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Ontario

ENGINEERING DIMENSIONS

MAY/JUNE 2014

CONTINUING PROFESSIONAL DEVELOPMENT COMING INTO FOCUS?

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IN SEARCH OF ANSWERS

J. David Adams
P.Eng., FEC
President

A FEW WEEKS AGO, I was invited to the Georgian Bay Chapter's annual general meeting to discuss the issues facing our profession in the year ahead.

It was a "come-let-us-reason-together-type" session with little or no discord or dissension evident during the discussion period, when many meaningful questions were raised by the members as we sought answers to determine the best way forward on at least five main issues.

The engineers present represented several industries, including a large contingent of nuclear engineers from Bruce Power, who, I must say, know what regulation is all about.

In my opening remarks, I indicated that I intended to follow a "servant style" of leadership in my upcoming term, a style, embraced by most engineers in practice, for the role of the servant is not uncommon in our profession as we seek to exceed customer expectations in our day-to-day work. I record, for your interest, the following five main expectations from our association, sought by these members on current issues.

1. The requirement for enhanced legislation, through changes in our *Professional Engineers Act* and the Ontario Building Code, to more clearly define both the responsibility and authority of an individual P.Eng. and that of our association itself, in the protection of the public. This requirement was clearly enunciated during discussion of the Elliot Lake mall roof collapse where two were killed;
2. The transfer, or otherwise, of current PEO advocacy work to the Ontario Society of Professional Engineers (OSPE), including portions of the PEO Government Liaison Program;
3. Planned assistance by our association, in maintaining competency records, recorded in member "practice profiles";
4. The requirement for a greater number and more up-to-date practice standards and guidelines; and
5. The need to maintain a vibrant and relevant profession, based upon a P.Eng. with up-to-date technical content, augmented by emerging disciplines.

I will now report recommended actions on these five topics.

1. It was strongly expressed at this meeting that PEO should lobby the government to strengthen the individual engineer's authority and responsibility under the act and building codes, adopting, among other issues, standards and regulations for structural engineering practice and independent construction review by a P.Eng.

The role and responsibility of PEO as the regulatory association was also queried in the discussion, as our duties and status are far from clear in the minds of the participants. Specifically, with respect to the Elliot Lake mall roof collapse, it was asked why we had not adopted the PEO council-approved motion recommending act and regulation changes similar to those enacted in British Columbia, after their mall collapse. Our PEO council motion accepted the BC "engineer of record" solution for structural design and construction review, which is still in use by them to this day.

Our PEO council deliberations on the subject took place roughly nine months before the actual Elliot Lake mall roof collapse, and were conveyed to the Bélanger Commission of Inquiry for their consideration. Commission findings are to be published in October 2014.

2. Transfer, or otherwise, of current PEO advocacy programs to OSPE.

With respect to advocacy, we discussed the fact that the Ontario government had decreed that PEO was to divest itself of member advocacy over 10 years ago. This we tried to accomplish with the transfer of substantial start-up financing and personnel to OSPE. It had been thought their organization would grow well beyond the present 10,000-member range, and would be in a position to advocate for PEO's whole P.Eng. membership.

Because this did not happen, PEO continued to provide limited support advocacy, in some areas with our own staff, sometimes duplicating OSPE efforts. The annual cost to PEO of advocacy programs in 2013 was $830,000, with $976,000 budgeted for 2014. In addition to the joint PEO/OSPE awards gala, present PEO advocacy activities range from public policy debates, to education outreach, the Engineer-in-Residence program, National Engineering Month and the general MPP relationship portion of PEO's Government Liaison Program, which is increasingly participated in by PEO chapters.

It is recommended that, after providing some advocacy for over 10 years, PEO should determine

whether we follow the government's intention of PEO divestiture, or we put in place a funding formula, which would enable transfer of the administration of these lingering advocacy activities to OSPE.

3. Planned assistance by our association in maintaining member competency through established practice profile updates.

There was general belief among the participants that it is an individual engineer's responsibility to maintain his or her competency. Further, it was thought each member should design their own training program in conjunction with the needs of their employer, by delineating the continuing education they require to adequately protect the public from engineering failures in their own practice.

Much additional new learning will be common to many engineers of the same discipline, which will assist in qualification recording. When records are established, PEO will be able to verify individual study programs for each practitioner. This will accomplish the objective of allowing selective public inquiry of any member's qualifications.

It was thought by those in attendance at our chapter annual general meeting that the requisite learning should be at a member's own expense, based on the needs arising from their individual practices, plus any individual studies any engineer may want to undertake to improve themselves and their prospects.

Once defined, each practice profile, plus planned study programs, would be recorded by PEO and updated annually at the time of fee payment. If requested, PEO could assist with a member's development by identifying, through OSPE, books, lectures, courses, seminars, webinars, etc., to assist in their continuing education. It was thought that PEO money spent in promoting and recording such endeavours would be a sound investment and good use of members' fees.

THERE WAS ALSO THE NEGATIVE CONNOTATION THAT IF WE DO NOT INSTALL A CONTINUING COMPETENCY PROGRAM SOON, IT IS QUITE POSSIBLE PUBLIC OPINION AND THE GOVERNMENT WILL DEMAND IT OF US, AS HAS BEEN THE CASE WITH OTHER PROFESSIONS.

There was also the negative connotation that if we do not install a continuing competency program soon, it is quite possible public opinion and the government will demand it of us, as has been the case with other professions.

In the opinion of those present, moving on such a voluntary approach to achieving individual continuing competence would be a very positive route to member buy-in and to PEO's ability to assure government we are individually continuing to update our proficiency to protect the public. While other routes to continuing education used by our sister associations include a wide range of technical and business subjects, often sought after by employers, it is believed such subjects should be studied by our members on their own time and dollar, with the proviso that the additional learning be recorded in their competency profile kept by PEO.

In their thinking, the recording of continuing competency and education programs would apply only to registered practising engineers, including engineers in management and teaching. This process will no doubt leave in its wake a "right to title" group of engineers, who we should encourage to remain members, largely because, from PEO's perspective, they often offer useful advice in the direction of our profession and association. Should any of the right to title group decide to enter practice at a later date, particularly if work becomes available, or they move to another province, they would inform PEO accordingly. And if they were just beginning engineering, they might refresh themselves in the EIT [engineering intern] program if necessary, and be registered in our continuing competency program with their own personally formulated practice profile.

The other issues listed as numbers 4 and 5, concerning the adequacy of practice standards and guidelines and maintaining a vibrant engineering profession in Canada, are self-evident and will require renewed effort from our committees and the work of our PEO representatives on the Canadian Engineering Accreditation Board of Engineers Canada.

While these forward-thinking ideas were offered by dedicated members, none have been sufficiently researched or officially proposed. Many other issues and their recommended solutions will be discovered as we visit groups of engineers across the province. As we grow more knowledgeable about their requirements for an improved association, we can only imagine a better association in the future.

Thank you for your continued support. Let us serve and grow stronger together as a profession, and as an association. Please email me your thoughts on this progress report, to date, and suggest other steps we might take to improve our association in serving the public. Σ

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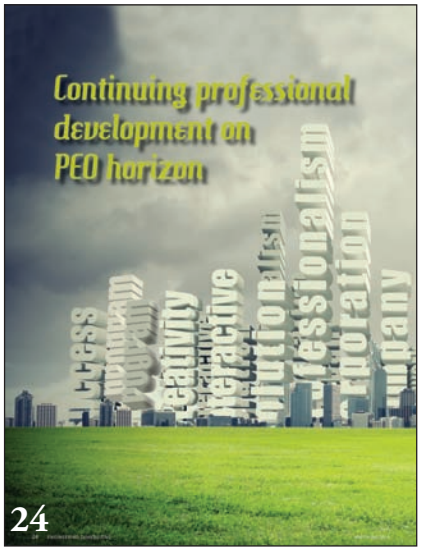

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CPD's TIME HAS COME

Jennifer Coombes
Editor

BY NOW, it's well known that Ontario is the last remaining province in Canada without some form of continuing professional development (CPD) program for its engineering licence holders. But it appears that the planets are now aligned to make CPD a reality for Ontario P.Engs.

But what's driving this new push for a CPD program after several decades of surveys, on-again, off-again discussions, and various task forces struck and stood down? In short, to ensure public trust, it's time for PEO to be seen to be proactive in preventing faulty engineering from happening rather than dealing with the aftermath of failures later through disciplinary action.

There are also concerns that a program may be imposed upon PEO by external sources, in particular as a result of the partial collapse of the rooftop parking deck at the Algo Centre Mall in Elliot Lake. As David Adams, P.Eng., FEC, says in his first president's message (p. 3): "If we do not install a continuing competency program soon, it is quite possible public opinion and the government will demand it of us, as has been the case with other professions."

Whatever the impetus, as of the March council meeting, terms of reference are now in place for a new task force that will oversee drafting the details of a PEO program (p. 47). The tongue-twisting Continuing Professional Development, Competency and Quality Assurance Task Force, also known by its equally unwieldy acronym, CPDCQATF, is being assembled and is expected to present its recommendations for a CPD program to council in December 2015.

What the final CPD program might look like is anybody's guess at this point. The main thing is, after many bumps in the road, PEO is now on its way to developing a professional development program of some sort.

Michael Mastromatteo has captured PEO's progress with CPD, to date, in "Continuing professional development on PEO horizon," on page 24.

As we go to press, just one week has passed since PEO's annual general meeting (AGM) in Niagara Falls, which was hosted by its namesake chapter. On April 26, David Adams was installed as president for his third term, as were the other new members of council. Our Introduction to council section (p. 41) will help you get to know PEO's sitting councillors for the 2014-2015 term.

The annual Order of Honour gala was also held over the AGM weekend at which 10 engineers were inducted into the order for their outstanding volunteer contributions to the profession through PEO. Snippets of the awardees' remarks begin on page 9.

We'll follow up, as always, in the July/August issue with full coverage of the AGM and the Penta Chapter Forum, as well as with a feature profile of President Adams.

Included with this issue is a copy of PEO's 2013 annual review (if you are a digital subscriber it appears when you first open the digital edition). This review is an excellent way to find out more about PEO and learn about the work it has accomplished over the past year. Σ

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Professional Engineers Ontario

THIS ISSUE: With increasing public and government expectations that practitioners stay up to date with their engineering knowledge and skill, there is increased pressure on regulators somehow to prove licensees are fully competent to do the work they do. This issue looks at what may be in store for continuing professional development, quality assurance and compulsory versus voluntary compliance.

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.

Thomas Chong wins 2015-2016 presidential term

By Jennifer Coombes

LONG-TIME PEO VOLUNTEER Thomas Chong, P.Eng., FEC, is PEO's new president-elect, securing his win by garnering almost 60 per cent of the votes. He will begin his run as PEO president at the 2015 annual general meeting in Toronto. Chong was PEO's elected vice president for the 2013-2014 council term and appointed vice president for the 2011-2012 term. He was also East Central Region councillor from 2011-2013.

In this election, just over 12 per cent of PEO membership voted for the position of president-elect, a position for which all members are eligible to vote. This marks an uptick in voting from 2013, when only 8.9 per cent of PEO licence holders participated in the elections. PEO launched an awareness campaign for the 2014 election season in an attempt to turn around the prior year's disappointing election turnout.

George Comrie, P.Eng., FEC, was elected vice president for the 2014-2015 council. Comrie is a former PEO president (2004-2005) and was the elected vice president for 2012-2013.

The new council, including the following newly elected councillors, took office on April 26 at PEO's annual general meeting in Niagara Falls.

- Councillor-at-Large Bob Dony, PhD, P.Eng., FEC
- Eastern Region Councillor Charles M. Kidd, P.Eng., FEC
- East Central Region Councillor Nicholas Colucci, P.Eng., FEC
- Northern Region Councillor Serge Robert, P.Eng.
- West Central Region Councillor Danny Chui, P.Eng., FEC
- Western Region Councillor Len King, P.Eng., FEC

At the first meeting of council on April 26, Michael Wesa, P.Eng., was appointed to the position of vice president elected by and from the members of council, and Nicholas Colucci, Rebecca Huang, LLB., and Rob Wilson, P.Eng., were elected as additional members of the Executive Committee. Huang was also elected to chair council meetings during the 2014-2014 term.

HOW YOU VOTED

PRESIDENT-ELECT	
Thomas Chong	**5549**
Nancy Hill	3406
Anwar Syed	471
VICE PRESIDENT	
George Comrie	**5326**
Sandra Ausma	3984
COUNCILLOR-AT-LARGE	
Bob Dony	**4121**
Denis Carlos	3040
Denis Dixon	2082
EASTERN REGION COUNCILLOR	
Charles Kidd	**564**
Tim Kirkby	517
Sucha Mann	479
EAST CENTRAL REGION COUNCILLOR	
Nicholas Colucci	**1185**
Fred Saghezchi	821
Rajiv Srivastava	492
NORTHERN REGION COUNCILLOR	
Serge Robert	**acclaimed**
WESTERN REGION COUNCILLOR	
Len King	**acclaimed**
WEST CENTRAL REGION COUNCILLOR	
Danny Chui	**1022**
James Chisholm	693
Pappur Shankar	280

ADAMS TAKES THE HELM for another year

Outgoing President Annette Bergeron, P.Eng., FEC, congratulates incoming President David Adams, P.Eng., FEC, at PEO's annual general meeting April 26 in Niagara Falls. This is Adams' third presidential term on PEO council (he was also president in 2008 and 2011). Check news in the July/August issue of *Engineering Dimensions* for full coverage of the meeting.

Ten extraordinary PEO volunteers rewarded for service at Order of Honour

By Jennifer Coombes

A gala held April 26 in Niagara Falls saw 10 exceptional professional engineers awarded medals at the 2014 Order of Honour. Then PEO President Annette Bergeron, P.Eng., FEC, and Nancy Hill, P.Eng., FEC, chair of the Professional Engineers Awards Committee, hosted the event that honours those who provide exceptional volunteer service to the profession.

"Tonight we celebrate those who, through their voluntary service to Professional Engineers Ontario, have helped shape the engineering profession. We shine the spotlight on those whose selfless character and support have helped to strengthen our self-regulated profession. PEO volunteers are the lifeblood of the association, sharing a desire to make a difference in their professional communities by contributing their time, energy and exceptional talents to a cause they hold dear," said Hill.

Four engineers, Amanda J. Froese, P.Eng., FEC, Wanda Juricic, P.Eng., Vasilj Petrovic, P.Eng., PgMP, PMP, FEC, and Dennis B. Pupulin, P.Eng., FEC, were inducted as members, and three recipients were elevated to the rank of officer and three to companion.

Robert Hindle, P.Eng., FEC, Ross L. Judd, MEng, PhD, P.Eng., FEC, and Glenn Richardson, P.Eng., FEC, were invested as officers of the order and David W. Euler, P.Eng., FEC, PMP, Diane Freeman, P.Eng., FEC, and Colin Moore, P.Eng., FEC, were invested as companions–the Order of Honour's highest achievement.

Special guest Wayne Gates, MPP Niagara Falls, said: "Your [engineers'] work is appreciated each and every day for many different projects. Congratulations to the engineers being honoured for their services. You are an incredible group of talented professionals and I'm honoured to speak in front of you."

The Order of Honour gala also received an unscheduled visit by the mayor of Niagara Falls, Jim Diodati, who was attending another function at the venue and shared a few words with attendees.

For further information about the recipients, see *Engineering Dimensions*, March/April 2014, page 8, or read their citations online at www.peo.on.ca/index.php/ci_id/27701/la_id/1.htm.

Here are some brief quotes from the recipients in accepting their awards:

"I started volunteering with PEO on the suggestion of my boss, Ian, as a way to get to know people in a new community and within the industry. It certainly did that. And I had fun doing it, which I think is the important thing to remember–that volunteering is all about the fun. I think this is important to stress to young engineers, that volunteering is fun and there are business skills and communication skills that you get. Young engineers out there are our next councillors–they're the ones who are going to run the profession in the future."
Amanda J. Froese, P.Eng., FEC

"I had a feeling of encouragement watching individuals be acknowledged for the good they do within their chapters [at prior Order of Honour ceremonies]. It made me want to do more for my chapter….

"When I received the letter announcing my induction, I wondered, did PEO make a mistake? Have I reached that level of accomplishment already? It finally sunk in that I'm indeed part of this wonderful celebration. I have yet to reach my personal level of accomplishment and have not peaked in my chapter involvement. I look forward

to making a difference in my engineering community and Windsor community."
Wanda Juricic, P.Eng.

