferences that connect students and showcase engineering spirit. Design teams from each school will be able to apply for access to this fund, and corporate sponsors will be rewarded for their charitable donations.

The ESSCO fund is envisioned as a central resource for all member schools in Ontario. The aim is for the ESSCO fund to become a registered charity.

In addition to Lipohar and Buckley, the ESSCO executive for 2015-2016 includes Zachary Muma, vice president, finance and administration (mechanical systems engineering, Conestoga College), and Ezekiel Areghan, vice president, services (process automation technology, McMaster University).

PEO TOWN HALLS 2015

YOU TALK. WE LISTEN.

PEO President Thomas Chong, P.Eng., FEC, will be hosting a series of town halls throughout Ontario this fall.

On the agenda? Implementing the Elliot Lake recommendations, including continuing professional development and specialist engineering designations.

Eastern Region

September 29, 7 p.m to 9 p.m.

Ottawa Conference & Event Centre

200 Coventry Road, Ottawa

Northern Region

October 6, 7 p.m to 9 p.m.

Holiday Inn Express

1325 Seymour Street, North Bay

Western Region

November 3, 7 p.m to 9 p.m.

Four Points Sheraton London

1150 Wellington Road South, London

West Central Region

November 9, 7 p.m to 9 p.m.

Sheraton Toronto Airport

801 Dixon Road, Toronto

East Central Region

November 12, 7 p.m to 9 p.m.

Radisson Hotel Toronto East

55 Hallcrown Place, Toronto

Attendance is free, but please visit www.peo.on.ca/index.php/ci_id/29011/la_id/1.htm to register for a meeting. Space is limited.



ENVIRONMENT MINISTER PUTS engineers on front lines of CLIMATE CHANGE CHALLENGE

By Michael Mastromatteo

Ontario's environment minister has implored newly licensed engineers to put their talents to use in developing adaptation strategies for the "existential crisis" of climate change.

Speaking July 29 at the PEO East Toronto Chapter's licence presentation ceremony, Glen Murray, minister of the environment and climate change in Kathleen Wynne's Ontario government, said engineering as a profession can play a leading role in developing new standards to help communities withstand the impact of climate change on infrastructure and other vital public resources.

"A lot depends on the next 10 years and it relies heavily on the intelligence and creativity of your profession," Murray said.

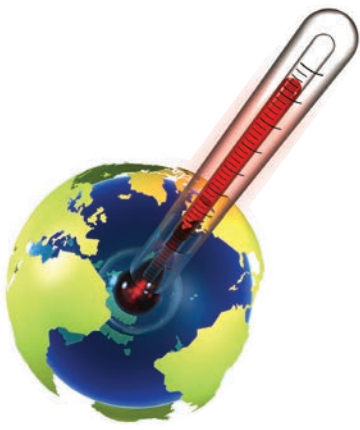


Newly licensed engineer Ka Ming Liu Yuan, P.Eng. (second from left), receives his certificate from East Toronto Chapter Chair Hugo Maureira, P.Eng. (left). To Yuan's right are PEO Councillor Roger Jones, P.Eng., OSPE President and Chair Karen Chan, P.Eng., Minister Glen Murray, and PEO Councillor Changiz Sadr, P.Eng., FEC.



Environment and Climate Change Minister Glen Murray urged new engineers to work for adaptation strategies July 29 at the PEO East Toronto Chapter licence presentation ceremony.

**"A LOT DEPENDS ON THE NEXT
10 YEARS AND IT RELIES HEAVILY
ON THE INTELLIGENCE AND
CREATIVITY OF YOUR PROFESSION."**
Glen Murray, minister of the environment and
climate change



A total of 25 new engineers received their licence certificates during the ceremony.

Others attending included East Toronto Chapter Chair Hugo Moreira, P.Eng., who hosted the evening's activity, East Central Region Councillor Changiz Sadr, P.Eng., FEC, and PEO Councillor-at-large Roger Jones, P.Eng.

PEO President Thomas Chong, P.Eng., FEC, had been scheduled to attend, but had to cancel due to a last-minute scheduling conflict.

Ontario Society of Professional Engineers President and Chair Karen Chan, P.Eng., brought greetings from the advocacy and members services organization and encouraged new licensees to consider the benefits of membership in both organizations.

The climate change minister also cited the engineering profession, particularly in Ontario, for being diverse and inclusive. "The engineering profession has done what everyone is talking about, which is actually integrating and creating upward mobility for all Canadians, regardless of their faith, ethnicity or place of origin," Murray said. He said a simple look at the names of the East Toronto licence recipients shows how engineering in Ontario is taking on an international character.

"The certificate you receive tonight is not just for engineering," Murray said, "but [it is] one for enlightenment to go and save the planet. So please make sure you accept the challenge to be more than just an engineer but to be a planetary warrior to save our planet. The challenges you have to face are bigger and more important than what any other generation has faced."

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APPLICATION DEADLINE: March 1, 2016

Application forms are available at engineerscanada.ca/scholarship-program or by contacting the Engineers Canada National Scholarship Program at awards@engineerscanada.ca

Building on ENGINEERING* knowledge



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Jacek stepping down as OLIP director

PEO's former manager of enforcement Marisa Sterling, P.Eng. (centre), and Government and Student Program Manager Jeannette Chau, P.Eng., presented a gift of appreciation to Henry Jacek, PhD, June 26 during a visit to PEO by interns with the Ontario Legislative Interns Program (OLIP). A professor of political science at McMaster University in Hamilton, Jacek has headed the program since 2004. He is scheduled to retire from the program August 29. OLIP was established in 1975 to provide university students with practical experience with the daily workings of the Ontario legislature. Through its government relations programs, PEO has hosted visits by legislative interns every year since 2005.

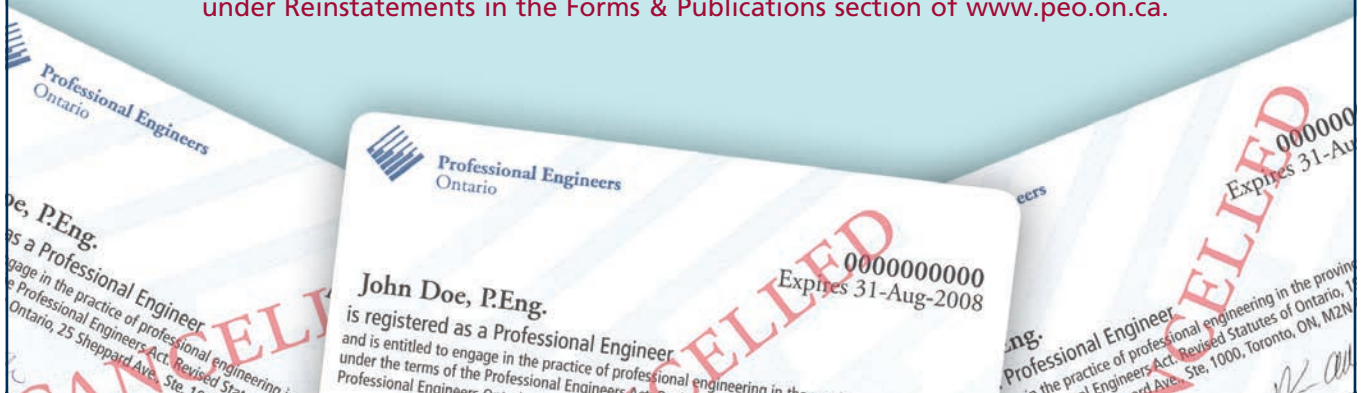


DID YOU KNOW?

Licence holders looking to reinstate their licences are subject to rules under Regulation 941.

If you have resigned your licence or it has been cancelled for nonpayment of fees, there is a graduated reinstatement system in place. Fees and obligations increase based on the length of time your licence has been cancelled.

For full details, see *Reinstatement Requirements—An Information Guide* under Reinstatements in the Forms & Publications section of www.peo.on.ca.



STAKEHOLDER ENGAGEMENT, IMPACT ANALYSIS AND ALTERNATIVE APPROACHES TO REGULATIONS

By Jordan Max



IN MY LAST ARTICLE of this series on evidence-based policy development, I discussed reasons and ways to identify, define and validate problems and the possible uses and misuses of evidence to support policy development, and suggested how PEO could adopt these approaches. This issue, I'll address the role of stakeholders, potential impacts, and alternative approaches to regulations to achieve a desired outcome—all new features of the Preliminary Regulatory Impact Assessment (PRIA) requirement for regulations.

STAKEHOLDERS

A stakeholder is an individual or group of people on whom a proposed change may have an impact. Stakeholder consultations are not new to PEO; however, they have tended to be carried out only at the tail end of the policy development process to fine-tune a proposal that has essentially been finalized. The government's new PRIA asks a proponent to identify all the possible stakeholders affected by a proposed regulatory change. PEO defines four PRIA stakeholders to be:

- individuals (practitioners, engineering clients and end users);
- businesses (engineering companies, clients, manufacturers, suppliers, distributors, associations, universities and learned societies);
- communities, including First Nations; and
- governments (municipal/regional/provincial/federal ministries/departments, provincial agencies/boards/com-

missions, and special purpose bodies/authorities, e.g. MetroLinx, Toronto Region Conservation Authority).