"I really appreciate this prestigious award and I can't say how much it means to me. There are many who have helped me in the early years of my life to become an engineer and ultimately receive the honour to stand here accepting this award. I want to recognize my numerous teachers and professors. We didn't have Internet and my professors were my main source of knowledge and information and, most importantly, they were my mentors who helped me become an engineer. I have a real passion for volunteering on behalf of my profession. I have truly enjoyed the work I have done and the friendships I've made during my 20 years of volunteering for PEO."
Vasilj Petrovic, P.Eng., PgMP, PMP, FEC

"I'm grateful and humble to be selected as part of this Order of Honour. This award has made me reflect back to my early days when challenged with the career path that I needed to choose. My father, who is an immigrant with no education, encouraged me to get educated. He had the privilege of working with engineers in his career and he always respected and looked up to them. Throughout this, I'm speechless about how this profession has opened doors for me and the numerous people I've had the privilege of meeting and respecting."
Dennis B. Pupulin, P.Eng., FEC

"It's a very significant honour and I'm humbled and very grateful to receive it. I always knew I wanted to be an engineer. To say I have no regrets is an understatement. Engineering has given me a rewarding and unbelievably satisfying career that has allowed me to get involved in a huge number of fascinating projects around the globe. Because of the rewards that engineering has given me, I've felt a strong desire to contribute what little I have back to the profession. My time on the Complaints Committee has not been a chore or a negative experience. Rather, it's been a great learning experience. Serving on this committee makes you a better engineer."
Robert Hindle, P.Eng., FEC

"Throughout my career I've strived to serve others–my students, my colleagues and the profession….

At the April 25 gala in Niagara Falls, 10 professional engineers were inducted into PEO's Order of Honour. They are (back row, left to right): David Euler, P.Eng., FEC, PMP (companion) and Colin Moore, P.Eng., FEC (companion). Centre row, left to right: Dennis Pupulin, P.Eng., FEC (member), Robert Hindle, BSc (Hons), P.Eng., FEC (officer) and Vasilj Petrovic, P.Eng., PgMP, PMP, FEC (member). Front row, left to right: Wanda Juricic, P.Eng. (member), Diane Freeman, P.Eng., FEC (companion), Ross Judd, BESc, MEng, PhD, P.Eng., FEC (officer) and Amanda Froese, P.Eng., FEC (member). Glenn Richardson, P.Eng., FEC (officer) is absent from the photo. Heather Murdock, EIT (centre, in red), was also honoured with PEO's 2014 G. Gordon M. Sterling Engineering Intern Award (see p. 11).

"I've held an appointment at McMaster University for 51 years and, prior to that, I worked in industry….

"The students have changed significantly over the last 50 years. Students nowadays have supreme confidence in their ability to access information–so much so that there is a prevalent attitude that all engineering problems have been solved and there is no need for original thought–it's just a matter of finding the coordinates where they can find the answers to the problems. I take great pleasure in dissuading them of this idea. I teach them to approach every problem as original. As long as I can continue to make a positive contribution, I'll just carry on."
Ross L. Judd, MEng, PhD, P.Eng., FEC

"I'd just like to spend a minute to encourage you all to encourage others to volunteer. Seventeen years….

"It went by in about a minute. It has been a lot of enjoyment. I've enjoyed every minute of it and I encourage you to find more people to do exactly that for the profession and for any volunteer capacity they want to take on in society. Thank you for the voices of encouragement over the years."
Glenn Richardson, P.Eng., FEC

"I am very grateful to have both my parents here tonight–my mom, a life-long educator, and my dad an engineer and a member of our profession for over 60 years. They both had a very positive influence on my work and my life. Like the recipients that came before me tonight I, too, am very humbled by this award. I would also like to mention

how pleased I am to receive this special honour on the same day as the next two recipients. I've served with Diane and Colin for many years and have relied on them for many years for their support and wisdom."
David W. Euler, P.Eng., FEC, PMP

"It's such a privilege to be recognized for undertaking work that brings such fulfillment to my life and career. Volunteering and demonstrating a heart of service to others is one of the many things my parents taught me growing up. It is the mentorship of my parents and my keen interest to encourage women to pursue non-traditional careers that resulted in my personal desire to find ways to give back to my engineering community. I have always known at the end of all things I wanted to be more than an engineer–to give back, to seek to serve others and to pay rent for the space that we occupy."
Diane Freeman, P.Eng., FEC

"Thank you. Those two words summarize what I have to say tonight. I'll acknowledge six groups of people for their roles in this honour: my nominators, the Awards Committee, and council. The fourth group of people are very important–PEO staff. They work largely in the background and receive little recognition. I couldn't do what I've done without them. The fifth group I don't remember anyone thanking before–the politicians. I want to remind all the members that PEO only exists at the pleasure of the government of the day. I am particularly sensitive, myself, to the importance of the *Professional Engineers Act*, having worked in a non-regulated environment. The Canadian system is much better. My final appreciation has to go to the most important people in my life–my family."
Colin Moore, P.Eng., FEC

Sterling Award recipient honoured

Heather Murdock, EIT, was presented with the G. Gordon M. Sterling Engineering Intern Award at the 2014 Professional Engineers Ontario Order of Honour gala April 25 in Niagara Falls. As an EIT, Murdock has gained experience with a wide range of water management and transportation-related projects with engineering consulting firm Hatch Mott MacDonald. Apart from her work, she has volunteered with Engineers Without Borders, the Water Environment Association of Ontario Young Professionals, and PEO's West Toronto Chapter.

"It's just such an honour to win this award," said Murdock. "Last year, when I was preparing the application for this award, I was reflecting on some of the things I had done in a volunteer capacity. One of the themes that came out of this was in each of the volunteer positions I've taken on, of course I've aimed to give back but I have really gained a lot from these roles and learned a lot from the people I've worked with. So, I've been thankful to take on these positions and learn so much. I also appreciate the legacy behind this award, which is that leaders aren't born, they're created."

The annual G. Gordon M. Sterling Award provides up to $3,500 to support leadership development pursuits and is available to participants in PEO's Engineering Intern program. For further information about this year's recipient, see *Engineering Dimensions*, March/April 2014, page 10.

ENGINEERS CANADA'S "big picture" paper goes before regulators

By Michael Mastromatteo

PEO COMMITTEES ARE reviewing an Engineers Canada "Big Picture Thinking" discussion paper that captures what it believes are key elements for the "envisioned future" of engineering regulation in Canada.

Produced by Engineers Canada's board of directors, the Big Picture Thinking document (available at www.peo.on.ca/index.php/ci_id/27606/la_id/1.htm as Appendix A of council agenda item C-491-4.5) is an attempt to engage constituent associations (each provincial/territorial engineering regulator) to consider emerging issues and trends for licensing and regulation.

The document is closely linked with the Canadian Framework for Licensure (CFL) project, which is a multi-faceted program to bring consistency and uniformity to each provincial regulator's licensing and other regulatory requirements and practices.

At its February 2014 meeting, PEO council agreed to forward the document to the Academic Requirements and Experience Requirements committees, as well as to the Legislation and Registration committees. Comments from each committee will be submitted to Phil Maka, P.Eng., FEC, a PEO director on the Engineers Canada board.

Maka told *Engineering Dimensions* in March that discussion at a recent Engineers Canada board meeting focused

on the links between the Big Picture Thinking document and the CFL.

"The discussion ended up focusing on the CFL with concern being expressed on the limited progress achieved in completing various elements over the last 10 years," Maka said. "Ways to get the constituent associations to take the CFL more seriously were also discussed."

Key questions from the document include:

- What value is there in the adoption and implementation of national standards and guidelines?;
- How can Engineers Canada overcome the challenges of implementing national standards and practices?;
- What principles should guide the chief executive officer (of Engineers Canada) in how he/she supports the constituent associations in the adoption and implementation of national standards and guidelines?; and
- What would be a fair and reasonable response by the constituent associations to the work of Engineers Canada in support of consistency of national standards and practices?

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HITE Engineering Corporation is celebrating its 18th year of providing engineering solutions to reduce or eliminate hazards in the workplace. In the course of these years we have investigated well over a hundred workplace accidents and provided successful litigation support. This has given us unparalleled experience in identifying hazards and recommending effective and economical solutions which raise the level of safety to meet or exceed current applicable standards.
We conduct your Pre Start Health and Safety Review on the same basis, with the objective of bringing your equipment into full safety compliance in a cost effective manner. Our Reports of Findings always include suggested solutions. With our experience in a wide variety of industries and our in-house design capability, we can resolve any guarding and safety issues while minimizing the effect on production. At the same time we can review any additional items such as upgrading your fluid power components, drives and electrical control system. We can prepare a detailed specification for bidding by your choice of contractor, or have our team provide you with a turnkey solution. HITE also provides design of commercial and industrial building, façade access systems, equipment inspection and repair and the design of temporary structures. We also provide PSR 's required for racking structures.

Ralph Balbaa, B.Eng., M.Eng., P.Eng. / President/ Registered Consultant- Ralph Has over 40 years of experience in the design and project management of commercial and industrial buildings and bridges, the design and inspection of temporary structures, accident investigations and litigation support, welding design and inspection and the design, and inspection of mobile, tower cranes and elevating work platforms, including seven years as Ministry of Labour engineering consultant. Ralph was a member of the PEO committee that established a guideline for engineers performing PSR and an active member of 7 CSA technical committees and various Canadian and US engineering associations.s

Charles Charron, B.A.Sc., P Eng. / Senior Consultant Charles holds a Mechanical Engineering degree from U of T (82).He has over 25 years of extensive design and manufacturing experience with vertically integrated companies. He has specified, designed, upgraded, commissioned and troubleshot a wide array of machinery, equipment and processes including manual, semi and fully automated assemblies and test equipment. Charles has been granted Canadian and US patents for five product design work.

Saad Fazal, M.Eng., P.Eng. / Project Engineer- Saad holds a Masters degree in Civil Engineering, with major in Structural Engineering, from University of Texas, Arlington, USA (2003). His set of skills includes Project Management, analysis, design, detailing, and specification development of commercial and industrial buildings, telecommunication towers, and industrial storage racks. Saad is proficient in Canadian and American codes. He is experienced in engineering software packages including ETABS, SAP2000, STAAD.Pro. Saad is registered in multiple provinces. He provides structural engineering support for building structures, industrial storage racks, and forensic investigations.

David Newton, P.Eng., B.A.Sc. / Senior Consultant
Dave holds an electrical engineering degree U of T and has over 40 years of experience in electrical engineering. He is experienced in Industrial Control including programmable controller systems and motor control. He has designed and commissioned machine control systems. He has specified electrical apparatus for hazardous area locations, and has worked in the fields of drives, pneumatic, hydraulic, combustion systems, cooling towers and HVAC/refrigeration. Dave's experience includes safety controls for power presses in accordance with CSA standard Z142 and general machine guarding in accordance with CSA Z432.

Joe Smolcic, Designer / Field Technician Josip holds a diploma in Mechanical Engineering Technology (2005) from Sheridan College. He has over 5 years of experience in the custom fabrication field as well as several years in façade access systems design. Josip is HITE'S Design and Field Inspection Specialist.

Catherine Bowman, BA / Human Resources- Catherine holds a Bachelors of Education from Western University. She is a member of the Ontario College of Teachers. She has several years of Human Resources experience with a major telecommunications company. As the Administrative Coordinator, she monitors HITE's administrative projects.

Stephanie Cicero, Office Administrator- Stephanie Cicero holds an Advanced Diploma in Business Administration Human Resources from Sheridan College as well as a Bachelor of Commerce Degree from Nipissing University. As the Office Assistant, she supports the HITE team with daily administration functions.

Sam Wahabi, B.Eng., P.Eng. Senior Consultant / Construction Manager Sam holds a Mechanical Engineering degree from McMaster University (93) and has a diverse set of skills which includes design and specifications development, remediation of building systems, project engineering and product development and program/project management. Sam has managed numerous large projects. Sam is registered in multiple provinces and an active member of several CSA committees. He is also a trained Six Sigma green belt and participated in various transformation initiatives.

Tiago Estragadinho, B.Eng., P.Eng. / Consultant - Tiago holds a Mechanical Engineering degree from McMaster University ('02). Tiago worked in the automotive, rubber and plastics industry. He has a diverse set of skills that include Project Engineering, Product Design/Development, and Program/Project Management. Tiago is highly experienced in: AutoCAD, SolidWorks & Cosmos/Simulation, Autodesk Inventor, Pro Engineer & Mechanical, UGS I-DEAS, DDS CATIA V5, and STAAD/Pro.

Georg Schneider, P.Eng. / Senior Consultant- Georg holds a Mechanical Engineering degree from McMaster University ('81). Georg has over 30 years experience in a wide variety of design and manufacturing in outdoor power equipment, automotive metal and plastic and heavy metal fabrication. His skill set includes Product Design/Development, Process Development, Maintenance, Root Cause Analysis and Project Management. Georg is engaged in Pre-Start Health & Safety and other equipment compliance reviews, forensic investigations, and overseeing Equipment Safety Upgrade Installation / Integration Projects.

Nadeem Wahabi, Field Technician Nadeem studied mechanical engineering at University of Windsor and Ryerson University. He has a certificate in architectural CAD, and is currently studying "Sustainable Energy and Building Technology" at Humber College. Nadeem has seven years of customer relations management experience. He is part of the HITE'S Construction team in the role of a Design and Field Inspection specialist.

Warren Templo, Engineering Technician - Warren holds a diploma in Mechanical Engineering-Design and Drafting Technologist (2007) from Sheridan College. He has several years of experience in computer aided designing. Warren is HITE'S Engineering Technician Designer. He has 6 years experience in Computer Aided Designing. His expertise are in Solidworks, AutoCAD, Catia, and Solid Edge.

Susan Voigt, Office Director- Susan holds a degree in accounting from Damelin College. She also has completed Management and Human Resources courses. Susan has been with HITE Engineering since 1997. She has worked in office management for over 20 years. As the Office Director, Susan provides financial management, office operations and client liaison.

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Innovations forum sheds new light on **3-D** TECHNOLOGY APPLICATIONS

By Michael Mastromatteo

Breakthroughs in 3-D laser imaging could have significant practice implications for professional engineers involved in building inspection and maintenance, forensic investigation and the design and use of health-care products.

Commonly referred to as 3-D "printing," 3-D imaging was the focus of the 2014 Engineering Innovations Forum (IEF) held March 6 at the Ontario Science Centre. The EIF presentation is a key part of each National Engineering Month celebration.

Presenters this year were Peter Srajer, P.Eng. (Alberta), of the MMM Group's geomatics engineering division; Eugene Liscio, P.Eng., of forensic measurement firm AI2-3D; and Steven Pong, senior industrial designer, Toronto Rehabilitation Institute.

The forum was moderated by CBC television journalist Steven D'Souza, as it has been for the past several years.

Each presenter outlined novel applications for laser scanners and associated processing software. While the concept of laser scanning isn't new, the decreasing cost and increasing sophistication of 3-D technology has led to innovative applications for designers and professional engineers.

Srajer, for example, outlined laser scanning applications in industrial settings, pointing out its cost, convenience and safety advantages over conventional surveying.

"Laser scanning is probably the best thing we have today, especially in terms of worker safety," Srajer said. "If the field operator can collect the data required from a safe distance, then that is a critical point for its use. If the infrastructure you need to survey is a facility in production or a hazardous location, I am more comfortable knowing that the crews can collect data away from the danger zones and that they will also be there for a shorter time period."

Another key advantage is the tremendous increase in data obtained by way of laser scanning of construction projects, power plants, mining operations and even heritage buildings.

(Clockwise from top left) Steven Pong, a certified solidworks professional, described some of the healthcare devices enabled by 3-D laser technology.

Eugene Liscio, P.Eng., owner of AI2-3D, specializes in 3-D forensic measurement, analysis and visualization for law enforcement and legal proceedings.

Peter Srajer, P.Eng., of the MMM Group, outlined some of the industrial applications for 3-D laser scanning.

CBC TV reporter Steven D'Souza was moderator for the 2014 Engineering Innovations Forum.

Liscio concentrated primarily on the use of laser imaging for forensic investigation and mapping. One of the most direct advantages of laser scanning, he said, comes in the areas of crime scene investigation and (car) accident reconstruction. Liscio said 3-D laser scanning and visualization give a tremendous boost to traditional investigation methods and have become a key tool in documenting and validating evidence. Even bullet trajectories, he said, can be pieced together more accurately based on information obtained via laser imaging.

Liscio, who extols the sometimes overlooked benefits of photogrammetry, said the basic digital camera can be used as an accurate 3-D measuring tool. "I try to preach a method to taking photographs so that, if necessary, a person with some photogrammetry experience can obtain valuable information," he added.