There are significant advantages to involving external stakeholders early in evidence-based policy development. First, these stakeholders are more directly connected to what's happening outside PEO headquarters. They can help us identify problems, emerging issues and research sources. Second, external stakeholders can provide different viewpoints (see the "elephant" example in *Engineering Dimensions*, May/June 2015, p. 34), and identify data and potential impacts and likely outcomes and behaviours. This suggests a wider role for a continuing dialogue about issues and concerns, not simply a one-off event or reactions to a particular PEO proposal. Third, if we view stakeholders as partners in finding solutions, they can help PEO validate and challenge our initial problem definition, outcomes, alternatives and solutions. Finally, external stakeholders can identify implementation issues that may decrease the likelihood of an initiative's success, so corrections can be made.

IMPACT ANALYSIS

PRIA is also concerned with potential impacts on external stakeholders—to pinpoint what, who and how they might be impacted and, more importantly, to suggest how negative impacts could be mitigated or avoided. Impacts are not merely financial; PRIA requires the identification of social, economic, health and safety, environmental and trade impacts. The cumulative quantitative impact a year must also be estimated and, if the cumulative dollar value exceeds \$2 million across the province, a more full regulatory impact assessment is required. For example, if a new practice standard were to require licence holders to add a new engineering service requirement billable at \$500, and 4000 clients would be affected, the \$2 million threshold would be reached. The implication is that PEO needs to have a better handle on the incremental cost of regulation and know who its regulation will have an impact on and how. Having strong, positive stakeholder relationships creates an improved likelihood of estimating potential impacts.

ALTERNATIVES TO REGULATIONS

As the old adage goes: "If your only tool is a hammer, every problem looks like a nail."

The last significant PRIA element PEO must consider is whether there are alternative approaches to regulations to achieve the desired outcome, or whether only a regulation will solve the problem. PRIA expects us to do a rigorous analysis and comparison of alternative approaches. In PEO's case, regulations are not the only tool in our toolkit.

Regulations are put in place to achieve a certain goal, such as mandating some activity to be performed or preventing it from happening. To know if we've been successful in achieving that goal, we need to impose some level of reporting by practitioners, activity monitoring by PEO, enforcement and evaluation of the

[REGULATION]

results. None of these are resource-free (i.e. cost-free). For businesses and practitioners, reporting to PEO takes away productive time. For PEO, it requires new or adapted IT systems (online or otherwise) and databases to enable data input and report generation, staff time and management. So, we should consider a regulation requirement only if we are prepared to devote the resources to monitor compliance and evaluate results.

There are also more virtuous reasons to consider alternative approaches. In *Alternatives to Regulation: Developing Smarter Policy Approaches*, published by the Ontario Ministry of Economic Development and Trade in January 2012, it's suggested that alternative approaches may help governments, regulators and businesses reduce their administrative burdens and business/user costs; encourage and support innovation; improve targeting, which will lead to improved compliance rates; and allow for greater flexibility and responsiveness, leading to a more effective policy instrument.

This more nuanced approach to regulation operates from the principle of using the least intervention necessary to achieve an outcome. Strong, positive external stakeholder relationships really pay off here; PEO would be better positioned to achieve compliance if it better understood the various actors, agents and resistors to proposed changes in a system. There is a spectrum of different approaches to achieve a desired outcome, which can generally be broken down into three categories.

1. Voluntary compliance

The approach encourages a target audience to comply voluntarily, often as a first step when embarking on a new area. Typical methods include the use of education, persuasion, recognition/awards, credits/points and guidelines. Some savvy regulators use behavioural nudges, such as sending automated reminders or notices that "x percentage of users have already complied." Another key success factor is explaining to the intended audience the reasons why compliance is desired, accompanied by examples and case studies to show how possible it is to comply. Social media can play a large part in getting the message out. Setting up website FAQs, hotlines and support are also important factors in achieving compliance.

Professional practice guidelines are PEO's primary examples of a voluntary approach for practitioner compliance, because they are advisory and do not have force of law. The Code of Ethics is another example of listing expectations, especially since a breach of the Code of Ethics, by itself, doesn't constitute professional misconduct. The Ontario Professional Engineers Awards, Order of Honour and Engineers Canada Fellowship (FEC) awards are other examples of encouraging engineering achievement, civic engagement and volunteering for the profession. Enforcement initiatives have recently included employer presentations aimed at encouraging use of PEO licence holders in industrial settings (i.e. voluntary compliance with the repeal of the industrial exception) and PEO's "Licence, Please" educational outreach DVD.

2. Market-based incentives: fee reductions (e.g. PEO Financial Credit Program), offsets and social impact bonds (SIBs)

Another non-traditional approach for governments and regulators is using market forces (and users' pocketbooks) to encourage compliance. To date, PEO has used the Financial Credit Program to waive licence application fees and first-year engineering internship program fees for qualified engineering graduates (within six months of convocation) and international engineering graduates (within six months of landing in Ontario) to encourage them to apply for licensure. We also removed the waiting period for qualified applicants to write the professional practice exam (PPE), potentially enabling them to get licensed sooner.

3. Mandatory compliance: standards, certificates, examinations, and act or regulation change

Traditionally, PEO has focused more on this category, in particular, regulation changes and professional practice standards, which are added to Regulation 260/08. All applicants must pass the PPE; some applicants must additionally pass confirmatory and technical examinations. The Certificate of Authorization is a prime example of a certificate. The last major round of act changes were brought in under the government's *Open for Business Act* in 2010. The most recent regulation changes were made to implement the limited licence/LET, temporary licence and Certificate of Authorization changes (see *Engineering Dimensions*, May/June 2015, p. 35).

To determine which approach will most likely achieve the desired policy outcome, we need to look more broadly at models and philosophies used in other places, or even other professions. We can benefit greatly from inter-jurisdictional comparisons, whether in Canada or around the world, to examine and consider other non-regulation approaches (particularly, the United Kingdom, Europe and Australia). We don't always have to reinvent the wheel.

In conclusion, the government's new PRIA requirement compels PEO to raise the bar and move toward evidence-based regulatory policy development. It presents us with the opportunities and challenges of more valuable stakeholder relationships, understanding and quantifying impacts of proposed changes, and a more robust consideration of alternative forms of reaching policy objectives. Taken as a package with better problem identification and validation at the front end, and augmented by better qualitative and quantitative evidence, the PRIA requirement can enable us to achieve more effective and efficient policy solutions going forward.

PRIA is the new normal. We can fight the new requirements to our detriment, or embrace their elements as a way of better regulating the practice of professional engineering and governing our licence holders in the public interest. Σ

Jordan Max is PEO's manager, policy.

SUMMARY OF DECISION AND REASONS

In the matter of a hearing under the *Professional Engineers Act*, R.S.O. 1990, c. P.28; and in the matter of a complaint regarding the conduct of A MEMBER and A HOLDER of the Association of Professional Engineers of Ontario.

This matter came before a panel of the Discipline Committee of the Association of Professional Engineers of Ontario (the association) for hearing from July 2014 to March 2015.

ALLEGATIONS

The allegations related to the engineering services provided by the member and the holder for engineering assessment and recommendations relating to the cracked foundation walls and floor slab of a residential property located in southern Ontario (the house). It was alleged that the investigations, analysis and conclusions were deficient and, thus, the member and the holder were guilty of professional misconduct as defined by sections 72(2)(a), (h) and (j) of Regulation 941.

PLEA AGREEMENT AND AGREED FACTS

At the outset of the hearing, the respondents denied the allegations. The parties jointly submitted a Statement of Agreed Facts, followed by viva voce evidence given by a number of witnesses called by the association.

Following completion of the case by the association, the respondents did not present their case. Instead, they entered into a plea agreement with the association. A joint submission from the parties included a Supplementary Statement of Agreed Facts and a submission as to penalty and costs.

EVIDENCE

The association called a total of six witnesses, including three expert witnesses.

The respondents did not call any witnesses.

DECISION AND REASONS

The panel carefully considered the parties' Statement of Agreed Facts and Supplementary Statement of Agreed Facts. As the parties were each represented by competent counsel and the agreements were negotiated by counsel on behalf of the parties, there was nothing to suggest that the parties' agreements should not be respected. The panel accepted the parties' agreed facts as the basis for the decision in this proceeding.

On the basis of the admissions made by the respondents, the panel found that the member is guilty of professional misconduct as defined in subsection 28(2)(b) of the act. In particular, the member:

- i. conducted deficient and insufficient investigations into the causes of the problems at the house, as detailed above, amounting to professional misconduct as defined by subsection 72(2)(a) of Regulation 941 under the act (the regulation);
- ii. carried out deficient and incorrect analyses and came to incorrect conclusions, as detailed above, amounting to professional misconduct as defined by subsection 72(2)(a) of the regulation; and
- iii. giving regard to all circumstances, would reasonably be regarded by the engineering profession as unprofessional, amounting to professional misconduct as defined by subsection 72(2)(j) of the regulation.