Engineers are well positioned to take laser imaging and 3-D technology to new levels, Liscio said. In a March 7 interview with *Engineering Dimensions*, the forensic expert said professional engineers can "bridge the gap" to new paradigms of working with 3-D scan data. "Engineers can bring traditional methods and apply them to modern techniques," he said. "This often leads to new and effective ways of doing things. When you think of what happened in Elliot Lake with the collapse of the shopping mall, perhaps there could have been a way to better monitor the movement of floors, walls and other structural members with laser scanning technology so that these types of failures could have been prevented."

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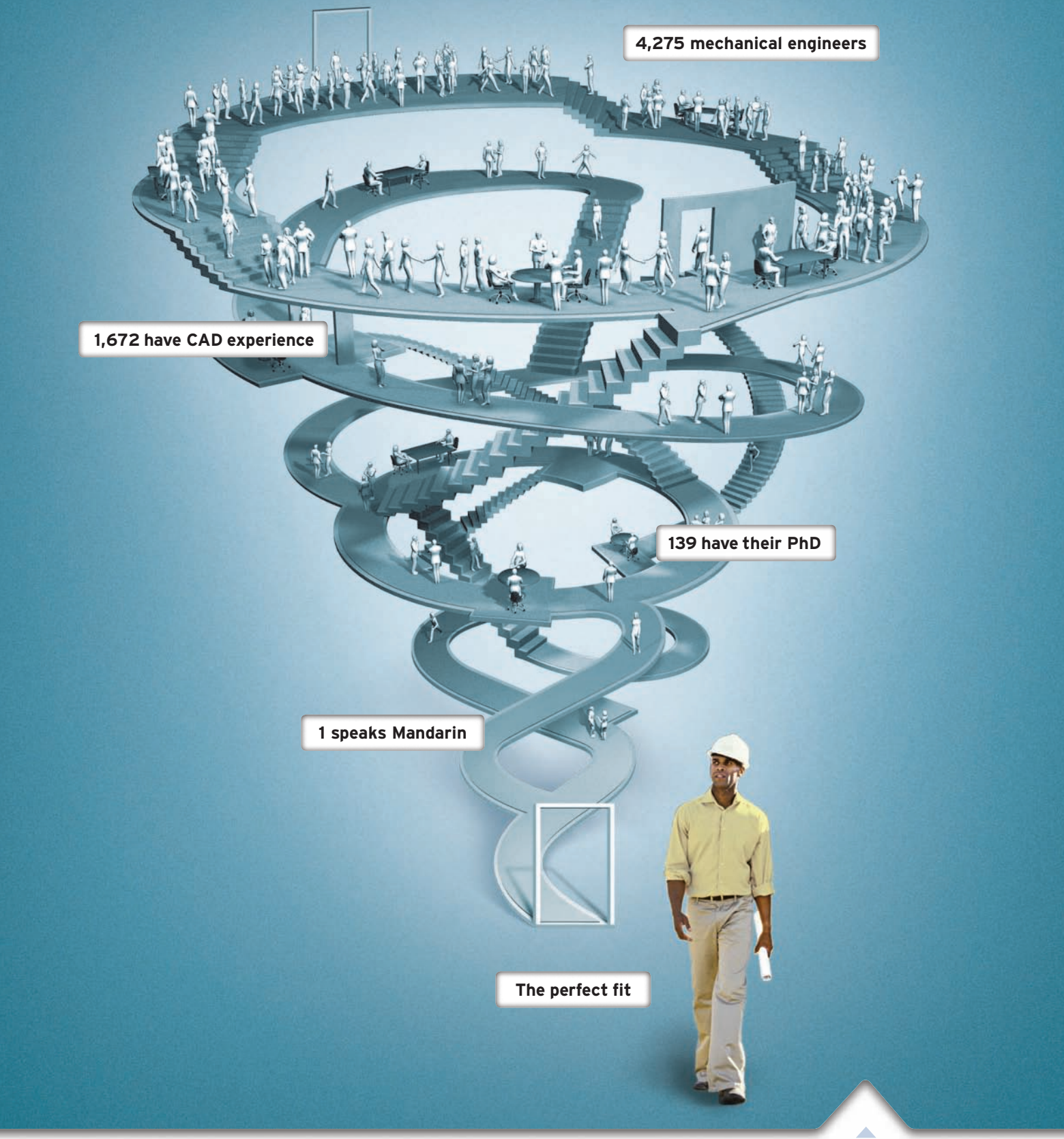

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Steven Pong, the final speaker at the 2014 forum, reiterated the potential of 3-D imaging with particular emphasis on the health-care field. At the Toronto Rehabilitation Institute, Pong is involved with such projects as wearable electronics, robotics, sleep apnea diagnostic devices and hygiene-related projects, all aimed at enhancing patient treatment and therapy.

He said laser scanning can uncover information and detail over and above that provided by magnetic resonating imagery (MRI) devices, which, in turn, leads to advances in design of new assistive technologies.

One of the biggest challenges for engineers in the 3-D imaging area is to develop more powerful computation devices to store and analyze the exponential increase in data collected by laser scans. All three speakers agreed that "computer horsepower" has yet to respond to high volume data capture enabled by 3-D imaging.

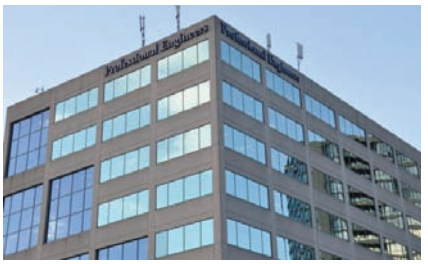
"The data you get is much more detailed and more comprehensive," Srajer said. "That being said, of course if you collect a large amount of data you need to process a large amount of data [and] this is still one factor that may hinder its use. You do need specialized software and expertise and a better computer system to handle this workflow."

For the second year in a row, the EIF drew a large audience of PEO members, students and the general public. The goal of the annual forums is to raise public awareness of engineering innovations and their impact on the quality of life. Previous forum themes have included nanotechnology, biomedical engineering, disaster relief and transit solutions.

Each year, an EIF organizing committee, currently chaired by Paul Annis, C.E.T., meets regularly to plan for the next year's forum.

PEO headquarters obtains LEED GOLD CERTIFICATION

By Nicole Axworthy



AFTER EXTENSIVE renovations with the goals of state-of-the-art technology and sustainable design, PEO headquarters has obtained Leadership in Energy and Environmental Design (LEED) Gold CI certification.

Located just steps from the Sheppard subway station at 40 Sheppard Avenue West in Toronto, PEO's building was evaluated according to LEED Canada-CI (for commercial interiors) by the LEED Canada Rating Systems, promoted by the Canada Green Building Council to encourage and facilitate the development of more sustainable buildings. LEED represents third-party confirmation that a building is designed and built to the highest standards for minimal energy and water consumption, indoor environmental quality and reduced greenhouse gas emissions.

Plans to extensively renovate the 25-year-old building when PEO purchased it in 2009 provided an opportunity to renovate to LEED standards, while also focusing on PEO's long-term vision to have an engineering centre that is a landmark for members and a centre of activity for volunteers serving on the association's committees and chapters.

The LEED rating system is a set of environmental categories–such as water efficiency, sustainable sites, and materials and resources–that are subdivided into established LEED credits, which are based on desired performance goals within each category. PEO's official LEED score was 37 (of a possible 41 at the Gold CI level), with most points achieved in the indoor air quality category, which focuses on materials used during construction, lighting systems and thermal comfort monitoring systems.

At the beginning of the project, PEO engaged BJC (formerly BLJC), a leading facility management services company, as property managers of 40 Sheppard, Intercede Facility Management Ltd. as its design team and project managers, sustainability consultants Ecovert as LEED consultants, and Greenferd Construction as general contractors, along with a team of highly skilled subtrades.

The major focus of the building overhaul included installation of a sophisticated heating, ventilation and air conditioning (HVAC) system, a high-efficiency lighting system throughout the building, and automation and communication technology to ensure energy is used only when necessary. Reducing water consumption was also of importance, with installation of low-flow toilets and urinals, along with automatic taps to ensure waste is kept to a minimum. As tenant space becomes available, PEO continues to expand the new HVAC system as the final phase of the retrofit, starting on the fourth floor this summer.

"I'm very proud of the work that was done to achieve the LEED CI Gold status and the leadership that council has shown on the project," says Scott Clark, PEO's chief administrative officer. "Going forward, we will be adhering to LEED principles in every project we undertake at 40 Sheppard."

NEM outreach continues **TO GROW**

By Alan Ham and Erica Lee Garcia, P.Eng.

Throughout March, volunteers across Ontario kept with the theme of this year's National Engineering Month (NEM) by "making a world of difference" in the lives of many elementary and high school students.

Whether that difference came by way of a bridge-building competition, an interactive workshop or a field trip, thousands of students now know what engineering is all about and are reflecting on what it means to be an engineering professional.

Through a continuing partnership between Engineers Without Borders (EWB), the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) and PEO, activities were held across the province, to the delight of students and their parents, and the general public. By the end of March, over 180 NEM-funded events were run with the help of generous sponsors and passionate volunteers. PEO-led events were up to a record number during this year's campaign. Add the independently run NEM events and the number was well over 200–a milestone for NEM outreach in Ontario.

The month of March saw many new and creative outreach events with the addition of an Innovation Funding initiative that recognized engagement by funding events that:

- provided global and/or social context;
- established new partnerships or collaborations;
- conducted outreach in a public space; and
- promoted emerging or under-represented engineering disciplines.

By exploring at least one of these opportunities, event leaders opened up new doors for curious youth to peek into, and showed them there is a place for everyone in the profession.

Coverage for the events continued to grow. Through the use of local news, social media and the NEM website (nemontario.ca), bulletins on upcoming events were well publicized, and recaps on past events were posted as soon as they happened. This provided NEM news almost every day of the month. In addition, the NEM website features a blog (nemontario.ca/blog), with coverage and photos of NEM events, profiles of event organizers, and insightful articles about the most important topics in engineering outreach today. Additional coverage was provided on social media sites Twitter and Facebook under #NEM2014 and @NEMOntario.

At PEO Etobicoke Chapter's 7th annual Engineering Idol competition, high school student teams participate in an engineering design challenge to create an efficient bioreactor that produces algae.

Planning for NEM 2015 will kick off in June, and applications for funding will be due to the National Engineering Month Ontario Steering Committee in November 2014. Please contact Erica Lee Garcia, P.Eng., at nem@peo.on.ca with comments or questions.

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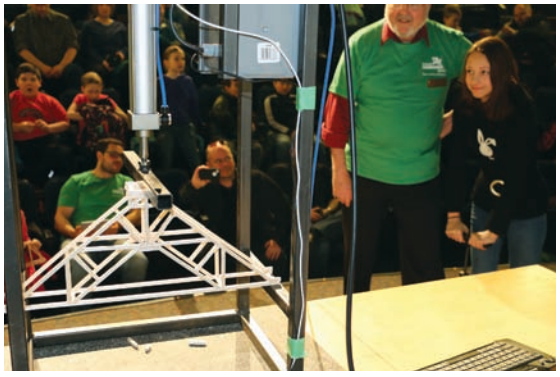
EVENT LEADERS OPENED UP NEW DOORS FOR CURIOUS YOUTH TO PEEK INTO, AND SHOWED THEM THERE IS A PLACE FOR EVERYONE IN THE PROFESSION.



PEO and OACETT Sudbury chapters hold their 18th annual balsa wood bridge-building competition. Here, a student tests the load-bearing capacity of one of the creations.

London-area elementary school students dress up as an engineer, engineering technologist and engineering technician as part of a presentation organized by the PEO and OACETT London chapters.

APEGA URGING RESTRAINT IN WAKE OF HUMAN RIGHTS COMMISSION RULING

By Michael Mastromatteo

ALBERTA'S ENGINEERING regulator has filed a stay of decision request to provincial court in response to a February 6, 2014 ruling from Alberta's Human Rights Commission that the regulator discriminated against a licence applicant based on his country of origin.

The Association of Professional Engineers and Geoscientists of Alberta (APEGA) is also urging its members to respond professionally and with restraint in discussing the human rights ruling, which if not overturned, could have a major impact on the education assessment procedures used by all of Canada's engineering regulators.

As reported in the March/April issue of *Engineering Dimensions* (p. 14), the commission ordered APEGA to pay $10,000 in general damages to the applicant, Ladislav Mihaly, and to reassess his educational background, transcripts and experience. APEGA was also ordered to establish a new committee of internationally educated licensees to examine ways of dispensing with certain qualifying examinations for applicants from unaccredited engineering programs.

Lawyer James Casey of Field Law, APEGA's legal representative in the human rights case, said the commission made a number of legal errors in the Mihaly decision, and that some of its findings were contrary to evidence presented in the hearings.

"The human rights tribunal erred in its conclusions regarding the nature of the examinations and came to these conclusions in a procedurally unfair way by not raising the issue at the hearing," Casey and co-author Michael Wall said in a March 6 online article published on the Field Law website.

"[APEGA's] registration requirements are reasonable and justifiable and in accordance with APEGA's statutory obligation to protect and serve the public by ensuring that all applicants have entry-level competence," the authors said.

APEGA has already filed an appeal of the Human Rights Commission ruling, and is awaiting a court date sometime in December of this year.

Meanwhile, the *National Post* reported March 21 that Moosa Jiwaji, the Alberta human rights tribunal chair who made the Mihaly decision, is no longer working for the commission. Jiwaji had been under criticism for his handling of certain evidence in the APEGA-Mihaly case.

An official with the human rights body told *Engineering Dimensions* March 24 that the commission is not commenting on the item.

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ONTARIO POWER AUTHORITY

[IN MEMORIAM]

THE ASSOCIATION HAS RECEIVED WITH REGRET NOTIFICATION OF THE DEATHS OF THE FOLLOWING MEMBERS (AS OF MARCH 2014).

ABEL, Murray Keith
Kingston, ON

ADAMS, Frank Murray
Thunder Bay, ON

ALING, Gregorio Pada
Chelmsford, ON

ANDERSON, Norman Evan
North York, ON

ARMSTRONG, Henry Conner
Ottawa, ON

ARMSTRONG, Richard Patterson
London, ON

BARCLAY, Ronald Stewart
Peterborough, ON

BAREICH, Gerald Joseph
Amherstburg, ON

BARRETT, Harry John
Ottawa, ON

BATH, Duncan Thomas
Peterborough, ON

BEATTY, Harold Kelly
Pembroke, ON

BEDNAR, Leif Kristian
Toronto, ON

BELL, Francis Aurey
St. Thomas, ON

BENDAYAN, Leon
North York, ON

BIHNAM, Ghanim Habib
Lasalle, ON

BLAIR, Thomas Frederick
Brampton, ON

BONNYCASTLE, Michael Kurt
Scarborough, ON

BOOTH, James Kenneth Brooks
Mississauga, ON

BOVAIRD, Cecil Edward
Vineland, ON

BOYLES, Wilson Victor
Ashburn, ON

BRENNAND, Robert Wallace
Winnipeg, MB

BROADHURST, Thomas Edwin
Sarnia, ON

BRUINS, John William
Brockville, ON

BRYAN, James Gregory
Dalkeith, ON

BRYCK, Leon Gerald
Thornhill, ON

BURROWS, Mark Wallace
Georgetown, ON

CARVALHO, Roque John
Oakville, ON

CATHRALL, Annabel Hope
Courtenay, BC

CHAN, John Chung
Markham, ON

CHAN, Paul Sau Wai
Nepean, ON

CHAN, Sing Woon
Thunder Bay, ON

CHIN CHOY, Fulford Hope
Scarborough, ON

CHONG, William B.
North York, ON

CLARKE, James Joseph
Surrey, BC

COPLEY, Richard Thomas
King City, ON

COTE, Armand Rene
Haileybury, ON

CRACKNELL, George Leslie
Paisley, ON

CRAWFORD, Robert Michael
Georgetown, ON

CRISSON, Christopher Herbert Bland
Hamilton, Bermuda

CZARNOGORSKI, George
Mississauga, ON

DAVEDIUK, Frederick
Kanata, ON

DAYKIN, Victor
Toronto, ON

DOIG, Wilson Campbell
Oakville, ON

DOST, Mohamad
Mississauga, ON

DRIMBA, Cristian Florin
Pickering, ON

DUCKITT, William
Brampton, ON

EASTMAN, Gunnstein Vincent
Etobicoke, ON

ELDER, James Gordon
King City, ON

ELDRIDGE, Archibald Kenneth
Barrie, ON

ELKHOLY, Ismail Abdel Salam
Richmond, BC

FARRER, Frank
Seagrave, ON

FAYEK, Dalia Maurice Bishay
Guelph, ON

FELSZEGI, George William
Kitchener, ON

FERGUSON, Robert Bruce
Ottawa, ON

FISHER, John Robert
Ottawa, ON

FJARLIE, Earl John
Kingston, ON

GOULETTE, Richard Ralph
Arnprior, ON

GUTHRIE, William Bruce
Perth, ON

HAMILTON, Philip Henry Banfill
Westmount, QC

HEIN, Roland Eugene
Nepean, ON

HENCHEY, David Winston
Whitby, ON

HILL, Lawrence Wilson
North York, ON

HOOPER, Peter Lawley
Thornhill, ON

HORTON, Samuel Graham
Mississauga, ON

HURE, Victor Robert
Aurora, ON

IMISON, Kenneth Halton
Scarborough, ON

JAMES, Peter
London, ON

JAY, Russell Bert
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JOHNSTON, Robert Willoughby
London, ON