The panel also found that the holder was guilty of professional misconduct as defined in subsection 28(2)(b) of the act. In particular, the holder:

- i. conducted deficient and insufficient investigations into the causes of the problems at the house, as detailed above, amounting to professional misconduct as defined by subsection 72(2)(a) of the regulation, and
- ii. carried out deficient and incorrect analyses, and came to incorrect conclusions, as detailed above, amounting to professional misconduct as defined by subsection 72(2)(a) of the regulation.

PENALTY

The panel considered the parties' joint submission as to penalty and costs.

It is well established that a joint submission as to penalty shall be disregarded only in circumstances where the proposed sentence is contrary to the public interest and would bring the administration of justice into disrepute. This is a very high test to meet.

In this case, again, as stated above, the parties are each represented by very capable counsel, who negotiated the submission as to penalty. In light of the facts as agreed to, the panel finds that the joint submission as to penalty and costs is within the reasonable range and should not be disregarded. While the cost of \$25,000 is a significant number for a discipline hearing, it is reasonable considering the complexity and length of the hearing.

Therefore, as set out in the joint submission, the panel orders the following:

- i. Pursuant to section 28(4)(f) of the act, member and holder shall be reprimanded in writing, and the fact of the reprimand shall be recorded on the register for a period of six (6) months;
- ii. The finding and order of the Discipline Committee shall be published in summary form under section 28(4)(i) of the act without reference to names; and
- iii. Pursuant to section 28(4)(j) of the act, there shall be an order requiring the sum of \$25,000 in costs to be paid by member or holder within 60 days of the date of pronouncement of penalty by the Discipline Committee. This order for costs shall be a joint and several liability of both the member and holder.

Reprimand letters, signed by the chair, on behalf of the disciplinary panel were sent to the member and the holder on June 25, 2015.

The Decision and Reasons document was signed by Virendra Sahni, P.Eng., as chair on behalf of the other members of the discipline panel: Ishwar Bhatia, P.Eng., Rebecca Huang, LLB, R. Anthony Warner, P.Eng., and Robert Willson, P.Eng.

TORONTO BUILDING DESIGNER DANILO MARASIGAN, OPERATING AS DANMAR DESIGN, FINED \$10,000 FOR ILLEGAL USE OF A PROFESSIONAL ENGINEER'S SEAL

On Thursday, June 25, Justice of the Peace Costa of the Ontario Court of Justice, fined Danilo “Dan” Marasigan, operating under the business name Danmar Design, \$10,000 plus a 25 per cent victim’s surcharge. Marasigan pleaded guilty to three offences under the *Professional Engineers Act* for applying fake professional engineers’ seals to home renovation and new home construction drawings submitted to the City of Toronto’s building department. Danmar Design represents itself as an architectural drafting, design and building services company serving the general public. Its owner and sole designer, Marasigan, has never been licensed as a professional engineer and has never held a Certificate of Authorization to provide professional engineering services.

On Friday, March 6, Marasigan was prohibited, in an order by the Honourable Mr. Justice Whitaker of the Ontario Superior Court of Justice, from either possessing or using the seal of a professional engineer. PEO was awarded \$3,000 for its costs of applying to the court for the stop order.

Marasigan had been under investigation by PEO since 2011. An engineer first reported documents prepared by Marasigan, which bore an engineer’s seal but had not been sealed by that engineer. The engineer became aware of his copied seal when a homeowner for whom the documents were prepared contacted the engineer to ask about their East York home renovation project. During its investigation, PEO received further reports, this time from the City of Toronto and the Town of Richmond Hill, regarding questionable seals the building departments could not authenticate on documents associated with home construction projects by Danmar Design. In all, PEO discovered more than 75 questionable documents ostensibly sealed by four different engineers, one of whom was deceased at the time his seal was used. The seals appeared to have been copied from independent engineering firms Marasigan had hired for other projects.

STRATFORD RESIDENT DAVID KEY FINED \$10,000 FOR VIOLATION OF THE *PROFESSIONAL ENGINEERS ACT*

On April 28, 2015, in the Ontario Court of Justice in Stratford, David Key, a Stratford resident and owner of KTS Engineered Systems, was fined \$10,000 under the *Professional Engineers Act* for the illegal use of a term, title or description that will lead to the belief that he may engage in the practice of professional engineering.

Key has never been licensed by PEO. In the fall of 2010, investigations were commenced by both PEO and the Ontario Provincial Police after they received information that suggested Key had used the credentials of a professional engineer on documents submitted to building departments in southwestern Ontario. The projects involved were generally commercial in nature. PEO received the co-operation of 14 different affected building departments in the region during its investigation.

After fraud charges were laid, Key pleaded guilty before Justice of the Peace Abdul A. Chahbar for using a term, title or description that would lead to the belief that he may engage in the practice of professional engineering.

Please report any person or company you suspect is violating the act. Call the PEO enforcement hotline at 416-224-9528, ext. 1444 or 800-339-3716, ext. 1444. Or email your questions or concerns to enforcement@peo.on.ca.

PUBLICATIONS ORDER FORM

	\$	No.	Total
The Professional Engineers Act, R.S.O. 1990, Chapter P.28	N/C		
Ontario Regulation 941/90.....	N/C		
Ontario Regulation 260/08 (Practice Standards)	N/C		
By-law No. 1	N/C		
Practice Guidelines			
Acting as Contract Employees (2001).....	10.00		
Acting as Independent Contractors (2001).....	10.00		
Acting Under the Drainage Act (1988).....	10.00		
Acoustical Engineering Services in Land-Use Planning (1998).....	10.00		
Building Projects Using Manufacturer-Designed Systems & Components (1999).....	10.00		
Commissioning Work in Buildings (1992).....	10.00		
Communications Services (1993)	10.00		
Conducting a Practice Review (2014)	10.00		
Developing Software for Safety Critical Engineering Applications (2013).....	10.00		
Engineering Evaluation Reports for Drinking Water Systems (2014)	10.00		
Engineering Services to Municipalities (1986).....	10.00		
Environmental Site Assessment, Remediation & Management (1996)	10.00		
General Review of Construction as Required by Ontario Building Code (2009).....	10.00		
Geotechnical Engineering Services (1993)	10.00		
Guideline to Professional Engineering Practice (2012).....	10.00		
Human Rights in Professional Practice (2009)	10.00		
Land Development/Redevelopment Engineering Services (1994).....	10.00		
Mechanical & Electrical Engineering Services in Buildings (1997)	10.00		
Professional Engineer as an Expert Witness (2011).....	10.00		
Professional Engineer's Duty to Report (1991)	N/C		
Project Management Services (1991)	10.00		
Reports on Mineral Properties (2002)	10.00		
Reports for Pre-Start Health and Safety Reviews (2001)	10.00		
Reviewing Work Prepared by Another Professional Engineer (2011).....	10.00		
Roads, Bridges & Associated Facilities (1995).....	10.00		
Solid Waste Management (1993)	10.00		
Structural Engineering Services in Buildings (1995)	10.00		
Temporary Works (1993).....	10.00		
Transportation & Traffic Engineering (1994).....	10.00		
Use of the Professional Engineer's Seal (2008)	10.00		
Using Software-Based Engineering Tools (2011)	10.00		
Business Publications			
Agreement Between Prime Consultant & Sub-Consultant (1993) per package of 10.....	10.00		
Selection of Engineering Services (1998).....	10.00		
Use of Agreements Between Clients & Engineers (2000) (including sample agreement)	10.00		

Fax to: 416-224-8168 or 800-268-0496
Phone: 416-224-1100 or 800-339-3716
Mail to: Professional Engineers Ontario
 40 Sheppard Ave. W., Suite 101
 Toronto, ON M2N 6K9
 Attn: Margaret Saldanha

Name _____

Address _____

City _____

Province _____

Postal Code _____

Tel _____

Fax _____

Shipping and handling is included. Please allow 10 days for delivery.

Subtotal _____

13% HST _____

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Membership # _____

ENGINEERING CANDIDATES PLAY A BIG ROLE IN FEDERAL ELECTION

By Howard Brown



Former PEO president Diane Freeman, P.Eng., FEC, federal NDP candidate for Waterloo (second from left), hosted a reception for federal NDP leader Thomas Mulcair, MP (Outremont), in Waterloo July 24. Joining them were (from left) Helen Wojcinski, P.Eng., Ontario Society of Professional Engineers director, Catherine Mulcair and Nancy Hill, P.Eng., LLB, PEO Awards Committee chair.

MAYBE THIS TIME we will see a breakthrough.

The three major national political parties have nominated a total of 15 professional engineers as candidates for the October 19 federal election.

Prominent professional engineers running for the governing Progressive Conservatives in Ontario include incumbents Corneliu Chisu, P.Eng., FEC, MP (Pickering-Scarborough East), and Pierre Lemieux, P.Eng., MP (Glengarry-Prescott-Russell).

“Our world is moving at a rapid pace with evolving technology, and policy relationships need to be understood, technically,” Chisu, a former PEO vice president, told me in a July 24 email. “Engineers, by trade, uphold the highest ethical standards and have the capabilities to contribute and continue to help Canada excel.”

Chisu is a retired major of the Canadian Armed Forces (CAF) and served as PEO vice president from 2011 to 2012. He is currently a member of the Official Languages Committee, the Standing Committee on National Defence and the Executive Committee of the Canadian NATO Parliamentary Association.

Lemieux was in the CAF for 20 years and retired at the senior rank of lieutenant-colonel. In 2006, he was elected in the riding of Glengarry-Prescott-Russell. In the process, he ended a 43-year Liberal hold on the Glengarry-Prescott district and a 124-year Liberal hold on the Russell district. He currently serves as a member of the Standing Committee on Veterans Affairs.

Engineers running as NDP candidates in Ontario include Diane Freeman, P.Eng., FEC, and Adam DeVita, P.Eng., who are running in Waterloo and Richmond Hill, respectively.

“Female engineers offer the opportunity to bring gender diversity in addition to engineering experience, and leadership through consensus building and comradery. It is no doubt easier to sit on the sidelines and criticize, but if we want to effect meaningful change, then we need to become policy-makers,” said Freeman, a former PEO president (2010-2011) in a July 27 interview.

Freeman has been a Waterloo city councillor for nine years, serves as a director for the Association of Municipalities of Ontario and also serves on the Ontario section board for the Air & Waste Management Association.

DeVita holds a certificate in preventive engineering and social development from the University of Toronto in addition to his engineering degree. He has run as the NDP candidate for Richmond Hill in both 2011 and 2014. His father, Peter DeVita, P.Eng., FEC, is a former PEO president (2000-2001).

Engineers running as Liberal candidates in Ontario include Anne Tennier, P.Eng., for Hamilton Centre and Omar Alghabra, P.Eng., for Mississauga Centre.

“I’ve always worked in a male-dominated environment. There is a different way in how women and women engineers look at decision making— we often incorporate the social implications of an issue,” said Tennier in a 2013 GLP Journal column.

Tennier previously ran as the Liberal candidate for Hamilton Centre in 2011 and she has been actively involved with the United Way of Burlington and Greater Hamilton, the Hamilton Roundtable for Poverty Reduction and the Ontario Trillium Foundation.

Alghabra is a distinguished visiting fellow at Ryerson University’s faculty of engineering and architectural science. He has been involved with PEO in the past and moderated the Engineers Want In Conference on March 30. Alghabra served as the member of parliament for Mississauga-Erindale from 2006 to 2008.

These are only a few of the engineer candidates in Ontario. Other engineers running are Marilyn Gladu, P.Eng. (Conservative, Sarnia-Lambton), George Brown, P.Eng. (NDP, Ottawa South) and John Hansen, P.Eng. (NDP, Kanata-Carleton).

Although a number of engineers have been nominated to run as candidates for all three major parties, considering there are a total of 338 ridings, the number of engineer candidates appears strikingly low.

Given how important the issues of transportation, infrastructure and energy are this election, the technical understanding and critical thinking of an engineer should be seen as assets. It is therefore valuable to have more professional engineers elected to parliament. **Σ**

Howard Brown is president of Brown & Cohen Communications & Public Affairs Inc., and PEO’s government relations consultant.

ORDER IN THE COURT: BETTER ADJUDICATION A KEY TO BETTER REGULATION



Professional Engineers
Ontario

By devoting more resources to its tribunals processes, PEO aims to maintain confidence that self-regulation upholds both public and practitioner interests.

BY MICHAEL MASTROMATTEO



With the goal of enhancing the regulatory framework under which it operates, an initiative in PEO's 2015-2017 strategic plan commits the regulator to making use of accepted smart practices in its tribunal operations so that its adjudicative function is seen to be independent and fair.

In fact, however, PEO's tribunals office, which provides administrative support to the Discipline Committee, Complaints Review Councillor, Registration Committee and Fees Mediation Committee, has long been set on a path of administrative effectiveness and continuous improvement. Its efforts are aimed at ensuring PEO runs a tight legal ship in keeping with the continuing privilege of self-regulation.

In January 2006, the tribunals group assumed responsibility for the operation and administrative support of PEO's Discipline and Registration committees, which had been supported by staff in the regulatory compliance department. This move separated PEO's enforcement and prosecution operations from its adjudicative process, to bring greater transparency to tribunal matters and ensure tribunals' independence from enforcement and prosecution, so that those involved in investigating and prosecuting complaints against practitioners were also not involved in the process of deciding on their merit.

TECHNOLOGY AND OTHER ENHANCEMENTS

One of the more recent enhancements in tribunal operations is the use of the latest communications technology. In 2014, PEO began using Skype as a communications medium through which to conduct certain hearings and/or to receive testimony. At the time, it was believed to be the first use of Skype technology by any North American regulator.

By permitting international licence applicants, for example, to provide testimony from remote locations, Skype has become a tremendous boost to PEO's Registration Committee, whose mandate is to conduct hearings at the request of an applicant in respect to the registrar's proposal to refuse to grant a licence.

With the success of Skype for the Registration Committee, its use is now being considered for the Discipline Committee.

Earlier, PEO remodeled some of its 40 Sheppard Avenue West office space to serve as hearing and private collaboration facilities for adversarial parties to a case. It has even supplied netbook computers and tablets to panel members for use during hearings, allowing for faster and paper-free information updates.

INDEPENDENT LEGAL COUNSEL

PEO has also actively sought to provide development opportunities to the crucial volunteer resources on which its justice system depends.



Space at PEO's 40 Sheppard headquarters has been remodeled to create separate, private hearing and collaboration facilities for adversarial parties to a case.

With the retention of independent legal counsel (ILC), the tribunals office has brought additional forces to bear in ensuring procedural fairness in the conduct of discipline hearings.

PEO's use of ILC is intended to provide discipline panels a source of impartial advice and legal guidance in the conduct of discipline hearings.

David Jacobs, LLB, is one of three ILCs retained by PEO. The two other ILCs are Sean McFarling, LLB, and M. Jill Dougherty, LLB, a partner at WeirFoulds LLP.

A partner with Watson Jacobs McCreary LLP, Jacobs has legal expertise in labour relations, human rights, professional regulation and discipline, health, administrative, insolvency, constitutional and criminal law, as well as several other areas.

Through his extensive network of legal contacts, Jacobs has been instrumental in helping to organize a number of information sessions for Discipline and Registration committee volunteers.

In an August 19 interview with *Engineering Dimensions*, he said it's extremely important for volunteers with regulatory bodies' tribunals to keep abreast of the nuances of administrative law. "The stakes are very high for these tribunals," Jacobs said, "especially as adjudicative procedures are becoming increasingly complex and the courts, which oversee such tribunals, want evidence of transparency and procedural fairness, in order, among other things, to maintain public confidence in self-regulation."

Jacobs, who provides independent legal counsel to other regulators besides PEO, says it's important for such bodies to have well-trained adjudicators who can weigh evidence and understand procedural protocols. "Today's courts are carefully scrutinizing some of the decisions of disciplinary tribunals. They are anxious to see that trial proceedings are carried out with the utmost fairness."

PANEL COMPOSITION

PEO also recently took steps to ensure the composition of each discipline panel is as specified in the *Professional Engineers Act* (PEA).

As of 2012, the PEA mandates that PEO discipline panels must include at least one:

1. elected member of council;
2. professional engineer who is,
 - i. a councillor appointed by the lieutenant governor in council, or
 - ii. not a councillor, and approved by the attorney general (AG);
3. non-engineer who is,
 - i. a councillor appointed by the lieutenant governor in council, or
 - ii. not a councillor and approved by the AG; and
4. professional engineer with at least 10 years' experience in the practice of professional engineering.

Formerly, the non-engineer on the panel was required to be an appointed councillor. Since the maximum number of such councillors is five, this constraint often made it difficult to convene a panel with the required representation.

"Some time ago, we went to the Ontario attorney general and said the engineering act's requirements for the discipline panels were too restrictive," says Michael Wesa, P.Eng., FEC, chair of the Discipline Committee.

"Because we were required to compose the panel from members of council, lay appointees and member volunteers, we needed help in bringing in more legal expertise."

Despite PEO's long-standing use of the ILC to advise discipline panels on procedural matters, discipline panels still felt they lacked legal expertise in some of their deliberations.

To that end, the *Open for Business Act, 2010* made changes to the PEA to allow for a roster of people approved by the AG to sit on discipline panels as alternatives to non-engineer appointed councillors. This amendment to the act was proclaimed into effect in August 2012. Since then, members of a recruited roster of lawyers have taken part in a number of discipline panels and bring a higher level of legal understanding to hearing cases of professional misconduct and other matters brought to the committee.

"I can now have one of the LGA (lieutenant governor appointed) lay members or I can have one of these lawyers on the panel," Wesa says. "This has alleviated a lot of the heavy workload that Discipline Committee volunteers have been concerned about in the past."