JONES, Donald Frank
Ottawa, ON

JONES, Robert Edward
Oshawa, ON

KARGEL, Reinhard
Scarborough, ON

KAUFMAN, Milton Carl
Waterloo, ON

KAZEMI ARBAT, Hooshang
Richmond Hill, ON

KENNEDY, Frank Edmund
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KUKORAITIS, Vladas
Aurora, ON

KUZYK, Gregory William Robert
Pinawa, MB

LAIDMAN, Lawrence David
Oakville, ON

LAM, Wai-Kwan
North York, ON

LAMMERS, Wessel
Thornhill, ON

LEACH, William Robert
Mississauga, ON

LEUNG, Johann Chi-Kong
Richmond Hill, ON

LEWIS, Robert
Duncan, BC

LINDON, Paul Horace
Sudbury, ON

LIPPETT, Robert William
Etobicoke, ON

LITTLE, Derek J.W.
Toronto, ON

LLOYD, Bernard Hugh
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LONG, Bryan Gilbert
Toronto, ON

MAARSE, Leo
Mississauga, ON

MacDONALD, John Charles
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MacKENZIE, Peter Bertram
Fonthill, ON

MARSETTI, Carlo Joseph
Milton, ON

MARTEL, Henri-Paul
Saint-Jean-sur-Richelieu, QC

MARTINDALE, Robert Astley
Toronto, ON

McGREGOR, Charles Angus
Etobicoke, ON

McNEIL, Dennis Harold
Bewdley, ON

MORLEY, Lawrence Whitaker
Owen Sound, ON

MORRISON, George Ewing
Burlington, ON

MYERS, John Arnold
Brockville, ON

NIGOL, Olaf
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NOTENBOOM, William Gerrit
Mississauga, ON

PANDYA, Chandrakant Tribhovandas
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PENT, Walter H.
Ottawa, ON

PIECHOTA, Antoni
Richmond Hill, ON

POIRIER, Marcelle Paul
Pickering, ON

POLLARD, Robert Thomas
Wallaceburg, ON

RAJALA, Les Herbert
Falconbridge, ON

ROGERS, Robert Wilfrid
Mississauga, ON

RUDDOCK, William Marson
North York, ON

RUTHERFORD, William Alastair
Komoka, ON

RUTTER, John William
Mississauga, ON

RYAN, David Morris
Mississauga, ON

SAGE, Stewart Alexander
Peterborough, ON

SAUDER, Frederick James
Indian River, ON

SCHLANGER, Arthur Lee
Glenview, IL

SEABROOK, Gordon Dennis
Nepean, ON

SHADFORD, George Leonard Melville
Oakville, ON

SIMKO, Michael
London, ON

SMITH, David Ross
Waterloo, ON

SOUDKI, Khaled Adnan
Waterloo, ON

STARCOK, Libor
Waterloo, ON

STRICKLER, Gary Leslie
Oakville, ON

TAYLOR, Thomas William
Barrie, ON

THEODORAKOPOULOS, George
North York, ON

THOMPSON, Clifford L.
Campbellford, ON

TOMBLER, George
Ottawa, ON

TRAVERS, John Hetherington
St. Catharines, ON

TURNBULL, Christopher Kelly
Ajax, ON

TURNER, John Alan
Thornhill, ON

ULOTH, Milton MacRitchie
Burlington, ON

UNDERHILL, Alton James
Richmond Hill, ON

VANDERMEER, Aart
Mississauga, ON

VAN ROON, John Anthony Henry
Sharon, ON

VASILIEV, Zisis
Hamilton, ON

VISKONTAS, Aloyzas
Hamilton, ON

WARDLE, Lawrence Noel
Belleville, ON

WILLIAMS, Norman Llewellyn
Peterborough, ON

WONG, Daniel Min-Chun
Scarborough, ON

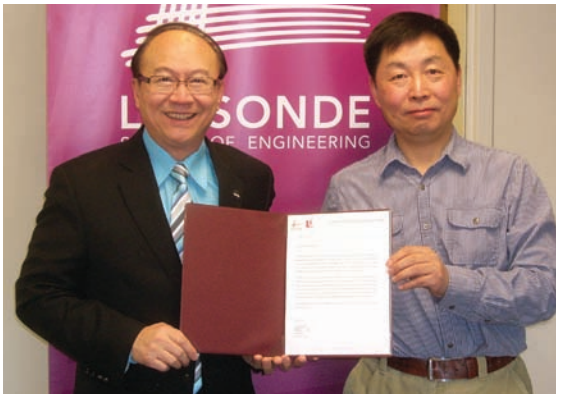
YULE, Robert Edward
Burlington, ON

ENGINEERS RECOGNIZED WITH NATIONAL AWARDS

By Nicole Axworthy

Hussein T. Mouftah, P.Eng., has been recognized with the K.Y. Lo Medal from the Engineering Institute of Canada.

Vic Pakalnis, P.Eng., is a recipient of the 2014 Minerva Canada Education Award of Honour.



Thomas Chong, P.Eng., FEC (left), PEO's president-elect, received a Mentorship Recognition Award from York University's Lassonde School of Engineering.

The Engineering Career Pathways website has won the 2014 International Qualifications Network (IQN) Award for best initiative in the overseas category. The IQN Awards, presented by the Canadian government, recognize leadership in foreign qualification assessment and recognition in four areas: workplace integration, innovation, engagement and overseas. Engineers Canada and the Canadian Council of Technicians and Technologists created the career pathways website to help people determine where their engineering skills might fit within the engineering team and to discover the pathway to a successful career in Canada's engineering profession.

The Engineering Institute of Canada (EIC) has announced the 2014 recipients of its honours, awards and fellowships. The K.Y. Lo Medal was presented to Hussein T. Mouftah, P.Eng., who is recognized for his contributions to computer engineering and telecommunication networks, including 35 years of service to the IEEE Communications Society. He is a principal investigator of a multi-million-dollar, multi-year engineering project in wireless sensor networks, known as WiSense. New EIC fellows include Amir G. Aghdam, P.Eng., Nasser Ashgriz, P.Eng., Sushanta Mitra, P.Eng., Weiming Shen, P.Eng., Shahrokh Valaee, P.Eng., and Christopher Yip, P.Eng.

Vic Pakalnis, P.Eng., president and CEO, MIRARCO Mining Innovation at Laurentian University, is a winner of the 2014 Minerva Canada Education Award of Honour. The award, presented by Minerva Canada Safety Management Education Inc., recognizes individuals from academe, government, industry, and health and safety associations for their long-standing contributions to advancing health and safety education in Canadian postsecondary teaching institutions. Pakalnis has been an ambassador for and contributor to Minerva's educational programs and resources, and teaches health and safety during work assignments with the Ontario government, Queen's University and now MIRARCO. He has also been instrumental in establishing important Minerva partnerships with academe, government and industry.

Thomas Chong, P.Eng., FEC, PEO president-elect, recently received the Mentorship Recognition Award from York University's Lassonde School of Engineering for helping final-year engineering students with their engineering design projects (a requirement for graduation). Chong also received a Mentorship Achievement Award from the Chinese Professionals Association of Canada for mentoring new international engineering graduates to obtain their P.Eng. licence. Chong has been a mentor with the association since 2008.

CALL FOR ENTRIES

The 12th annual Create the Future Design Contest is open for entries until July 1, 2014. The contest involves creating an innovative new product idea that benefits society and the economy. The prize is an opportunity to receive global recognition and a cash prize of $20,000. Entries can be submitted by an individual or a team. For more information, visit www.createthefuturecontest.com.

Nominations are now open for the Queen Elizabeth Prize for Engineering, an international engineering award worth £1 million that celebrates the engineers "responsible for a ground-breaking innovation that has been of global benefit to humanity." Nominations are open until July 14, 2014. For more information or to nominate someone, visit www.qeprize.org. Σ

A STAIN ON OUR PROFESSION

By Patrick Quinn, PhD (Hon.), P.Eng., FEC

AN OBSERVER LOOKING objectively at the engineering profession in Canada might reasonably wonder about its culture. What is it about engineering that sets it apart from other professions in the offensive behaviours some of its students exhibit at university? And why do these behaviours endure?

Some 25 years ago I wrote of anti-arts chants at a major university by engineering students, and about the public harassment of a woman engineering student at an engineering university function that drove the woman out of that school. The pushback surprised me. Deans talked about esprit-de-corps; it was not the role of universities to promote behaviour or character; it was all in fun; and I should lighten up. Some women in engineering suggested that by drawing attention to these events, I was drawing unwelcome attention to them.

IT IS NOT A STRETCH TO LINK VIOLENCE AGAINST WOMEN TO SO-CALLED FUN ACTIVITIES THAT ARE, BY THEIR NATURE, ABUSIVE TOWARD WOMEN OR PERCEPTUALLY INAPPROPRIATE.

Twenty-five years ago, at a time when date rape at universities was getting media coverage, I also wrote a column asking if our universities were really safe for women. Recently, former US president Jimmy Carter, in promoting a book wherein he spent some effort to bring the issue of violence against women to the public fore, decried the rape statistics of American universities where the school's reputation was more important than women's safety. I doubt our universities are any safer today than American universities. It is not a stretch to link violence against women to so-called fun activities that are, by their nature, abusive toward women or perceptually inappropriate. And when these insensitive activities become part of the public perception of engineering, we need to take note and action.

Recently, Engineers Canada circulated an article headed, "Engineers kidnap, ransom and bribe their way to Geer Week win," about a Canadian university. To see the reactions of engineer friends, I circulated the piece, wondering how others viewed the optics and asking for reactions. The only response was a "lighten up" one from a friend with children in university in recent years, who said, "These kids have been 'killing' on video games, etc., so this is not new to them. It's a game."

Enquiries of those involved in Geer Week elicited that they thought the situation was a lot less sinister than the article depicts; it was actually all about fun, and that the concerns of a woman who was not sanguine about features of Geer Week were capitalized on to make the article more sensational.

When this type of incident is publicized, the student response is: "We have been doing this for years…What's the problem now?" Those in authority have to know it is there as a constant, transmitted down from frosh to frosh. Action is taken only when it reaches public attention and university reputations are in danger.

The first response of enlightened universities (enlightened at least to the reality of the damage that a bad reputation can inflict) is damage control–apologies, suspensions, shutdowns of student activity, sensitivity training, promises about zero tolerance, etc. As time goes by it is obvious that this is not enough.

As a profession, we are shamed by these behaviours and their tolerance. We simply must address this rot, which is a continuing stain on our profession. Perhaps, if public perception about engineering were not that it is male-dominated and its students rough-acting boors, we could get away with ambivalence. But in 2014, when even universities with progressive attitudes toward women in engineering are dealing with a resurgence of offensive and insensitive behaviours, which can only be seen as a regression to attitudes many of us thought had long been purged from engineering faculties, something needs to be done by those who speak for our profession.

We have to *believe* that these examples are beneath the dignity of our profession and insist on student and faculty behaviour that does not besmirch a great profession. Character is a defining factor in the definition of a professional, and universities must, for accreditation purposes, be required to show they are involved in fostering and promoting their students' characters.

Where they fail, the regulatory bodies need to use their influence and power not just to ensure our profession's good name, but also to act responsibly toward the protection of women. Violence against women must be more of a real concern and anything associated with our profession that is perceived to, in any way, promote or condone it needs to be eradicated. It is a profession's obligation. Σ

Patrick Quinn, PhD (Hon.), P.Eng., FEC, is a two-time PEO president.

Continuing professional development on PEO horizon

Ontario is the only province without some form of a continuing professional development (CPD) regime for engineering licence holders. Most agree that some form of CPD is valuable, but what sort of program to develop has become a major sticking point at PEO.

By Michael Mastromatteo

Is PEO ready to move forward with a continuing professional development program (CPD) for its licence holders?

After a number of fits and starts over several decades, there is now some indication that an official, post-licensing professional development plan for licence holders is in the offing.

PEO council in March 2014 approved motions calling for the creation of a Continuing Professional Development, Competency and Quality Assurance Task Force, which will work with new terms of reference to consider a comprehensive PEO program of CPD, with a "strong focus" on competency.

The task force's terms of reference and a problem statement for CPD were developed by PEO's Professional Standards Committee (PSC), which was given the task after the February 2014 council meeting.

The rationale for PEO looking seriously at a CPD program is that it is incumbent on the regulator to take a proactive stance to forestall or prevent faulty engineering, rather than relying on the complaints and discipline system to punish licence holders after the fact for practice failures.

PEO council has wrestled with the CPD issue a number of times over the years. In 2009, for example, council authorized a form of voluntary reporting of professional development, in which members would declare each year on their licence renewal forms that they maintain competence in the professional engineering services they provide. However, the program was never implemented and the check box has yet to appear on renewal forms.

Previously, PEO established task forces to consider CPD efforts, and conducted membership surveys to gauge licence holders' impressions of compulsory versus voluntary programs. Despite signs of support for CPD among members, the regulator never moved beyond the review stage.

Ontario, in fact, remains the only engineering jurisdiction in Canada without some form of CPD program (compulsory or voluntary) in place. The Association of Professional Engineers and Geoscientists of Manitoba (APEGM) became the latest regulator to embrace CPD when it established its mandatory program in 2012.

As the largest engineering regulator in Canada, PEO is beginning to look conspicuously absent from the CPD field.

Public questions about professional development, competence and quality assurance in engineering have become more acute since the 2012 partial collapse of the rooftop parking deck at the Algo Centre Mall in Elliot Lake, which resulted in two deaths, numerous injuries and millions of dollars in damage and economic disruption. Some observers see the tragedy not only as an engineering failure, but also as a call for the profession to take greater note of each practitioner's fitness to practise by way of meaningful competence and quality assurance measurement programs.

Public questions about professional development, competence and quality assurance in engineering have become more acute since the 2012 partial collapse of the rooftop parking deck at the Algo Centre Mall in Elliot Lake.

VALUE UNDER DEBATE

To be sure, there is no unanimity among PEO members as to the value of compulsory CPD. Traditionalists point to the profession's Code of Ethics, which calls on engineers to devote themselves to ongoing learning and quality assurance throughout their careers (Regulation 941/90, section 77.1.iv). They say the additional imperative for engineers not to stray beyond their areas of experience and expertise (Reg. 941, section 77.1.v) also obviates for many compulsory CPD and quality assurance (QA) programs. They also note that "undertaking work the practitioner is not competent to perform by virtue of the practitioner's training and experience" constitutes professional misconduct under section 72(2)(h) of the regulation.

Other critics of compulsory CPD say such programs simply add another layer of bureaucracy on engineering regulation and, as such, are a waste of resources. Also at issue is whether by adopting compulsory professional development programs, regulators put themselves at risk by implying that having such a program enables them to vouch for a member's competence to practise. In other words, regulators could open themselves to increased liability by intimating that compulsory programs guarantee competent engineers and, in turn, increase public safety.

At issue is whether by adopting compulsory professional development programs, regulators put themselves at risk by implying that having such a program enables them to vouch for a member's competence to practise.

OSPE'S TAKE

One of the first tasks of PEO's CPD task force will be to examine *Continuing Professional Development, Maintaining and Enhancing our Engineering Capability*, a study produced by the continuing education working group of the Ontario Society of Professional Engineers (OSPE).

The report calls for a mandatory program based on a similar one instituted in 1997 by the Association of Professional Engineers and Geoscientists of Alberta (APEGA). It also conforms to the expectations of the Canadian Framework for Licensure (CFL) project, which aims for process and evaluation consistency among all of Canada's engineering regulators.

In discussing CPD, the CFL values statement says such programs enhance public and government confidence that licence holders meet ethical obligations to maintain professional competencies. Among the key considerations of the CFL's take on CPD is that programs be measurable, have sufficient reporting mechanisms, and allow adequate compliance monitoring.