DECISION-WRITING SUPPORT

Kathleen Robichaud, LLB, a Manotick, Ontario-based sole practitioner with expertise in corporate, real estate and estate law, is one of the lawyers appointed by the AG to assist with PEO discipline hearings.

Since her appointment in the spring of 2013, she has sat in on three panels and has helped prepare the official decision and reasons for each of those cases.

"I share my knowledge of the law and relevant experience with panel members where it is relevant to something that is happening and point out when I see an issue that I believe

we need the assistance of ILC to address," Robichaud told *Engineering Dimensions* August 11. "Primarily, I enjoy the experience of being on the panels. I believe it is helpful to me in my work as a lawyer and in the work I do as a volunteer organizing continuing education programs as well."

Robichaud says despite the engineering profession's requirement to be judged by one's peers, it is useful to import lay or outside legal expertise. "I believe that a lay opinion is helpful to most, if not all, self-regulating professions," she says. "It adds a perspective to the issues that can be hard to see when you are a member of the profession, and I believe it is important for self-regulating professions to know and have input from the public they serve. I believe the perspective of lay people in the adjudicative process is a way of allowing that input to be part of the discussion and of the evolution of any profession."

"I BELIEVE THAT A LAY OPINION IS HELPFUL TO MOST, IF NOT ALL, SELF-REGULATING PROFESSIONS. IT ADDS A PERSPECTIVE TO THE ISSUES THAT CAN BE HARD TO SEE WHEN YOU ARE A MEMBER OF THE PROFESSION."

Kathleen Robichaud, LLB

David Germain, JD, a Toronto-based practitioner with Thomson Rogers, is another of the AG-appointed Discipline Committee lawyers. Although he deals with professional engineers frequently in his municipal law practice, he says the PEO experience has broadened his perspective.

"My involvement with PEO's Discipline Committee allows me to see things from the other side of the table," Germain says. "In some ways, it helps me to become a better lawyer."

Besides the involvement of lawyers on discipline panels, all Discipline Committee members have had access to training to help them fulfill their roles. One key session in November 2013 was a presentation by Mr. Justice John Laskin, a 20-year veteran of Ontario's Court of Appeal, on how to write more effective and concise decisions and reasons.

Laskin, son of former Supreme Court of Canada chief justice Bora Laskin, was one of the most prestigious jurists ever to address a panel of PEO volunteers.

In another instance, Ontario Divisional Court judge Hon. Dennis Lane, QC, shared his insights on some of the fine points of adjudication. Lane focused on decision writing by administrative tribunals and how panels can extend procedural fairness to all hearing participants.



Lorne Sossin, PhD, LLM, dean of Osgoode Hall Law School, addressed Discipline Committee members June 26 about the use of expert evidence in discipline decisions.

Hon. Dennis Lane, QC, Ontario Divisional Court judge, spoke to Discipline Committee members (from left) Paul Ballantyne, P.Eng., James Amson, P.Eng., Michael Wesa, P.Eng., Ishwar Bhatia, P.Eng., and Ken Lopez, P.Eng.

Discipline Committee members also participated in a June 26 presentation by Lorne Sossin, PhD, LLM, dean of Osgoode Hall Law School, who discussed the weight of expert evidence in transparency in discipline panel decisions.

The operations of the Complaints Review Councillor and Registration and Fees Mediation committees have also benefited from similar specialized training and information.

MORE RESOURCES MADE AVAILABLE

Registration Committee member and lay LGA councillor Bill Kossta is one volunteer who is especially appreciative of the increased support to PEO's adjudicative committees.

"I am active with the Registration Committee and sit on selected panels very frequently," Kossta says. "The committee holds quarterly meetings and training sessions. We have had

judges, justices of the peace, adjudicators from other tribunals, lawyers and other practitioners lead our training sessions, as well as attending various seminars."

Other training highlights for Kossta have included training aimed at the role of an adjudicator, administrative law and how to apply it, writing decisions and reasons, conducting a hearing, taking notes during a hearing, and how to conduct yourself as a chair and a panel member during a hearing.

"Basically, it's an understanding that you have to be fair to all parties and how to properly apply the relevant regulations to each case," Kossta adds. "Holding training sessions gives us the knowledge about procedural and substantive law. It gives us the knowledge to conduct hearings and rule on motions before us. The knowledge also allows us to understand which law or section of the regulation is pertinent. Without this knowledge we couldn't conduct professional hearings. If we had not held all those seminars, our knowledge would have been very limited."

BETTER ADJUDICATORS

Kossta suggests that such training is a must for every volunteer who sits on the adjudicating committees: "To be a good adjudicator you must be properly trained and this training can only come by attending the appropriate training sessions."

Similarly, PEO Complaints Review Councillor Mary Long-Irwin also notes the increased resources allocated to her work at PEO. In her role, she reviews the handling of a complaint when a complainant is dissatisfied with the outcome, to ensure the process was administered correctly. Those involved in complaints review meet about four times each year to review about half a dozen cases. They comprise an LGA council member (Long-Irwin) and two others approved by the AG.

Former PEO registrar Kim Allen, P.Eng., FEC, now CEO of Engineers Canada, was at the helm of the Ontario engineering regulator when some of the enhancements to its adjudicative processes began to take hold. He believes it's natural for a self-regulating profession with licence granting (or denying) and disciplinary authority to pay heed to all its adjudicative and operational processes.

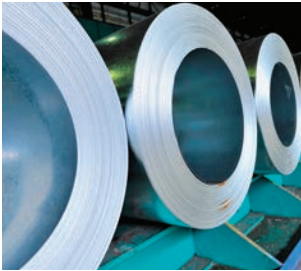
"Tribunal decisions can have significant impacts on the affected individuals and businesses," Allen says. "It is important that the affected people not only understand why a particular decision was made, but can also accept the decision as fairly made, even if they do not agree with the outcome. If decisions made by PEO's tribunals are perceived to be arbitrary or unfairly made, the people affected may feel the need to request the court or a tribunal review the decision or the decision-making process."

He expresses hope that PEO's enhanced adjudicative efforts come to be seen as a standard or example for regulators across the country to emulate. Σ

[DATEPAD]

SEPTEMBER 2015

SEPTEMBER 16-18
SAE 2015 North American Powertrain Conference, Chicago, IL
www.sae.org/events/naipc



SEPTEMBER 18
Steel Day, across Canada
www.steelday.ca

SEPTEMBER 20-23
Canadian Society of Safety Engineering 2015 Professional Development Conference, Ottawa, ON
www.csse.org/annual_conference

SEPTEMBER 21-23
ASME 2015 Conference on Smart Materials, Adaptive Structures & Intelligent Systems, Colorado Springs, CO
www.asmeconferences.org/smasis2015



SEPTEMBER 22-24
SAE 2015 Aerotech Congress & Exhibition,

Seattle, WA
www.sae.org/events/atc

SEPTEMBER 27-30
Transportation Association of Canada 2015 Conference & Exhibition, Charlottetown, PE
www.tac-atc.ca

OCTOBER 2015



OCTOBER 1
Green Building Festival, Toronto, ON
sbcana.org/conferences/green-building-festival-2015

OCTOBER 6-8
SAE 2015 Commercial Vehicle Engineering Congress, Rosemont, IL
www.sae.org/events/cve

OCTOBER 7-9
COMSOL Conference 2015, Boston, MA
www.comsol.com/conference2015/boston

OCTOBER 21-22
CHES Canadian Healthcare Construction Course, Toronto, ON
www.ches.org/conferences-and-events/canadian-healthcare-construction-course



OCTOBER 26-29
Society of Motion Picture & Television Engineers 2015 Annual Technical Conference & Exhibition, Hollywood, CA
www.smpete2015.org

OCTOBER 26-30
CISC Inspection of Steel Building Structures, Toronto, ON
www.cisc-icca

OCTOBER 27-30
International Association of Hydrogeologists Canadian Conference & short courses, Waterloo, ON
www.iah-cnc2015waterloo.ca/workshops.php



NOVEMBER 4-5
SAE 2015 Active Safety Systems Symposium, Plymouth, MI
www.sae.org/events/cass

NOVEMBER 8-11
ASME 2015 Internal Combustion Engine Division Fall Technical Conference, Houston, TX
www.asmeconferences.org/icef2015



NOVEMBER 13-19
ASME 2015 International Mechanical Engineering Congress & Expo, Houston, TX
www.asmeconferences.org/imece2015

NOVEMBER 18-19
Advanced Manufacturing Expo 2015, Montreal, QC
www.amexpo.ca



NOVEMBER 21
Ontario Professional Engineers Awards gala, Toronto, ON
www.ospe.on.ca

SELF-REGULATION IN CANADA: HOW DID IT COME ABOUT?

By Peter M. DeVita, MASc, MBA, P.Eng., FEC

SELF-REGULATION OF Canadian engineering has had several external influences. Various approaches were tried to organize engineers. A constant theme going back to at least the mid-1800s was the understanding that engineers were the backbone of economic growth. This was pretty clear to those who looked, considering the major technologies introduced in those times—the railroad, steam-powered industrial machines, steel, electricity, the airplane and communication devices and systems, including the trans-Atlantic cable project, which was driven by Canadian engineers.

Yet, in spite of these major advances, many engineers complained about poor remuneration and recognition. These days we speak of image and incomes. This dissatisfaction motivated many to organize. Unionism and developments in the United Kingdom and United States were always in the background—sometimes helping, sometimes hindering. Our Canadian mold is encapsulated by our political system, which shaped how our organizations evolved into provincial-based regulators.

Modern engineering itself grew with the Industrial Revolution. Of course we can look back to many feats of engineering around the world in ancient times—Roman roads and aqueducts, weapons of war, the pyramids of Egypt, temples of the Greeks, and many others. Engineering and architecture have been intertwined forever, it seems.

The early pioneers who learned to tame steam opened a new world of engineering that could bend the forces of nature to the will of humanity. Humankind and its machines dominated the Industrial Revolution. Some of those machines were dangerous and could explode, causing death and injury. Early advances related to safely handling this newfound power. There were no engineering schools

in the late 1700s or early 1800s. Indeed, the word “arts” was typically used to refer to works we now call engineering (RSSA).

THE EXTERNAL INFLUENCES

The key influences on Canada were the UK and the US. Indirectly, France also had influence via its polytechniques, as established by Napoleon when he disbanded the French universities in the late 1700s. Here are the influences, in brief.

United Kingdom

The British, notably via Scotland, the source of intellectual genius, handled the problem of know-how by creating the Institute of Civil Engineers (ICE) in 1818. This is the prototype institute for all that have followed. “Civil” meant civilian, in contrast to military engineers that Napoleon was creating in his polytechniques. Their primary concern was the documentation and dissemination of techniques for steam-based machines. They used technical meetings, papers, journals and conferences—all the things we know today to support a “learned body” organization. Members of the ICE were given the title “chartered engineer,” or CE. Over time, this title carried considerable prestige. These practical men (as they all were men in the early days) gave the UK its early prowess in industrial processes. By the mid-1800s, the US surpassed UK technology, as demonstrated in 1851 at the Great Exposition of London.

ICE was the model for the Canadian Society for Civil Engineering (CSCE), founded in 1887. The CSCE became the Engineering Institute of Canada (EIC) in 1918. It was the EIC’s committee in 1919 that led to the creation of the Model Law that was the foundation of Canada’s provincial engineering

licensing bodies created between 1920 and 1924. EIC still exists and continues in its role as a learned body.

As well as the ICE, the mechanics institutes began in the UK in the 1830s, followed immediately in Canada. These offered a library of books for self study, as well as lecture series for any who wished to do extra study and get into the trade/profession. The Toronto ME was the first home for the Canadian Institute (CI) founded by Sir Sandford Fleming in 1849, and provided the platform for Alan MacDougal to organize engineers in Canada. His efforts set the foundation for the creation of CSCE, the first engineers-only organization. The CI exists today as the Royal Canadian Institute housed at York University.

United States

The US took some different roads. The approach of the UK institutes was avoided in favour of the French polytechnique. Recall that the American Revolution was in 1774. Hence, US-French ties were very close. West Point was fashioned after the French model, focusing on formal education, including learning French to read the French technical documents.

Much of the US early infrastructure was designed by these graduates. In 1825, the Rensselaer Polytechnic Institute (RPI) opened to teach civilians how to do “civil engineering,” a term that is credited to RPI because of its four-year degree in the subject. Canada started engineering education in the 1860s, but it did not take hold until 1875. Even so, it was well before the UK would accept academics over practical experience as the road to becoming an engineer. One notable early Canadian engineer, Ernest Edmund Brydone-Jack, obtained his second engineering degree from RPI. The first was from the University of New Brunswick (UNB). Brydone-Jack taught at UNB and became its dean. He was briefly at Dalhousie before going on to the University of Manitoba to become its first dean of civil engineering. Brydone-Jack was on the EIC’s Model Law Committee and eventually moved to British Columbia to become one of the Association of Professional Engineers of British Columbia’s early presidents. This “Johnny Appleseed” of Canadian engineering clearly spread the US know-how across Canada.

The US is, of course, where we find strong free enterprise tendencies, so regulating anything was not top of mind. Instead, state organizations formed to promote the interests of engineers. It was the US advocacy bodies (similar to our Ontario Society of Professional Engineers) that lobbied for licensing engineers. They obtained the right to license engineers in about the same time period as Canada, except that the licensing boards were creatures of the state, appointed by the governor. A good example is the Ohio Society of Engineers, which was founded in 1878 by a group of engineers and surveyors to advance the interests of engineering and surveying in their state. High on the founders’ agenda was promoting public recognition of their work and providing opportunities for fellowship of their members in public and private practice. In June 1933, the society was one of the first state-wide engineering organizations to secure legislation providing for state registra-

THE CANADIAN INSTITUTE (CI) FOUNDED BY SIR SANDFORD FLEMING IN 1849 PROVIDED THE PLATFORM FOR ALAN MACDOUGAL TO ORGANIZE ENGINEERS IN CANADA.

THE MAIN FUNCTION OF LSUC WAS TO ENSURE THAT ALL PEOPLE WHO PRACTISED LAW IN ONTARIO WERE COMPETENT, FOLLOWED PROPER PROCEDURES AND BEHAVED ETHICALLY.

tion and a registration board to administer licensing examinations to qualified engineers seeking to work in Ohio (Ohio Society).

THE CANADIAN EVOLUTION TO SELF-REGULATION

In Canada, we have a self-licensing history that begins in 1797 with the Law Society of Upper Canada (LSUC). Soon after Canada's first act of constitution in 1791-1792, the lawyers of Upper Canada (Ontario today) decided that the law they practised in the frontiers was different from that used by an industrialized nation like the UK. The fur trade and rural needs were not the same as those back in England. Therefore, they petitioned the government to create the LSUC to register Canadian lawyers, who would also be given special education in Canada.

The history section of the LSUC's website states: "The reasons for the creation of the Law Society, as set out in the statute of 1797, were to provide the province with a 'learned and honourable body, to assist their fellow subjects as occasion may require, and to support and maintain the constitution of the said Province.'"

In concrete terms, the main function of LSUC was to ensure that all people who practised law in Ontario were competent, followed proper procedures and behaved ethically. Its mandate has been broadened since May 1, 2007, to regulate all providers of legal services, including independent paralegals.

The law society and legal education

Until 1957, the law society controlled entry to the Ontario legal profession through its exclusive jurisdiction over legal education. Osgoode Hall Law School, the second oldest common law school in Canada, was established by the LSUC in 1889. The school was at the centre of debates over the principles of modern legal education in the 1950s. Osgoode Hall Law School moved to York University in 1968, but the law society remains the licensing body for both lawyers and paralegals in Ontario (www.lsuc.on.ca/with.aspx?id=427).

LSUC-self-regulation begins

The consequence of the LSUC's creation was the beginning of self-regulation. In 1869, the medical profession was granted this same ability to self-license. They had originally requested this around the same time as the lawyers, but the request was not granted when UK doctors objected. However, after 1867, Canada was an independent nation, so UK doctors could no longer object.

As we approach the end of the 1800s, the idea of self-regulation is well established in Canada and Ontario. Engineers in those days felt they were the backbone of the new country, helping it to become economically self-reliant. In fact, Canada was far more self-sufficient than it is now. The drive was always to "make it here" in Canada, rather than

rely on imports. The CI, with MacDougal as its secretary and the actual driver of the organization, corresponded with over 400 countries on developments in science and technology. Weekly meetings were held to disseminate information, putting Canadian engineers and those interested in science and technology at the forefront of world developments. The CI annual general meetings were initially held at Queen's Park. Many prominent politicians were members, including Oliver Mowat, one of the fathers of confederation. This meant engineering was closely integrated with the movers of society. Politicians understood the value of engineering in developing the economy, and additional lobbying requirements were minimal.

SUMMARY

We have traced the development of the Canadian engineering profession and licensure from its beginnings, examining and comparing influences and developments in the UK and the US.

Within Canada, we have traced the impact of self-regulation in other professions, notably the

LSUC, the first self-interest licensing body. It was not until the McRuer reports of 1968-1971 that a documented body of law was set down on how licensing bodies were to behave. That body of law mandates that they exist in the interest of the public and *not* in the interests of a specific profession. Since they are extensions of government exercising delegated authority, the self-regulating bodies are expected to be open and transparent in all they do, so the public can be assured they are indeed acting to serve and protect the public interest. Σ

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MUCH OF THE HISTORIC MATERIAL IN THIS ARTICLE IS DRAWN FROM A SEARCH FOR ADVOCACY—CREATING THE CANADIAN ENGINEERING PROFESSION, BY P.M. DEVITA, TORONTO: G7 BOOKS, 2011. (ISBN: 978-1-027389-00-3)

Peter M. DeVita, MASc, MBA, P.Eng., FEC, is a former PEO president and president of DeVita Associates.