"Ontario has lagged behind the other engineering jurisdictions in Canada in defining a Continuing Professional Development program for its licensees," the OSPE report reads. "OSPE is concerned that, over time, Ontario's licensed engineers will lose credibility in the eyes of the public, including clients and employers, and among other engineers, clients and employers outside Ontario if PEO does not establish an effective CPD program."

Although the OSPE report recommends a program based on the Alberta example, it calls for some modifications: "Some changes to the APEGA CPD program have also been recommended by the working group to make the reporting process less onerous on both the licensees and the regulator and to make the CPD program more flexible to better meet the needs of the individual licensees and their employers."

CRITICISMS AND CONCERN

PEO circulated the OSPE report for comment from selected stakeholders prior to its March council meeting. Criticism of the report included concerns about effectiveness, cost and inconvenience but, more importantly, that there is no hard evidence in the report that CPD actually improves engineering practice.

But while a CPD/quality assurance task force is going forward, some council members still think it may be a case of too little, too late.

Eastern Region Councillor David Brown, P.Eng., BDS, C.E.T., for example, voted against the task force terms of reference, but not because of opposition to CPD in general.

"I voted against this motion at the March council meeting because I did not fully agree with the terms of reference presented; however, I am strongly behind the need to formulate a CPD/QA program for practising engineers in Ontario," Brown told *Engineering Dimensions*. "Having been a member of the Elliot Lake Advisory Committee (ELAC) and a practising structural engineer, I believe PEO needs to follow through with a meaningful program of CPD/QA for Ontario engineers who actually practise engineering and, more importantly, ones whose practice affects public safety."

Brown and a few other members of council believe the current plan of action isn't active enough, and might only delay implementation of a program sorely needed right away.

"I do not support any program that is simply window dressing, and I also don't think we should adopt a 'one-size-fits-all' solution to apply to all licence holders,"
Chris Roney, P.Eng., PEO councillor

"I understand my colleagues' concerns with CPD/QA," Brown adds. "I fully recognize the matter will involve much peer review and input from the members, but I am also confident that the optics of doing nothing in light of our work on the ELAC and the pending commission report will not be well received by the general public, nor by government."

NON-PRACTISING MEMBERS

Brown also cites an additional complicating factor, namely that non-practising engineers might be required to conform to a compulsory program, simply to maintain their P.Eng. "One of the biggest fears about CPD/QA in this province stems from the fact that, by far, the majority of members don't actually do any engineering and for them to be encumbered by a program like this would be considered, by most, unnecessary," Brown says.

Fellow Councillor Chris Roney, P.Eng, FEC, BDS, chair of ELAC, fully supports a formal means for licence holders to maintain currency of their knowledge, but he has concerns about how a CPD program might take shape.

"I do not support any program that is simply window dressing, and I also don't think we should adopt a 'one-size-fits-all' solution to apply to all licence holders," Roney says. "I do not support simply following the other common models, since I feel strongly they are largely meaningless, have no metrics to verify efficacy, and are really there just to give the appearance that the association is doing something to ensure the ongoing competency of their members."

Instead, Roney suggests a PEO program focus only on those areas of practice where there is a greater exposure to public welfare and safety, and where there is demonstrable need or expectation that practitioners engaged in such work have a level of knowledge and currency beyond that required for initial licensure.

"It should certainly not apply to non-practising members and members whose work does not affect the public," he adds. "We have the ability to devise a system that practising members would actually welcome as clearly beneficial, rather than being a burdensome and unnecessary waste of their time."

CPD ≠ COMPETENCE

For PEO's West Central Region Councillor Robert Willson, P.Eng., the CPD debate is especially vexing. Willson, who supports professional development and quality assurance programs in general, is concerned that the process is taking too much time.

"The reality is that the [Continuing Professional Development, Competency and Quality Assurance] task force will simply delay what should be a relatively straightforward process to establish some form of monitoring what our membership is doing post licensure," Willson told *Engineering Dimensions*.

Willson is also concerned the approved terms of reference for the task force call for a linkage between CPD and a determination of member competence, something he believes was not intended at the outset. "At the end [of the process], I fear we will be essentially where we are now and the task force will have discovered that CPD monitoring cannot ensure competence, which is a much more complex issue. The council of that day will have to wrestle with the same issues–is CPD worth doing and how to do it?"

POLISHING SKILLS

One engineer with a unique perspective on CPD and quality assurance is Pierre Lapalme, ing., a Laval, Quebec-based civil engineer who, due to different work assignments, is licensed to practise with six provincial engineering associations, including PEO.

Lapalme, whose first experience with CPD was in Alberta and later Quebec, believes post-licensing refresher programs are sorely in need.

"Early after I graduated, I worked with engineers who started practising well before I did, and their methods and knowledge of codes, standards, laws, tools, calculation methods, interpersonal relations and other aspects of day-to-day skills required to perform engineering tasks were, by my standard, outdated or needed some polishing," Lapalme says. "But improving these skills is not to be done at any price. When the Ordre des ingénieurs du Québec consulted its members about a proposed CPD program three years ago, I commented that the skills to be considered valid for a member's CPD program should be directly related to his or her field of work."

Lapalme discounts criticism that CPD and quality assurance programs are necessarily over bureaucratic, or simply a public relations exercise.

All over Canada, he says, professional associations, not only engineers, are faced with increased public scrutiny, and need to show they are fulfilling their duties as self-regulating bodies. "This is especially so in Quebec with all the recent bribery and corruption and collusion accusations in court and the related Charbonneau Public Commission. It seems that several professional associations adopted a CPD program, among other measures, to achieve that goal. But how to develop, sell–to its members and to the public–maintain and steer that kind of program seems to be a challenge."

TIME TO EVOLVE

Whatever PEO's CPD task force ultimately recommends, there is little doubt CPD and quality assurance issues will remain high priorities for engineering regulators. It's conceivable CPD programs will become more sophisticated and customized as they evolve within the regulatory framework. Roney, for example, has developed an eight-point set of guiding principles he believes should be an essential part of any meaningful program. Some of these echo the engineering Code of Ethics, especially in terms of remaining up to date in a practitioner's area of specialty. Other points, however, speak more directly to public safety concerns.

"The establishment of a regulated system of knowledge assurances shall only be called for where there is a potentially higher risk to public welfare, an expectation by the public, government or other stakeholders, or where it is otherwise deemed to be in the public interest to do so," Roney suggests.

He also suggests substituting the term "knowledge assurance" in favour of quality assurance. "I realize that it is perhaps not the best term either, but I believe PEO can effectively ensure practitioners are actively seeking to obtain ongoing knowledge, but would have a much more difficult time ensuring competence," Roney says.

Willson suggests a well-thought-out, sophisticated CPD program would help PEO and other associations keep up with a much-changing regulatory environment. "PEO currently focuses on initial licensure, which is important but is insufficient to deal with today's engineering profession," Willson says. "Our systems were established to regulate a much smaller group of independent professionals, and they could be expected to maintain their capabilities during their careers. Today, most engineers are employees of large corporations, often not Canadian, and have much less control over their work or how they do it. Many of our members no longer practise engineering as their careers have evolved. PEO needs to regulate the members of today. We need to know whether our members still practise engineering and whether they have maintained their knowledge during practice, or have taken steps to refresh their knowledge if they have not practised for some time and wish to return to practice."

For the immediate future, the PEO registrar will present a list of potential CPD task force volunteers to council for approval at the June 2014 meeting. PEO is allocating an initial budget of $20,000 to the project, and a report describing a recommended CPD program is to be presented to council by December 2015. The project will no doubt be challenging for task force members, and their recommendations nearly two years hence are certain to keep the CPD pot boiling.

Other engineering regulators' experiences with CPD

As PEO mulls over the need for a continuing professional development (CPD) program for licence holders, other engineering regulators already have significant experience with it. Below we present brief snapshots of CPD efforts for engineers in British Columbia, Alberta, Saskatchewan and Nova Scotia.

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF BRITISH COLUMBIA (APEGBC)

Under the APEGBC Code of Ethics, members are responsible for undertaking CPD that is relevant to their practice. APEGBC has developed a CPD guideline that outlines expectations of the types of activities and amount of professional development practising members should be undertaking. To be in compliance with the guideline, members are required to complete an average of 80 hours each year (240 hours on a three-year rolling total). Compliance with the guideline is recommended, but not mandatory.

Members may also voluntarily report their compliance with the guideline. Members who declare compliance with the CPD guideline are recognized as CPD compliant in the online member directory.

APEGBC also offers more than 180 technical, business and managerial seminars and workshops each year to help members reach their professional development goals. APEGBC has created an online tool to assist members in tracking their CPD hours.

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF ALBERTA (APEGA)

The Alberta regulator has been involved with CPD since 1997. The program requires members to complete at least 240 professional development hours over three years, in at least six categories.

The OSPE CPD report (cited in the main feature) referenced the APEGA CPD model.

Ray Chopiuk, P.Eng., APEGA director of professional practice, says there was some push-back from members initially, but it disappeared as members became aware the requirements were not onerous.

Chopiuk says: "What we do is monitor whether members are engaging in professional development activities as required." Noting that the majority of APEGA members comply with the program, he acknowledged that "there are always some who fall behind in their reporting or activity requirements, but when reminded of their obligations, they comply. There are a small number who fail to comply and are struck from the register as a result."

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF SASKATCHEWAN (APEGS)

The APEGS Continuing Professional Excellence program began in 2002. Members are required to earn at least 80 credits annually from six reporting areas:

- professional practice;
- formal activity;
- informal activity;

- participation;
- presentations; and
- contributions to knowledge.

Robert McDonald, P.Eng., APEGS deputy registrar, notes the following:

Currently, APEGS has a statutory object to ensure the proficiency and competency of members. APEGS members are also obliged by their Code of Ethics (which is embedded in regulatory bylaws) to "keep themselves informed in order to maintain their competence."

While APEGS developed the Continuing Professional Excellence program as a framework for members to plan, track and report on their professional development activities, the regulator has not (yet) moved to mandatory reporting; however, it is anticipated that in the future, it will become mandatory.

APEGS officials have discussed with their Ontario counterparts how and when the Ontario regulator might proceed in this area. The administration of such a program is a large undertaking. APEGS has plans to improve the online reporting experience for members, including allowing members to report both their field(s) of practice and their activities.

McDonald's colleague, Patti Kindred, P.Eng., FEC, APEGS director of education and compliance, says the regulator is still working out the approach to compliance reporting. "We will move forward with a plan to refresh our members to their Code of Ethics obligations and to improve their reporting habits prior to any bylaw changes that may be required," she says. "Currently, we require continuing professional education reporting for those members who are providing consulting services. We have no consequences at this point for non-reporting, but this dimension is a consideration in our deliberations for the path towards mandatory participation and reporting."

Kindred says APEGS has historical data and anecdotal evidence that the majority of members participate in CPD of some sort, either personally or through their employers.

ENGINEERS NOVA SCOTIA

Kris Dove, P.Eng., director of professional development, Engineers Nova Scotia, reports the following:

The CPD program has been in place at Engineers Nova Scotia since January 1, 2011, following acceptance by a membership vote in 2008.

Planning for the program was undertaken on various levels since 1996. Under the mandatory CPD program, members are responsible for their own development programs, in the same manner they are now. Members are required to certify, on an annual basis, that they are in compliance with the professional development guidelines and will practise only in those areas in which they are competent.

Members are not required (at this time) to submit records of CPD activities they participate in, but this will be a requirement in the future. "We have seen an over 95 per cent compliance rate with the program each year since its inception," says Dove. "We recommend members keep their CPD records for their own purposes, but Engineers Nova Scotia will not want to see these records unless it is required for disciplinary purposes."

At the beginning of the program launch, he says, a number of members misunderstood the intent of the CPD program and how CPD hours could be earned. Many assumed that taking courses costing a significant amount of time and money would be the only way to be compliant. However, through an ongoing communication program, members now know that CPD hours can be earned through many other avenues, such as participation, professional practice, volunteering or contributing to the knowledge of other engineers, to name a few.

Member evaluations of the program were conducted in 2011 and again in 2013, and it was apparent that members were much more aware in 2013 of the CPD program and what it entailed. Some of the interesting results from the 2013 evaluation are:

- 68 per cent of respondents have visited the CPD section of the Engineers Nova Scotia website;
- informal education continues to be the method most members use to maintain their competence;
- 87 per cent of employers support members attending CPD opportunities; and
- nearly 64 per cent of employers provide time off to attend CPD events and cover the cost of the member's attendance.

"By putting the mandatory CPD program in place at Engineers Nova Scotia, we are now in line with what is in place in most other provinces. This is important when dealing with issues such as full mobility for members working within Canada," says Dove.

There are many different views on professional development and what should be in place for members. Our goal is to have a program that is fair and that can be maintained by the members in an efficient manner. Much of the focus in implementing the mandatory CPD program was on communication of the program and working with members to ensure that it is clear and easy to comply with." Σ

GET ELECTION READY: HOW TO ENGAGE CANDIDATES DURING PROVINCIAL CAMPAIGNS

By Howard Brown and Kaitlynn Dodge

ENGAGING MPPs and provincial candidates during elections can be quite different from building relationships with local representatives outside of elections.

At regular times, the main priority of chapter and Government Liaison Program (GLP) members is building relationships with elected MPPs in their ridings. Holding regular meetings, inviting MPPs to engineering events and keeping them up to date on issues and news as it arises are all par for the course.

How then do you engage during an election? You don't want to alienate the current representative by appearing to support another candidate, but you also can't appear to support the incumbent. It is a delicate balancing act.

As a rule of thumb, when elections are called, all candidates should be treated equally, no matter if they have held the position before or not. The best way to do this is to halt your normal relationship-building tactics and shift to a strategy focused on engaging all candidates during the election.

Here are four ways chapters and GLP members can engage all provincial candidates during an election period. It is likely the incumbent will have a natural advantage because they have attended prior informational meetings, so try to provide some context for the new candidates.

1. Write a formal letter requesting each candidate's position on key engineering issues. Open up the lines of communication with your riding's MPP, and the nominated candidates from the other parties, by sending each of them a personalized letter. The purpose of this letter is to introduce the candidate to the GLP and start to get engineering regulation issues on their radar. If you are writing to the incumbent and you have met before, don't be afraid to acknowledge this in your letter.

2. Ask candidates to fill out a short survey. You may wish to include a short survey with your letter that includes some specific questions about the candidate's views and knowledge of the regulations of engineering in the province. This is both an education and information gathering exercise. Asking specific questions that are rooted in current events helps to make sure that all candidates understand the issues.

3. Volunteer in the election. Individual engineers should feel free to volunteer their time with local candidates. Make sure your chapter isn't aligned with only one party by having multiple engineers volunteer for multiple candidates. Volunteering for election candidates develops relationships and elevates the visibility of engineers in the community.

4. Ask a question at an all-candidates debate. While it is not always possible to host your own all-candidates debate, there are always one or two in a community you can attend. Prepare a question in advance that you would like to ask the candidates and be sure to stand up early to ask so you don't miss the opportunity to speak. In some cases you may have to send questions in advance of the debate, so contact the organizers to confirm.

AS A RULE OF THUMB, WHEN ELECTIONS ARE CALLED, ALL CANDIDATES SHOULD BE TREATED EQUALLY, NO MATTER IF THEY HAVE HELD THE POSITION BEFORE OR NOT.

"Always remember, after the election, you will want to have left a positive impression with all candidates so that no matter who wins, you have already started to build a relationship that is valuable and non-partisan," says Jeannette Chau, P.Eng., PEO's manager of student and government liaison programs.

Chapter and GLP members are encouraged to consult with PEO when engaging in election activities to ensure their message is aligned and to explore if there are ways to enhance activities toward common objectives. Also, be sure to use existing PEO materials for both letters and questionnaires sent to candidates. Σ

Howard Brown is president of Brown & Cohen Communications & Public Affairs Inc. and PEO's government relations consultant. Kaitlynn Dodge is account director at Brown & Cohen and PEO's government relations coordinator.

GAZETTE

COUNCIL APPROVES PRACTICE STANDARDS

By Bernard Ennis, P.Eng.

Three new practice standards have been approved by PEO council and, once proclaimed by the lieutenant governor, will be incorporated into O. Reg. 260/08, which contains all of PEO's practice standards. Since these are regulations, practitioners are legally required to comply with the measures identified in the standards.

NEW PRACTICE STANDARDS

The three new standards cover practice issues in the areas of environmental, civil and structural engineering. The first establishes a standard for the form and content of engineering evaluation reports for drinking water systems that must be submitted to the Ministry of the Environment. This standard was prepared in response to the ministry's concerns about the number of reports they received that were deemed unacceptable. Rather than impose their standards on professional engineering work, the ministry relied on PEO to prescribe how practitioners are to obtain the information needed for the reports and to describe the reporting requirements.

The second standard deals with the preparation of environmental site assessment reports. These reports are typically done for the purpose of producing a record of site condition subject to O. Reg. 170/03. However, sometimes engineers carry out these assessments for other reasons and, if compliance with O. Reg. 170/03 is not necessary, will not prepare a report acceptable to the Ministry of the Environment. Yet the ministry often receives reports that were clearly not intended to comply with regulation. To ensure reports are not used for purposes for which they were not intended, the practice standard requires practitioners to clearly state in the opening of the report whether the assessment complies with the requirements of O. Reg. 170/03, is done according to a different standard, or is not done in accordance with any standards.

The third standard requires all professional engineers submitting drawings for permits for buildings subject to the exemption provided by section 12(6)2 of the *Professional Engineers Act*–that is, buildings that do not require an architect–to include a building code compliance data table on the drawings. The standard prescribes the information that must be included in the data table. Rules under the *Architects Act* make it necessary for architects to provide a similar table for all buildings that require an architect, but there is no formal requirement for engineers to do the same when they provide similar drawings. Building officials have noted the discrepancy and the fact that engineers rarely provide these tables. PEO has produced this standard to facilitate the permit process by making information provided by the building designers consistent, regardless of whether they are engineers or architects.

NEW GUIDELINE

PEO council also recently approved a new practice guideline, *Professional Engineers Developing Software for Safety Critical Engineering Applications*. This guideline recommends good due diligence practices for practitioners developing software to be used in hardware or systems that impact on health and safety, such as railway signaling systems, power plant control systems or medical devices. Guidelines do not have the legal force of practice standards. These documents are intended to clarify the legal, ethical and professional obligations of practitioners carrying out specific engineering activities. They provide advice and recommendations on how practitioners should act to provide professional services in a manner consistent with the reliance on the profession made by society. The guideline is available from the Publications or How we Protect the Public sections of the PEO website.

Bernard Ennis, P.Eng., is PEO's director, policy and professional affairs.

REGULATION 260/08 AMENDED

On March 28, 2014, the government filed Regulation 91/14, amending Regulation 260/08, (performance standards), made under the *Professional Engineers Act*. The amendments will be effective on July 1, 2014. Following is the text of the amended or new sections of Regulation 260 as of July 1. To view Regulation 260, as amended, visit www.peo.on.ca.

DEFINITIONS

1. In this regulation, …
"building code" means Ontario Regulation 332/12 (Building Code) made under the *Building Code Act, 1992*. O. Reg. 91/14, s. 1, 4.

DESIGN OF CERTAIN BUILDINGS

1.1 The following are prescribed as performance standards with respect to the preparation and provision by a professional engineer of a design for the construction, enlargement or alteration of a building described in paragraph 2 of subsection 12(6) of the act:

1. In preparing the design, the professional engineer shall provide information about the building's compliance with the building code. The information shall be organized in a table and shall be listed under the following headings:

i. Project description (new, addition, alteration, change of use).
ii. Major occupancy or occupancies.
iii. Importance category.
iv. Building area.
v. Gross area of building.
vi. Number of storeys above and below grade.
vii. Building height.
viii. Number of streets and access routes.
ix. Building classification.
x. Sprinkler system proposal.
xi. Standpipe requirements.
xii. Fire alarm requirements.
xiii. Adequacy of water service or supply for fire fighting purposes.
xiv. Whether the building is a high building.
xv. Construction restrictions (combustible, non-combustible or both).
xvi. Mezzanine information (number, area, locations).
xvii. Occupancy load per floor and method of determination.
xviii. Provision of barrier-free design.
xix. Presence of hazardous materials in the building.
xx. Requirements respecting fire resistance rating of horizontal assemblies and supporting members.
xxi. Exterior wall construction type and requirements respecting spatial separations.
xxii. Plumbing fixture requirements.

2. The professional engineer shall ensure that the table is affixed to the topmost sheet of the drawings that he or she prepares as part of the application for a building permit for the building's construction, enlargement or alteration, or is included in the drawings in a similarly prominent location.

3. The professional engineer shall provide a copy of the table to any other person who the professional engineer knows to be responsible, for the purposes of the building code, for any portion of the design of the construction, enlargement or alteration of the building. 2014, O. Reg. 91/14, s. 2.

COMMENCEMENT

4. REVOKED, and the following substituted:

ENGINEERING EVALUATION REPORTS UNDER *SAFE DRINKING WATER ACT, 2002* (DRINKING WATER SYSTEMS)

4.(1) In this section,
"available" means, in reference to a document, that it is present at or immediately accessible from the site of a drinking water system, whether in paper or electronic format;
"distribution system", "drinking water system", "raw water" and "raw water supply" have the same meaning as in the *Safe Drinking Water Act, 2002*;
"Drinking Water Systems Regulation" means Ontario Regulation 170/03 (drinking water systems) made under the *Safe Drinking Water Act, 2002*;
"operational check equipment" means equipment installed in a drinking water system, or portable equipment present at the site of a drinking water system, for the purpose of carrying out,
(a) operational checks, sampling and testing under Schedule 6 to the Drinking Water Systems Regulation, and
(b) the maintenance and operational checks under Schedules 8 and 9 to that regulation. O. Reg. 91/14, s. 3.

(2) The following are prescribed as performance standards with respect to the assessment of a drinking water system and the preparation of an engineering evaluation report on a drinking water system under Schedule 21 to the Drinking Water Systems Regulation by a holder of a licence, temporary licence or limited licence:
1. Subject to paragraph 17, the holder shall complete and deliver the report in a timely manner that gives the owner of the drinking water system a reasonable opportunity to meet the timing requirements set out in Schedule 21 to the Drinking Water Systems Regulation.
2. The holder shall ensure that the report contains all of the information that section 21-5 of Schedule 21 to the Drinking Water Systems Regulation requires in order for the report to comply with that section.
3. The information and opinions that the holder provides in the report shall be based on observations made during one or more visits to the drinking water system by the holder or by a person under his or her supervision, and the holder shall include in the report,
i. the date of every visit to the drinking water system for the purposes of preparing the report by the holder or by a person under his or her supervision,
ii. in each case, the name of the person who visited the drinking water system, and
iii. in the case of a visit by a person under the holder's supervision, the person's title and relationship to the holder.

4. The holder shall determine and identify the location of the raw water supply for the drinking water system and shall provide as part of the report,
i. an indication as to whether the source of the raw water supply is ground water, surface water, or a combination of the two,
ii. a site plan showing,

A. the boundary of the drinking water system, any significant topographic features within those boundaries, and an indication of site grading that may impact on the source of the raw water supply,
B. the location of all parts of the drinking water system used for the collection, storage and treatment of raw water, and
C. the distribution system used for distributing treated water to users of the drinking water system, and

iii. the information described in paragraph 5 or 6 or both, as the circumstances require.

5. If any part of the source of the raw water supply is ground water, the holder shall,
   i. include in the site plan the location of any wells that form part of the drinking water system and the location of any known water courses, drains, septic tanks, tile fields and any other structures that may affect the quality of the well water, and
   ii. a description of the physical characteristics of each well that forms part of the drinking water system including, if available, a copy of the well record, and an indication of whether any of the wells obtains water from a raw water supply that was determined for the purposes of section 2 of the Drinking Water Systems Regulation to be ground water that is under the direct influence of surface water.

6. If any part of the source of the raw water supply is surface water, the holder shall state the name of the surface water body.

7. The holder shall provide in the report a description of the drinking water system, which shall include, at a minimum,
   i. an estimate of the number of persons served by the drinking water system,
   ii. a schematic diagram of any treatment process used in the drinking water system for the purpose of meeting the requirements of Schedule 2 to the Drinking Water Systems Regulation, and
   iii. a list of all water treatment equipment and operational check equipment installed in the drinking water system.

8. The opinion that the holder provides for the purposes of subclause 21-5 (b)(i) of Schedule 21 to the Drinking Water Systems Regulation respecting whether all equipment required in order to ensure compliance with Schedule 2 to that regulation is being provided, shall be with respect to all expected flow conditions and quality variations.

9. In addition to the opinions required to be included in the report by section 21-5 of Schedule 21 to the Drinking Water Systems Regulation, the holder shall provide in the report his or her opinion regarding,
   i. the reliability of the water treatment equipment and operational check equipment listed under subparagraph 7 iii and whether there are any redundancies in or observable problems with it, and
   ii. the operating conditions that must be maintained for the water treatment equipment listed under subparagraph 7 iii in order to ensure that the requirements of Schedule 2 to the Drinking Water Systems Regulation are met.

10. The holder shall,
    i. list in the report all equipment installed or used at the drinking water system, including water treatment equipment and operational check equipment listed under subparagraph 7 iii, that requires periodic maintenance, and
    ii. review the relevant maintenance records and maintenance schedules that are available for the equipment listed under subparagraph i, and give his or her opinion as to,
        A. whether the equipment has been inspected, tested, replaced and calibrated at the frequency recommended by the equipment manufacturer,
        B. if the equipment manufacturer does not recommend a maintenance schedule, whether the existing maintenance schedule for inspection, testing, replacement and calibration of the equipment would provide for reliable operation of the drinking water system, and
        C. whether the equipment is being inspected, tested, replaced and calibrated so that the drinking water system is in compliance with the applicable requirements set out in Schedules 2, 6, 8 and 9 to the Drinking Water Systems Regulation.

11. The holder shall provide reasons for the opinions required to be provided by paragraphs 8, 9 and 10, along with the technical and other information he or she relied on in reaching those opinions.

12. The holder shall attach to the report,
    i. a list of all available manuals and similar information relevant to the operation and maintenance of the water treatment equipment and operational check equipment listed under subparagraph 10 i, and

ii. a list of the water treatment equipment and operational check equipment listed under that subparagraph for which such manuals or information are not available.

13. In preparing the maintenance schedule referred to under clause 21-5 (d) of Schedule 21 to the Drinking Water Systems Regulation, the holder shall, subject to paragraph 14, base the maintenance schedule on the applicable maintenance schedules contained in the manuals and information referred to in subparagraph 12 i.

14. If a maintenance schedule for a piece of equipment is not available, or if the holder is of the opinion that the available maintenance schedule would not provide for the reliable operation of the drinking water system or ensure compliance with the applicable requirements of Schedules 2, 6, 8 and 9 to the Drinking Water Systems Regulation, the holder shall develop a maintenance schedule for the equipment that would, if followed, provide for such operation and compliance.

15. If the holder determines that water treatment equipment or operational check equipment at a drinking water system may be bypassed, or discovers any other problem with the drinking water system that, in his or her opinion, may lead to improperly treated water being delivered to users of the drinking water system but does not constitute a failure to comply with Schedule 2, 6, 8 or 9 to the Drinking Water Systems Regulation, he or she shall include in the report a description of the problem, together with recommendations that would rectify the problem or mitigate risks associated with it.

16. If at any time during the assessment of the drinking water system or the preparation of the report the holder determines that the drinking water system does not comply with a requirement in Schedule 2, 6, 8 or 9 to the Drinking Water Systems Regulation and that the lack of compliance may lead to improperly treated water being delivered to users of the drinking water system, he or she shall immediately inform the owner of the drinking water system in writing of the fact, identifying those provisions of the Drinking Water Systems Regulation with which the drinking water system does not comply and the problems that need to be resolved, and recommending changes that would bring the drinking water system into compliance.

17. If the holder makes the determination described in paragraph 16, the holder shall not complete the report, subject to paragraph 18.

18. If the owner of the drinking water system notifies the holder in writing that the changes recommended under paragraph 16 have been made, the holder shall review the changes, and if, in the holder's opinion, the altered drinking water system is in compliance with Schedules 2, 6, 8 and 9 to the Drinking Water Systems Regulation, the holder shall complete the report.

19. On completing a report, the holder shall promptly sign and give to the owner of the drinking water system a declaration, in the form provided for the purpose by the Ministry of the Environment, containing the opinion of the holder that is required to be provided for the purposes of clause 21-5 (b) of Schedule 21 to the Drinking Water Systems Regulation. O. Reg. 91/14, s. 3.

ENVIRONMENTAL SITE ASSESSMENT REPORTS

5.(1) In this section,

"environmental site assessment" means an investigation in relation to land to determine the environmental condition of property, and includes a phase one environmental site assessment or a phase two environmental site assessment under Ontario Regulation 153/04 (Records of Site Condition–Part XV.1 of the act) made under the *Environmental Protection Act.* O. Reg. 91/14, s. 3.

(2) A holder of a licence, temporary licence or limited licence who prepares or supervises the preparation of a report as part of an environmental site assessment shall ensure that the following is included on the signature page of the report:

1. In the case of a report for a phase one environmental site assessment or a phase two environmental site assessment under Ontario Regulation 153/04 (Records of Site Condition–Part XV.1 of the act), a statement that the objectives and requirements set out in that regulation for a phase one environmental site assessment or a phase two environmental site assessment, as the case may be, were applied in carrying out the environmental site assessment and preparing the report.
2. In any other case, a statement specifying which objectives, requirements or standards were applied in carrying out the environmental site assessment and preparing the report. O. Reg. 91/14, s. 3.

STRUCTURAL EFFECTS OF SOLAR PANEL INSTALLATIONS ON ROOFS

By Chris Roney, P.Eng., BDS, FEC

Over the last few years there has been a growing interest in the installation of roof-mounted solar (PV) panels on new and existing buildings. The Ontario government has provided significant financial incentives for green energy initiatives, thereby driving demand for such installations.

However, there appears to be a great deal of misunderstanding in the industry regarding the effect of solar panels on a roof. Some systems claim to be very light and thus to have no significant impact. Such statements are misleading. In fact, solar panels have a significant impact on the roof structure to which they are mounted. Information here is intended to assist building officials and building designers in understanding the potential structural implications of these installations.

This article was written specifically for buildings designed under the provisions of part 4 of the Ontario Building Code (OBC). However, the general concepts are the same for part 9 structures. In fact, buildings designed within the provisions of part 9 may be particularly unsuitable for the additional loads imposed by solar panels, due to the lower safety factors employed for such small structures. Roofs framed with light wood trusses should be approached with particular caution, since the trusses and truss connections are typically designed for only basic, uniformly distributed part 9 snow loads and do not, therefore, respond well when the loads are increased or the pattern of application of the load is altered, as is frequently the case for solar panel installations.

The OBC specifies the loads for which roofs must be designed. The loads to be considered include those of the self-weight of the roof structure itself, loads due to human activity, wind forces, and snow-, rain- and earthquake-induced forces. When solar panels are added to a roof, there are a number of factors that must be evaluated, beyond simply the additional weight of the panels themselves.

SNOW LOADS

The OBC requires that roofs be designed for the one-in-50-year ground snow load, modified by a number of factors, which are intended to account for the roof's exposure to wind, its slope and shape, as well as its importance.

An explanation of some of these factors as applied to a solar panel installation follows.

Wind exposure factor (C_w)

The factor C_w is intended to account for the degree to which the roof in question is exposed to wind. Areas of roof exposed to wind on all sides with no significant obstructions are found to accumulate a lesser degree of snow than sheltered or obstructed roofs. This is due, in large part, to the effect of wind sweeping across the surface and removing a portion of the snow. For this reason, the OBC permits a reduction of 25 per cent in the snow loads in such a case.

However, the installation of solar panels on a previously unobstructed roof will negate this permitted reduction.

Existing roofs designed using this factor would typically require reinforcement due to the increase in the design snow loads.

Slope factor (C_s)

The slope of a surface is a factor to be considered in determining the snow load on a roof or other structure. Surfaces having a slope of 30 degrees will tend to shed snow and so a reduction in the design snow load for such roofs is permitted. In the case of an unobstructed, slippery roof, the reduc-

tion is even greater and may be applied to roofs having a slope of greater than just 15 degrees.

If solar panels are placed on a formerly unobstructed sloped roof, the use of these slope factors may no longer be appropriate.

If a roof was previously designed as an unobstructed, slippery roof, the introduction of solar panels may result in increased accumulations of snow and the roof may, therefore, require reinforcement.

Furthermore, solar panels themselves are typically sloped and are usually relatively unobstructed and slippery. When arrays of solar panels are placed on a flat roof, the snow will tend to fall onto the panels and then slide off them into a pile beneath the low end of the panel. The structural commentaries to the code (Canadian Commission on Building and Fire Code) require roof areas below upper sloped surfaces that may shed sliding snow to be designed for these patterns of accumulation.