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HONESTY, INTEGRITY AND ENGINEERING REPORTS

By José Vera, P.Eng., MEPP



THE PURPOSE OF THIS professional practice article is to provide all licence holders with clear direction on preparing engineering reports in light of recommendation 1.23 in the report of the Elliot Lake Commission of Inquiry and to emphasize the importance of acting with honesty and integrity within engineering organizations.

DUTY OF HONESTY IN CONTRACTUAL PERFORMANCE

Recently, a Supreme Court of Canada judgment, *Bhasin v. Hrynew* (<https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/14438/index.do>), established a duty of honesty in contractual performance: “Under this new general duty of honesty in contractual performance, parties must not lie or otherwise knowingly mislead each other about matters directly linked to the performance of the contract.” Engineering companies commonly engage in contractual relations in the form of contracts for professional services, such

as retainers. Consequently, engineers should be knowledgeable of this duty of honesty in contractual performance.

PROVIDING FALSE INFORMATION TO REGULATORY BODIES

Beyond contract law, engineering companies retained to provide services to their clients often need to provide engineering documents to regulatory authorities on behalf of their clients. These engineering documents, such as drawings and reports, are required by regulatory bodies to perform compliance reviews. What’s more, several laws, including the *Building Code, Environmental Protection, Fire Protection and Prevention, Mining, Nutrient Management, Occupational Health and Safety, Ontario Water Resources, Safe Water Drinking* and *Waste Diversion* acts contain provisions making it an offence to provide false information to these regulatory bodies. These laws apply to a wide range of engineering disciplines and cover an unlimited number of engineering documents. Consequently, the legal requirement to not provide false statements to regulators is of great relevance to engineers.

COMPLAINTS RELATING TO ACTS OF DISHONESTY

Further, acts of dishonesty related to the practice of engineering that can be proven in court, such as providing false information to a regulator, can result in a complaint against a practitioner. For example, when an engineering report was found to be misleading by the courts in *R v. Ronald Carter and Quinte-Eco Consultants Inc.*, these facts supported the allegation of disgraceful, dishonourable and unprofessional conduct in the subsequent PEO discipline hearing (*Engineering Dimensions*, November/December 2009, p. 33, www.peo.on.ca/index.php/ci_id/21935/la_id/1.htm). In that hearing’s decisions and reasons, the discipline panel stated: “The profession needs to know that acts of dishonesty on serious matters will not be tolerated and revocation is necessary to maintain public confidence in self-regulation by the profession.”

HONESTY AND INTEGRITY AS CORE VALUES

To recap so far, engineers should be aware of three key principles when preparing reports:

- There is a duty of honesty in contractual performance;
- Several laws make it an offence to provide false information to regulatory bodies and, further, these laws apply to engineering documents, such as reports; and
- A practitioner who is convicted of the above offence may be found guilty of professional misconduct if the offence is relevant to suitability to practise.

From these principles it follows that acting with honesty and integrity helps engineers and their organizations avoid problems of a contractual, legal and disciplinary nature. Engineers are advised to promote honesty and integrity as core values within their organizations.

REPORT OF ELLIOT LAKE COMMISSION OF INQUIRY

The report of the Elliot Lake Inquiry (Volume 1, chapter 14 recommendations, www.attorneygeneral.jus.gov.on.ca/inquiries/elliottlake/report/Vol1_E/ELL_Vol1_Ch14_E.pdf) released on October 15, 2014, included the following recommendation pertaining to engineering reports:

“Recommendation 1.23

The Professional Engineers of Ontario should issue a clear direction to its members that the contents of an engineering report, or draft report, including a Structural Adequacy Report, should not be altered simply because the client requests that it be changed. Rather, any alteration of an engineering report, or draft report, should be based on sound engineering principles or changed facts.”

PEO’s Professional Standards Committee (PSC) was tasked by council with reviewing this recommendation. The PSC agreed with the recommendation and approved issuing a clear directive to all licence holders on the preparation of reports by means of this article. In addition, the PSC noted that honesty and integrity are values that should apply not only to reports but also to all engineering services. Duly reminding engineers of the importance of acting with honesty and integrity when performing their services, and the consequences of not doing so, addresses this recommendation.

BEST PRACTICES IN PREPARING REPORTS

The PEO guidelines *Professional Engineering Practice* and *The Professional Engineer Acting as an Expert Witness* contain best practices for engineers preparing reports. Here is a summary of some of these best practices as they relate to communications with clients:

1. It is important to ensure that a client is not misled by an overly favourable report or by a practitioner’s failure to give proper emphasis to adverse considerations;
2. For some projects, a client may request that a practitioner provide preliminary reports at various stages. These preliminary reports serve only one purpose: to inform a client about the progress of an investigation. As the investigation is not yet complete, no conclusions of any kind should be included in the report;

**HONESTY AND
INTEGRITY ARE VALUES
THAT SHOULD APPLY
NOT ONLY TO REPORTS
BUT ALSO TO ALL
ENGINEERING SERVICES.**

3. Before preparing a final report, a practitioner may discuss the facts and conclusions with a client to obtain appropriate guidance about what should be included;
4. A professional engineer must accept final responsibility for a report, and thus must not permit the client to exert undue influence on its final form; and
5. Expressly, professional engineers must not agree to alter their reports so as to distort their opinions to advocate for a client. Σ

José Vera, P.Eng., MEPP, is PEO’s manager, standards and practice, and the staff advisor to the Professional Standards Committee.



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INTEGRATED SUSTAINABILITY STRATEGIES FOR THE GREAT LAKES REGION

By Samiha Tahseen and Bryan Karney, PhD, P.Eng.



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MANY OF TODAY'S pressing challenges are complex. These problems often go beyond the capacity of a single organization, sector or nation to understand and respond to, and require collaboration across both internal and external boundaries to engage all stakeholders. The resolution of such critical issues often involves significant technical, as well as economic, legal and

political, components. As technical approaches are frequently intertwined with distinct political concerns, application of relevant scientific and technological factors is necessary for the most effective policy. Recognizing this, effective policy-making these days combines engineering study with policy analysis to address problems where technical details are critical to decision making. One such example is presented here through a case study of the Niagara River.

The Niagara River, an integral part of the Great Lakes Basin, hosts world-renowned and breathtaking waterfalls. The word Niagara, which has an aboriginal root, first appears in the form of Onguiaahra, presumed to refer to the “neck” connecting the two lakes. The river is about 58 kms long, extending between Lake Erie and Lake Ontario, and carries, on average, about 5660 m³/s of water between the lakes.

Each year, Niagara Falls attracts 12 to 14 million tourists, generating 57 per cent annual occupancy for the Niagara accommodation market. Tourism revenue from Niagara has a significant impact on the regional, as well as national, economy, as it is responsible for 11 per cent of hotel room night occupancy in Ontario, according to the 2009 Ontario Tourism Investment Attraction Research Study (www.mtc.gov.on.ca/en/publications/publications.shtml).

Apart from being a tourism resource, the elevation difference provides the much-required head for hydropower installation on both sides of the Canada-US border. At present, the Niagara River provides the driving force for almost 5500 MW of renewable power shared by both jurisdictions. Moreover, the river has long held its strategic importance as an international waterway, not only contributing to the growth of the region but also serving recreational purposes. Balancing the competing demands of Niagara for recreational, commercial and industrial uses has proven to be a challenge.

Looking at the falls, it's hard to imagine the human ingenuity just below the surface. The remedial works of 1941 are considered to be a milestone protecting the falls from erosion while making hydropower



from Niagara a reality. At present, its generation capacity is subject to bilateral regulations in the form of the 1950 Niagara River Water Diversion Treaty. The treaty identifies the “unbroken crest-line” as the most significant feature of the falls and establishes diversion limits aimed at securing it. These limits, commonly known as scenic flow restrictions, establish that during the period from April 1 to September 15, no less than 100,000 cfs (2832 m³/s) of water must go over the falls between 8:00 a.m. and 10:00 p.m. The same flow restrictions are in effect between 8:00 a.m. and 8:00 p.m. from September 16 to October 31. At all other times, a minimum of 50,000 cfs (1416 m³/s) of water must go over the falls unless additional water is necessary (1950 Niagara treaty, www.treaty-accord.gc.ca/text-texte.aspx?id=100418). The present-day flow control strictly adheres to this stipulation, which limits the flow diverted for hydropower.

But there are issues that pose impending threats to the Niagara resource system. One such concern is the growing number of over-misting events at the falls, which is believed to be influenced by an increased air-water temperature difference (Case). The Niagara Parks Commission has reported an increase in these events—68 in 2003 compared to 29 in 1996 (Binns). With the 4.4 C projected temperature increase for Ontario by 2040-2049 (SENES Consultants Ltd.), these excessive misting events may escalate and thus have a negative impact on Niagara's tourism industry by discouraging tourists from a future visit. However, it's difficult for such a prerogative to be backed by sound statistics, due to a lack of a consistent data set that would make such analysis possible. Another crucial issue is the gradual retreat of the Niagara escarpment. Although the rate has been greatly reduced by flow control and remedial works, erosion continues at a rate of 0.3 m each year.