This may result in patterns of snow accumulation on a roof for which it was not originally designed and may necessitate reinforcement.

Shape factor (C_a)

The distribution of snow on a roof depends greatly on the roof's shape and the presence of any obstructions on the roof. When wind encounters obstructions (e.g. a high roof next to a lower area, a parapet wall, roof-mounted equipment or solar panels), regions of accelerated and retarded airflow result. Since a minimum wind velocity is required to transport the snow, it tends to settle in regions where the flow velocity is too low and forms drifts. The weight of snow in these drifts may be significant and is often many times greater than the snow load over an unobstructed roof.

The shape factor accounts for the shape of the drifts that are likely to form next to an obstruction, such as a solar panel.

Large solar panels will induce drifting snow for which the roof may not have been originally designed, thereby necessitating reinforcement.

The code recognizes that small obstructions do not cause significant drifting. Many solar panels are less than the height that would induce drifting snow, or, in the case of small arrays, may be less than the length limits. However, in any case where both of these limitations are exceeded, snow drifting will be induced for which the original roof may not have been designed, resulting in the need for reinforcement.

WIND LOADS

The OBC requires that buildings and portions thereof be designed for pressures and suctions due to wind acting on all or part of a surface. It is based on a reference velocity pressure that is a site-specific parameter determined from recorded wind speed data and formulated to provide a probability of being exceeded in any one year of 50. This is loosely referred to as the one-in-50-year wind.

Wind pressures acting on a roof-mounted solar array will, depending on locale, sometimes be subjected to fairly significant forces acting in a downwards, upwards or sideways direction. Even panels oriented parallel to a roof surface are exposed to pressures and suctions acting normal to the surface of the panel. When downward pressures are exerted on the panels, these forces are transmitted into the building structure. In the case of panels supported on posts, this results in concentrated loads where there were none before. The pressure must be added to the weight of the panels when assessing the effect on the supporting structure.

The actual pattern and magnitude of wind pressures acting on a complex arrangement of rows of panels is difficult to confidently predict without project-specific wind tunnel testing. Some argue that it is reasonable to assume that some shielding effects arise within the rows of panels, while other literature cautions that the turbulence created between rows of panels can result in unanticipated forces.

In the case of a net uplift, some means of counteracting these forces must be provided. This entails either fastening the panel frames to the structure or overcoming the uplift by the use of ballast. Typically, the latter method has the benefit of not requiring any penetrations through the roofing membrane. However, it results in a much greater weight on the roof due to the ballast and typically results in the need for reinforcement of the roof structure. Ballast is also ineffective in providing resistance to seismic loads. Fastening the panels to the structure is preferable, structurally, and the number of penetrations through the roofing membrane may be minimized through the use of transfer beams on the roof to which the panel frames are fastened. This does, however, have the effect of accumulating the loads and so the greater concentrated force is likely to require localized reinforcement of the building structure. Even in cases where each panel is individually secured to the structure, reinforcement may still be required. Furthermore, such fastenings must typically be made to more than just the roof deck, and, in the case of installations on existing buildings, often results in the need to remove ceilings to properly connect to the primary and secondary framing members themselves.

Some panel systems claim to be "self-ballasted." For such a system to truly require no positive mechanical attachment to the building structure it would necessitate a fairly heavy panel system (in the order of 30 to 40 psf). Such a system would likely exceed the capacity of most roof structures unless they had been purposely designed for such additional loads. Some systems claim that anchorage may be provided just at the parapets, to avoid penetrating the membrane. Caution must be exercised with such a system, since the roof parapets on a building are often non-structural components and may not be reliably secured

to the building structure to resist the concentrated loads that would be imposed by the solar array system.

Panel frames supported on posts that rest on the surface of the roof, either on a base plate or on a sleeper, must be checked to ensure that the concentrated pressure exerted does not damage the roofing membrane or crush the roof insulation.

SEISMIC EFFECTS

The OBC includes seismic design requirements for such equipment as solar panels that are mounted on or in a building. The requirements are found in clause 4.1.8.17. Equipment on all post-disaster buildings must be seismically restrained regardless of the seismic risk at a particular site. Post-disaster buildings include hospitals, police, fire and ambulance stations, as well as power and water treatment facilities, among others. For all other importance categories, the trigger for the requirement to seismically restrain such equipment as solar panels is the building's seismic hazard index. The seismic hazard index is defined as: IEFaSa(0.2), which takes into account the importance of the building, the site-specific geotechnical properties and the seismicity of the locale. Where the seismic hazard is equal to or greater than 0.35, the solar panels must be seismically restrained.

The magnitude of the seismic forces on solar panels depends on the location of the equipment on the building as well as its mass. Roof-mounted installations are exposed to higher seismic forces than wall- or ground-mounted installations.

It is important to note that ballast is not an effective means of resisting seismic forces, since its only means of resistance to lateral forces relies on friction. Friction can't be relied upon for seismic resistance. Furthermore, the additional mass of the ballast serves to increase the seismic forces.

Consideration must also be given to the effect that solar panels have on a building's seismic force resisting system (SFRS). The addition of a solar panel array on a building contributes weight, particularly if it is ballasted, and this weight increases the seismic forces on the structure. This must be taken into account when checking the building's SFRS to ensure that it has the capacity to resist these forces. It is also important to ensure that proper load paths are available to deliver those forces to the SFRS. Many older buildings, particularly those constructed prior to the adoption of modern seismic design requirements, may not have well-developed and reliable SFRSs. This needs to be verified as part of any study on the suitability of an existing building to support a solar panel array.

Consequently, solar panels in post-disaster buildings, and for all structures having a seismic hazard index equal to or greater than 0.35, must be seismically restrained and cannot simply be ballasted. Furthermore, the panels increase the seismic load on the building and this must be accounted for in the evaluation of a building's SFRS.

BUILDING CODE PROVISIONS FOR EXISTING BUILDINGS

The OBC is periodically revised and the provisions within it change from time to time. In the case of wind and snow loads, there have been a series of changes over the years. In the 2006 edition, significant increases were made to the snow and wind forces for which buildings must be designed, with new combinations of load to be considered. Fortunately, the code is not retroactive and thus existing buildings need not be upgraded each time the code requirements change. However, when new alterations, additions or modifications to an existing building are carried out that affect the existing structure, upgrading may be required.

The OBC describes this concept in terms of a building's performance level. It states that the performance level of a building after construction or alterations shall not be less than the performance level of the building prior to construction. In simple terms, this means that if you add any new loads to a structure for which it was not originally designed, it is a requirement to reinforce those portions of the building to restore the building's structure to a level of safety that meets or exceeds the level that existed prior to the work.

CONCLUSIONS

The installation of solar panels on the roof of a building typically induces significant additional loads. The magnitude of the loads imposed depends greatly on the geometry of the panels, as well as the exposure and construction of the existing roof. The vast majority of existing building roofs, unless specifically designed for such installations, will require reinforcement to support the structurally significant loads imposed by solar panel arrays.

Competent analysis of the load effects of a solar panel installation on an existing roof structure, or a new one for that matter, is extremely important. Claims by solar panel manufacturers that their system is "self-ballasted" or otherwise requires no reinforcement of the existing structure should be critically examined. A structural engineering analysis should be carried out in all cases to fully assess the load effects of solar panel installations and the capacity of a roof surface to safely resist such effects. Σ

Chris Roney, P.Eng., BDS, FEC, is head of Roney Engineering, a company that offers structural engineering services related to building design and construction, investigations and restoration.

REFERENCE

Canadian Commission on Building and Fire Codes, *User's Guide NBC 2010, Structural Commentaries (Part 4 of Division B)*, National Research Council of Canada, 2006, Ottawa, Commentary G, Paragraph 41.

SOME CONSIDERATIONS FOR ROOFTOP SOLAR PANELS

- An existing roof designed using wind exposure factor C_w typically requires reinforcement due to the increase in the design snow loads;
- If a roof was previously designed as an unobstructed, slippery roof, the introduction of solar panels may result in increased accumulations of snow and the roof may require reinforcement;
- Snow tends to slide off panels into a pile under the low end of the panel, when solar arrays are placed on a flat roof. This may result in patterns of snow accumulation on the roof for which it was not originally designed and may necessitate reinforcement;
- Large solar panels will induce drifting snow for which the roof may not have been originally designed, thereby necessitating reinforcement; and
- Solar panels in post-disaster buildings, and for all structures having a seismic hazard index equal to or greater than 0.35, must be seismically restrained and cannot simply be ballasted. The panels increase the seismic load on the building and this must be accounted for in the evaluation of a building's seismic force resisting system (SFRS).

INTRODUCING PEO COUNCIL 2014-2015

EXECUTIVE COMMITTEE

J. DAVID ADAMS, P.ENG., MBA, FEC
President

David Adams, PEO president, 2008-2009 and 2011-2012, studied arts and science at Carleton University, before earning a BEng in mechanical engineering at McGill University and an MBA in finance and marketing from the University of Western Ontario. Involved extensively in mechanical engineering design and production management, he developed skills in acquisition analysis and business operations. He worked at the National Research Council, in Alberta's oil fields, Canadian Industries Limited, Cockshutt Farm Equipment, Abitibi Power and Paper, and Rio Tinto Zinc (England), and held senior positions with Canadian Gypsum and Massey Ferguson, before acquiring Canada Spool & Bobbin Company. Adams is now president, Maple Leaf Engineering, a consulting firm specializing in lean design and manufacturing processes, infrastructure renewal, wood product manufacturing facilities, sawmill and dry kiln design. He was twice elected a regional councillor and has over 25 years of chapter, committee and task force service. He chaired the Governance Task Force and the Audit and Finance committees. As a member of the Building Committee, he was instrumental in acquiring PEO's headquarters. A past president of the Rotary Club, Adams is president of the local Gideons International and a member of the Fellowship Baptist Church. He was appointed to *Marquis Who's Who* (US) in 1984, *International Men of Achievement* in 1985 and *Canadian Who's Who* in 1989. **daveadams@peo.on.ca**

ANNETTE BERGERON, P.ENG., MBA, FEC
Past President

Annette Bergeron holds an honours bachelor of science in material and metallurgical engineering from Queen's University and a master of business administration from the Schulich School of Business, York University. She has worked as a production engineer at Dofasco Inc.; a lecturer at Queen's faculty of applied science and engineering, and Queen's School of Business; director, first-year studies, Queen's engineering; and general manager at Queen's Alma Mater Society (AMS) Inc. In 2013, she was named one of the Top 25 Women of Influence in Canada by *Women of Influence Magazine*. She has been a PEO member since 1990. As a volunteer, Bergeron has been a director, Kingston General Hospital, since 2006. She has also twice served as president and chair of the Ontario Society of Professional Engineers. She believes accountability is a fundamental responsibility of leadership and continues to work with members to ensure that PEO excels in its regulatory mandate of setting standards and governing conduct. **abergeron@peo.on.ca**

THOMAS CHONG, MSC, P.ENG., FEC, PMP
President-elect

Thomas Chong earned a master's degree in mechanical engineering from the University of Strathclyde, Glasgow, Scotland, in 1973. He became a fellow of Engineers Canada in 2011; International Project Management Professional (PMP) in 2009; senior member, American Institute of Industrial Engineers in 1977; Professional Engineers Ontario member in 1976; and a Chartered Engineer (Britain) in 1974. Chong was recruited from London, England, by Northern Telecom Canada as a corporate engineering manager in 1976. He has been president of a 3000-member network since 2008, and currently works as a senior system lead with the Ministry of Health and Long-term Care. Chong received the Queen Elizabeth II Diamond Jubilee Medal in 2013. Since 2009, he has also won 13 other major awards, including the Amethyst Award in 2009 (highest award in Ontario government). Chong is a mentor, York University engineering design program, 2008 to present; mentor of Chinese Professionals Association of Canada (CPAC), 2008 to present; Knight of Columbus, and Lector, St. Agnes Tsao Church, 2011 to present; founding member and board executive, Popular Music Club, 2007 to present; and a former board member, Legal Aid Ontario Clinic, 2004 to 2009. Chong was PEO vice president (elected), 2013 to 2014; vice president (appointed), 2011 to 2012; East Central Region councillor, 2006 to 2013; member, Regional Councillors Committee, 2006 to 2013; vice chair, Chapter Leaders Conference, 2006; and director, communications and executive, York Chapter, 2000 to 2008; and is a member of the Repeal of Industrial Exception Task Force, 2011 to present; Audit Committee, 2006 to present; Discipline Committee, 2012 to present; and Government Liaison Program, 2006 to present. Chong has published many technical papers. **thomas.chong@rogers.com**

GEORGE COMRIE, MENG, P.ENG., CMC, FEC
Vice president (elected)

George Comrie holds BASc and MEng degrees in industrial engineering from the University of Toronto, and has had a successful career as a software engineer, management consultant, entrepreneur and business manager. As a volunteer for the profession, he is an executive member of PEO's Etobicoke Chapter; chair, Licensing Process Task Force; vice chair, Emerging Disciplines Task Force; and a director of the Information and Communications Technology Council. He was PEO president in 2004-2005, and is a past president of the Ontario Professional Engineers Foundation for Education. The founder of PEO's Engineer-in-Residence and Government Liaison programs, he was invested as a Companion of the PEO Order of Honour in 2007 to recognize his contributions to PEO. A passionate advocate for our Canadian model of professional self-regulation, Comrie believes in PEO's accountability to its membership, and in strengthening its core regulatory functions. **gcomrie@peo.on.ca**

MICHAEL WESA, P.ENG., FEC
Vice president (appointed)

Michael Wesa received his degree in mechanical engineering (co-op) from the University of Waterloo in 1974. The son of an engineer, Wesa had already attended chapter functions with his dad, and shortly after registering in 1976, became active on the Lakehead Chapter executive, a role he still maintains today. From 1992 to 1996, he was a Northern Region councillor, and served as the appointed vice president in his final year on council. In 2011, Wesa was elected again as Northern Region councillor. Wesa has contributed to numerous PEO committees over the years, and has served on the Discipline Committee continuously since 1992. He became chair of this committee last November. Wesa was inducted into the Order of Honour in 2008. His engineering career included professional service with the forestry industry, three consulting engineering firms, and Hydro One (electrical utility). His expertise includes HVAC, power transmission, diesel generation and mechanical building services. Retired in 2012, Wesa looks forward to more time for travel adventures. He has also volunteered with many community-based organizations in Thunder Bay, including minor hockey (scheduler, newspaper column), symphony orchestra (on board), little league baseball, his church (treasurer), and donating plasma (until the local facility was closed). His other interests include travel, music, theatre and computing. Retired from squash and tennis, he can still bicycle. Wesa has been married to Arlien since 1975, and together they raised two sons and a daughter.
michael@wesa.peo.on.ca

NICHOLAS (NICK) P. COLUCCI, P.ENG., MBA, FEC

Nick Colucci graduated from the University of Waterloo with a BASc (civil) in 1987. He joined PEO in 1989 and received his PEO Certificate of Authorization and consulting engineer designation in 1992. He is currently employed by the Township of Brock as the director of public works. He is a past member of PEO's Lake Ontario Chapter, which he chaired from 1995 to 2003, and vice chaired in 1991 and 1995. He was a director on the chapter executive from 1987 to 1991 and in 1994. Colucci also sits on PEO's Advisory Committee on Volunteers. He is an avid cyclist and also enjoys hiking, snowshoeing and kayaking. He has completed the Logs Rocks and Steel Adventure Race in Haliburton, which included a 16-km paddle, 45-km mountain bike and 16-km trail run segments, the Horseshoe Centurion 100-km cycling event, and the Fatty Frost Cross race at Hardwood Hills, a bike race on both double and single-track, snow-covered trails. He has also passionately participated in numerous fundraising efforts, including the Becel Heart and Stroke Ride for Heart, the World Wildlife Federation CN Tower Climb and the United Way CN Tower Climb. This summer, Colucci plans to participate in the Wounded Warriors Canada Battlefield Ride in France in hopes of raising $6,000 to support the wounded warriors Animal Assisted Therapy programs for our ill and injured Canadian Forces members and their families. Contact Colucci directly for information about donating.
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REBECCA HUANG, LLB, MBA

Rebecca Huang is a litigation partner at Fogler, Rubinoff LLP. She routinely assists corporations and business owners with commercial disputes. Huang is experienced in shareholder disputes, defamation, breach of contract claims, negligence and professional malpractice defense. On March 19, 2008, she was appointed by the Ontario government as a lieutenant governor appointee to PEO council for a three-year term. She was reappointed in 2011 and again in 2014 for a total of six more years. She is honoured to help advance the engineering profession with her legal skills.
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ROBERT WILLSON, P.ENG.