Despite having enormous prospects, the hydropower potential of the Great Lakes region is still partly untapped, primarily due to a policy constraint of the Niagara water diversion treaty. However, the current flow restrictions may not be the absolute minimum to achieve the scenic spectacle of Niagara. The crestline remains unbroken even at the current lowest flow rate of 50,000 cfs (1416 m³/s) (Friesen and Day). An additional 50,000 cfs of water flowing over the falls during the tourist season represents 1.6 million MWh of hydropower capacity for Ontario, which translates into \$52 million annually, considering Ontario's recent average electricity price (Sedoff et. al).

Again, the merits of additional diversion extend far beyond price. Hydropower, particularly with pumped storage, can be an effective means of permitting demand variability. This special attribute of hydropower, along with its trivial emission and negligible fuel dependency, makes it indispensable to Ontario's commitment to reduce CO₂ emissions. As the province is expecting significant proliferation and deployment of such intermittent renewables as wind and solar, the increased hydropower capacity at Niagara could prove to be a valuable backup. In addition, a reduction of flow over the falls is likely to improve the excessive misting conditions at Niagara, since flow rate is positively correlated with plume height (Case). Additional flow diversion, apart from extending the hydropower potential at Niagara, can also slow down further erosion at the falls. Furthermore, the third Niagara tunnel, inaugurated in 2013 at a cost of \$1.6 billion, increases Ontario's intake capacity by 25 per cent. However, the scenic flow provisions of the 1950 treaty would restrict this new tunnel from being utilized to its potential.

In 2000, the treaty, which acts as a major policy constraint, expired and is being extended year by year. The expiration of the treaty opens the door for renegotiation, which may permit additional hydropower generation along with a reduction in both the erosion rate and occurrence of heavy misting, without compromising the beauty of the falls. Any treaty revision should focus on the fact that the agreement, when signed in 1950, represents an era not struggling with carbon emission and the urgency of generating clean, sustainable energy.

Moreover, the Chicago Area Waterway System has been identified as a potential threat by the Great Lakes Fishery Commission for protecting the Great Lake ecosystem from Asian carp, an invasive species. The possible discontinuation of the Chicago diversion, currently being disputed in the US courts, has the potential to enhance available flow through the Niagara River and thus increase the potential for greater diversion for hydropower generation.

Hydroelectric power has long fueled the economic growth in Ontario. Generating nearly 8 per cent of Ontario's electricity, the Sir Adam Beck (SAB) complex, located on the Niagara River, hosts the only pumped storage station in Ontario. Even with limited storage capacity, this pumped storage station, known as SAB PGS, plays a valuable role in balancing the grid by providing much-needed ancillary services. The strategic placement of the reservoir also limits the hydraulic constraints on SAB I and SAB II, the two conventional, run-of-the-river hydro plants, and helps to use the full capacity. Additional

flow diversion has the potential to redefine the role of the SAB PGS, which runs below its capacity for more than 70 per cent of the year. The key question is, of course, to assess the risks and possible rewards of a renewed negotiation. It requires the adoption of an integrated management approach to formulate policies that involve all three dimensions of sustainability—social, environmental and economic. The solution will draw experience from the field of engineering and business, as well as social science.

This article does not attempt to influence any decisions, but rather attempts to integrate the disparate and currently unconnected aspects of energy, tourism and policy, and to draw attention to the need for further research to promote sustainable development of the incredible resource system present at Niagara. Σ

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Bryan Karney, PhD, P.Eng., is a University of Toronto professor in the department of civil engineering; associate dean, cross-disciplinary programs; and chair, division of environmental engineering and energy systems.

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Lawrence F. Clelland, P. Eng.
Regional Manager, Ontario,
Mining Environmental Group
Principal

Lawrence Clelland joined KCB in 2002. He has more than thirty years of international experience in the study, design and construction supervision of major civil engineering projects related to tailings disposal and power generation projects. Under Lawrence's leadership, the Ontario region has delivered outstanding financial results over the past 5 years. Moreover, he has stewarded KCB's new offices in Toronto and London, and personally led our work at the Tasiast Mine in Mauritania, which is the largest overseas project taken on by the Ontario Region.



Lindsay Robertson, M.Sc., P. Geo.
Ontario Manager, Environmental,
Mining Environmental Group
Associate

Lindsay Robertson manages projects related to reclamation and closure planning, environmental impact assessments, soil cover design and has completed numerous projects and studies on mine impacts, remedial strategies and permitting. Since joining KCB in 2007, Lindsay has taken on leadership roles for a number of internal company projects including the Mining Environmental Group business development initiative.



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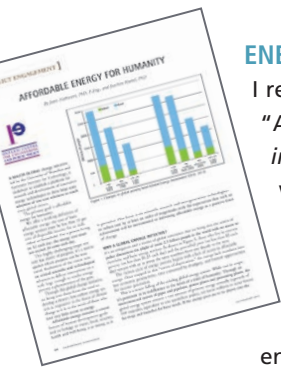
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[LETTERS]

P.ENG. SPECIALISTS

I read with interest the president's message (*Engineering Dimensions*, July/August 2015, p. 3), but am perplexed by the need for piling up more regulations and restrictions that are probably unenforceable, except after the fact. Surely our code of conduct covers the proper carrying out of an engineer's responsibility to protect the public. In fact, it was reported that the facility had been inspected, so the failure is in the selection of incompetent (or cheap) inspectors and ignoring their responsibility for maintenance on the part of the owners. How will new rules and "certificates of specialist" help, when the specialist may not be hired? How will PEO administer these specialists? Who will judge who is or is not a specialist? The specialist is supposed to be the P.Eng. who practises in the relevant field. That is the idea of the P.Eng., is it not? I have seen specialists who were not. Everyone has.

Simon Weisman, P.Eng., Toronto, ON



ENERGY vs. POWER

I read with interest and anticipation the article "Affordable energy for humanity" (*Engineering Dimensions*, July/August 2015, p. 44). I was disturbed to see that they really meant "affordable electricity or power for humanity." The difference is important and as engineers we must strive to make sure that the public understands the difference. Energy comes in many different forms as

sunlight, fossil fuels, wood, nuclear, etc. Some is used for thermal (heating) needs, and some is converted to power, either mechanical (car engines) or electricity. But it is important to recognize that as we move from energy to power, there are conversion losses. Our power plants typically operate at efficiencies of 25 to 33 per cent and throw away 50 to 75 per cent that could be used for thermal purposes. Rejected heat from Pickering nuclear plants could displace almost all of the space heating energy for the city of Toronto. Throwing away heat from thermal electric plants is against policy or even illegal in northern European countries.

So my point is not to criticize the many important points about affordable energy in this article, but to emphasize the importance of integrated thinking in devising affordable and efficient energy solutions. If we keep saying energy when we mean electricity, we are distorting public debate and diluting an accurate focus on energy issues. As a consequence, I once wrote a clear letter to the minister of energy of Ontario on energy opportunities for Ontario and I received a letter on electricity policy and actions, totally missing the point—and the opportunities.

Michael Wiggan, P.Eng., Ottawa, ON

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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 jcoombes@peo.on.ca.

CORRECTION

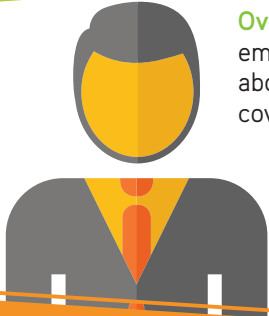
In our May/June 2015 issue (p. 16), we failed to mention that PEO President Thomas Chong, P.Eng., FEC, both attended the Ontario Society of Professional Engineers AGM on May 5, and addressed the assembly.

what's ailing the self-employed?

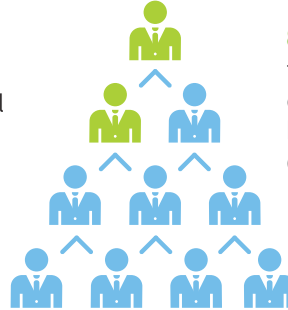
How health and disability insurance can help

The Self-Employment Challenge

Being your own boss has its perks. But without an employer's group benefits, self-employment also means fending for yourself in case of illness or disability.



Over two-thirds of surveyed self-employed individuals are concerned about their lack of access to medical coverage and insurance.¹



8 in 10 Canadians are concerned about the government's ability to fund health care, the cost of longterm care, and having enough money if they become disabled or seriously ill.²

The Role of Insurance

Supplementary health and disability income insurance plans help protect against financial loss due to illnesses or accidents.

Why health insurance?

Canadian families are spending an **increasing share of their household income** on health care.³

Households in the 3 top income quintiles had an average:⁴

- **39% increase** in dental spending
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Why disability insurance?

• **1 in 3** people will be disabled for 90 days or more at least once before they reach age 65.⁵

• **49%** of bankruptcies and mortgage foreclosures are due to disability.⁶

• **A disability of over 90 days** is likely to last three years or more for a 35-year-old man or woman, and four years or more for a 45-year-old man or woman.⁷

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