Robert Willson is a retired senior project engineering manager with over 35 years of experience and expertise in project management and engineering. He holds an MASc in human factors engineering and a BASc in industrial engineering, both from the University of Toronto. During his career, Willson has managed multi-discipline teams of engineers and designers, undertaking administrative and leadership roles in a variety of projects for power utilities, the process industry, and municipal water and wastewater clients. He has worked for companies, such as Ontario Hydro, Shaw Energy and Chemicals Canada, SNC-Lavalin and CH2M Hill. As West Central Region councillor, Willson is an active member of PEO's governing council. He serves on PEO's Finance (as chair), Discipline, Regional Councillors (as vice chair), and West Central Region Election and Search committees, and chaired the 2013 Chapter Leaders Conference. He is also vice president of the Professional Engineers Foundation for Education, which provides scholarships for engineering students across Ontario.
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COUNCILLORS

Councillors-at-large

ROYDON FRASER, PHD, P.ENG., FEC

Roydon Fraser received a bachelor's degree in engineering physics at Queen's University, and his master's degree and doctorate in mechanical and aerospace engineering from Princeton University. He is currently a professor in the mechanical and mechatronics engineering department at the University of Waterloo. He joined PEO in 1991, serving on the executive of the Grand River Chapter (formerly the Kitchener-Waterloo and Guelph-Cambridge chapters) starting in 1993, and chairing the chapter in 1996. Fraser supervises the University of Waterloo Alternative Fuels Team (UWAFT), which competes internationally in the Advanced Vehicle Technology Competitions (AVTCs), such as EcoCar 2, with the goal of offering unparalleled hands-on, real-world experience to engineering students. Over a multi-year design and build cycle, UWAFT achieves reduced fuel consumption, reduced greenhouse gas emissions, and reduced tailpipe emissions, all while maintaining consumer acceptability in the areas of performance, utility and safety. UWAFT is proud to have built the world's first, student-built, fuel-cell vehicle to successfully complete all of AVTC's production vehicle tests. Fraser continues to lead the organization of Explorations, an evening where the University of Waterloo's faculty of engineering is open to hundreds of grades 6, 7 and 8 students to see and explore the wonders of engineering. He is a member of the Society of Automotive Engineers, the American Society of Mechanical Engineers, and the Ontario Society of Professional Engineers, and is a lifetime member of the Sandford Fleming Foundation. He serves on PEO's Academic Requirements and Discipline committees, both since 1999.
rafraser@uwaterloo.ca

ROGER JONES, P.ENG.

Educated at Imperial College in London, England (BSc, DIC, M.Phil), and McGill University, Montreal (MBA), Roger Jones retired from George Kelk Corporation as vice president and chief engineer. His career has covered many engineering roles from design engineer to executive at several major firms, including Ferranti (UK aerospace), GEC (UK), Foxboro Canada, Cowan-Lavelin and Noranda. He has published over 35 technical papers and is a life/senior member of the Institute of Electrical and Electronic Engineers. Jones serves on several PEO committees: Council (2010-12, 2013-15), Finance, Professional Standards (PSC) and Emerging Disciplines Task Force (both the Nanotechnology and Molecular Engineering and Communications Infrastructure Engineering subcommittees). He chairs the PSC Industry subcommittee and is a member of the Professional Engineers Foundation for Education board. A vintage radio and aviation enthusiast, Jones is a member of the Ontario Vintage Radio Association and the Canadian Warplane Heritage Museum. Until it moved from Downsview, he volunteered at the Canadian Air & Space Museum, restoring vintage avionics for the Lancaster exhibit. In the local community, he serves on the Thornhill Festival Committee and is a board member of Heintzman House, a historic building and community centre in Thornhill. With a long-time interest in economics, Jones is a member of the Queen's Park Economy Political Action Committee and in 2012 wrote its *Report on Industry* in Ontario. He is also an original member of the Society of Manufacturing Engineers' "Take Back Manufacturing" forum. **rjones@peo.on.ca**

BOB DONY, PHD, P.ENG., FIET, FEC

Bob Dony holds BASc and MASc degrees in systems design from the University of Waterloo and a PhD in electrical and computer engineering from McMaster University. He is an associate professor in the School of Engineering, University of Guelph. Licensed by PEO in 1989, Dony was a member of PEO's Emerging Disciplines Task Group (1997-2002) and the Evolution of Engineering Admissions Task Force (2000-2005) and of Engineers Canada's Canadian Engineering Qualifications Board (2001-2004). From 2008 to 2011, Dony was co-editor-in-chief, *Canadian Journal of Electrical and Computer Engineering*, Institute of Electrical and Electronics Engineers Canada. He is currently a member (since 1998) and a past chair (2011-2012) of the Academic Requirements Committee, chair of the Legislation Committee (since 2012), and was recently appointed as the PEO representative on Engineers Canada's Canadian Engineering Accreditation Board. This is his second term as councillor-at-large, having first been elected in 2012. Dony believes that to restore the relevance of self-regulation in engineering for all its member licensees, the profession must be responsive to the concerns of the cross-section of new and existing licence holders. **bdony@peo.on.ca**

Regional councillors

EASTERN REGION COUNCILLORS

DAVID BROWN, P.ENG., BDS, C.E.T.

David Brown is both a principal and practising structural engineer with TaskForce Engineering Inc., a Belleville-based design-build firm that specializes in the ICI construction sector. He is a founding partner of TaskForce and holds a diploma in civil engineering technology from St. Clair College of Applied Arts and Technology and a bachelor of applied science in civil engineering from Queen's University. Brown is a member of PEO, the Ontario Society of Professional Engineers, Canadian Society for Civil Engineering, and Ontario Association of Certified Engineering Technicians and Technologists. Aside from his work at PEO, Brown volunteers extensively within his community and, in particular, with the United Way, where he has been named chair of the 2013 Campaign Committee. He is happily married to his wonderfully supportive wife, Liza, and between them have four amazing children. **dbrown@peo.on.ca**

CHARLES M. KIDD, P.ENG., FEC

Charles Kidd has served in the PEO chapter program since 1991, first in the Thousand Islands Chapter and then the Peterborough Chapter, contributing in the education, secretary, communications, and chair and vice chair roles. One of his first and more memorable involvements was as a contributing writer and player in the Thousand Islands Chapter 1992 production of *King Kilowatt and the Engineers' Quest*, an original stage play developed by the chapter and presented to an assembly of Brockville elementary school students to introduce them to the engineering profession. In 2005, he was inducted into PEO's Order of Honour. A Queen's University graduate, Kidd has served for 24 years in the private sector in the steelmaking, chemical processing, nuclear, marine and building science sectors. An additional 13 years was with the CRA Scientific Research and Experimental Development tax incentive program, advising the CRA on the eligibility of work claimed as R&D. He has also enjoyed serving on the board of directors for the Peterborough Utilities Group of Companies since 2005. In this last role, Kidd served as chair of Peterborough Distribution Inc., the electric distribution company, from 2011 through 2013. Kidd and his wife Carolyn have lived in Peterborough since 1992 and have two grown children, both now living nearby. "Gramma and Grampa" are also happy to spend lots of time with their three (soon to be four) grandchildren. Much of their summer is spent at their fifth-generation cottage on the St. Lawrence River near Gananoque. **ckidd@peo.on.ca**

EAST CENTRAL REGION COUNCILLORS

CHANGIZ SADR, P.ENG., FEC

Prior to being elected as an East Central Region councillor in 2013, Changiz Sadr held several positions with the board of executives of Willowdale/Thornhill Chapter, including vice chair (2004 to 2007), chair (2008 to 2010), past chair (2011 to 2012), and chair of the Program and GLP committees, over 14 years of service to the chapter. Sadr has also served as a member of PEO's Experience Requirements Committee (ERC) since 2003, and a member of the ERC Interviews Recommendation Ratification subcommittee since 2008. He also served PEO's Emerging Disciplines Task Force as vice chair of the Communications Infrastructure Engineering subgroup from 2008 to 2011. Sadr has participated in several engineering program accreditation visits through the Canadian Engineering Accreditation Board, representing PEO as a general visitor since 2007. Sadr has also volunteered as a mentor and coach to settlement agencies and community associations to assist newcomer engineers and professionals in adapting to their new environment. This involvement has increased awareness among international engineering graduates about PEO's licensure process. As a result of his work, Sadr has received four Ontario Volunteer Service Awards (summing up his total voluntary contribution over 35 years). He was made a fellow of Engineers Canada in 2010 and became a Member of PEO's Order of Honour in 2011. Sadr is a telecom engineer by education, and works as an ICT/CIE consultant. **csadr@peo.on.ca**

NICHOLAS (NICK) P. COLUCCI, P.ENG., MBA, FEC

(see Executive Committee)

NORTHERN REGION COUNCILLORS

MICHAEL WESA, P.ENG., FEC

(see Executive Committee)

SERGE ROBERT, P.ENG.

Born and raised in Timmins, Serge Robert pursued his engineering technology studies at Northern College of Applied Arts and Technology in Porcupine before completing his civil engineering degree at Lakehead University in Thunder Bay in 1998. Employed in the manufacturing industry, Robert worked as a structural design engineer for MiTek Canada, Inc., based in Bradford, from graduation until 2007, when he returned to his home town to accept a position as a structural engineer at J.L. Richards & Associates' Timmins office. Shortly after returning to the north, he began his involvement with the local PEO chapter and joined its executive. Serving as vice chair and then chair of the Porcupine/Kapuskasing Chapter, Robert discovered a new passion for his profession's governance. Recognizing the importance of every member's involvement, he decided to run for regional councillor for the first time this year. A firm believer in continuing education and maximizing one's exposure to other trains of thought, he participates in and encourages others to participate in all forms of professional development, from association events, to supplier presentations, online courses, webinars, Engineers Without Borders events, and everything in between. "We must be out there building on our knowledge and being seen!" Robert continues to participate and volunteer in local events, such as school outreach programs, the local science fair, local sporting events, and chapter fundraisers and events, such as the annual baseball tournament, technical tours and National Engineering Month events. **srobert@peo.on.ca**

WESTERN REGION COUNCILLORS

EWALD KUCZERA, MSC, P.ENG.

Ewald Kuczera graduated from Queen's University in 1976 with an honours bachelor of science degree in civil engineering. Having worked for two summers in the signals and communications branch in Ottawa-Carleton, he began his full-time career as traffic engineer for the City of Cornwall in 1978, and two years later completed his master of science (Eng.) civil engineering from the School of Graduate Studies and Research at Queen's. From 1985 until 1993 he held the position of deputy works administrator, engineering with the then Township of Kingston during a period of rapid growth and went on to become director of physical services (county engineer) for neighbouring Lennox & Addington County. As a consequence of amalgamations, he accepted his current posting of director of public works for the Town of Niagara-on-the-Lake in 1998. At the start of his career, he was on the executive of the Eastern Chapter (since renamed). He chaired the Resolutions Committee of the Ontario Traffic Conference in the early '80s and has been an active member of the Municipal Engineers Association since obtaining his professional designation. He and his wife of 36 years, Wanda Gora, have three grown children and five grandchildren. He is passionate about his religious faith, his family's heritage and his calling to the profession. Kuczera served as Warden for Camp #3, Ritual of the Calling of an Engineer for more than a decade, ending with his move to Niagara. He feels honoured to now serve the association. **ekuczera@peo.on.ca**

LEN C. KING, P.ENG., FEC

After earning his BEng in civil engineering from McMaster University in 1972, Len King began a career in the building sector spanning over 25 years. King was chief plan examiner and deputy building commissioner, building department, City of Hamilton from 1975 to 1989. He became building commissioner in the same department in 1989 and retired from the post in 1999. He has been a consultant with NAL Engineering since his retirement. Licensed since 1974, King was treasurer of the Brantford Chapter from 2000 to 2004 and chair from 2004 to 2006. Over the years, he has had numerous professional affiliations: vice chair, Ontario Building Code Commission (2000-2006); vice president and director, Ontario Building Officials Association (1984-1991); member, National Building Code's Standing Committee on Structural Design (1985-1994); member, Engineers, Architects and Building Officials Committee (1987-1993); director, Building Officials and Code Administrators International, Chicago (1990-1996); member, Underwriters Laboratories of Canada's fire council (1989-2000); member of several CSA committees; member, National Fire Protection Association (1989-1999). He has also served as Western Region councillor on council since 2008 and as chair of the Regional Councillors Committee since 2013. **lking@peo.on.ca**

WEST CENTRAL REGION COUNCILLORS

ROBERT WILLSON, P.ENG.
(see Executive Committee)

DANNY CHUI, P.ENG., FEC
Danny Chui received a BSc in civil engineering from the University of Calgary in 1984. He is manager of capital works for Toronto's Exhibition Place. As such, he was a member of the owner project implementation team for the National Trade Centre (known as the Direct Energy Centre), Ricoh Coliseum, BMO Field and Allstream Centre, including undertaking many innovative energy projects. He recently completed on time and within budget the Infrastructure Stimulus Fund's $27.3 million program in a year and a half for Exhibition Place, for which he received a commendation from his board. Chui was a member of PEO's Mississauga Chapter executive from 1984 to 1999, as chair, vice chair and secretary, and served on PEO council as a councillor for the West Central Region from 1995 to 2001. While on council, he served on various committees, including the Executive Committee as the appointed vice president, and Finance Committee, which he chaired. He was made a Member of PEO's Order of Honour in 2002 and a fellow of Engineers Canada (FEC) in 2009, and received a 15-Year Volunteer Service Award from the Ontario government. Chui is a past member of the Association of Professional Engineers and Geoscientists of Alberta, American Society of Civil Engineers, Alberta Association of Engineering Technologists, Ontario Association of Certified Engineering Technicians and Technologists, and the Mississauga Public Library board. He is also the past chair of the Ontario Construction Users Council, on which he's served since 1996. **dchui@peo.on.ca**

Appointed councillors

ISHWAR BHATIA, MENG, P.ENG.
Ishwar Bhatia completed his BEng at BHU, Indian Institute of Technology (IIT) in 1970, and his MEng (civil) at Dalhousie University in 1972. After working with McNeely and Northland Engineering, Bhatia joined the City of Ottawa in 1974 as head of sewer maintenance. As a senior project leader in infrastructure, Bhatia supervised project managers, conducted environmental assessments, hired consultants, and managed multi-million-dollar complex construction projects. He worked for GENIVAR from May 2009 to June 2011 to set up its municipal group. He is a past president (twice) of Ottawa's Civic Institute of Professional Personnel. Bhatia continues to serve on PEO council in his sixth year, and has been chair of the Audit Committee; past chair of 40 Sheppard Renovation Task Force and vice chair of the Finance Committee, and continues to serve on Discipline Committee discipline hearing panels. He is also an active member of the Government Liaison Committee. **ibhatia@peo.on.ca**

SANTOSH GUPTA, PHD, MENG, P.ENG., FEC
Santosh Gupta earned a bachelor of science (engineering) in 1961 and a master of engineering in 1962. He obtained a PhD from the University of Waterloo in 1974 and became a member of PEO in 1976. Gupta worked for Hydro One/Ontario Hydro in several management and professional engineering positions from 1981 to 2000. Prior to this, he worked in Montreal, Kenya and India on a variety of engineering projects and as a professor. Currently, Gupta serves on PEO's Experience Requirements Committee (ERC) as chair, the Finance and Discipline committees, the National Framework Task Force, the Academic Requirements Committee/ERC subcommittee and on the Ontario Society of Professional Engineers Chapter Liaison Committee. He is also the executive secretary of the Council of Ontario Deans of Engineering, and participates on Canadian Engineering Accreditation Board engineering program accreditation teams at Ontario universities. Gupta served on PEO's Professional Engineers Awards Committee until December 2011. Prior to his current appointment to PEO council by the lieutenant governor of Ontario, Gupta sat on council as an East Central Region councillor for two years and was vice chair of the Scarborough Chapter for two years. **sgupta@peo.on.ca**

RICHARD J. HILTON, P.ENG.
Richard Hilton worked for over 30 years in the Canadian mining industry, mostly in the environment, health and safety (EHS) area. In his job, he travelled to many parts of the world to deal with operational and governmental issues. He has been on the cusp of the development of forward-thinking EHS programs and legislation. Hilton retired from full-time work in 2005. He is now a part-time consultant in environment, health and safety, most recently undertaking to co-author EHS requirements for base metal smelters for the World Bank and conducting an EHS survey of an exploration camp in the Northwest Territories. **rhilton@peo.on.ca**

REBECCA HUANG, LLB, MBA
(see Executive Committee)

VASSILIOS (BILL) KOSSTA
Bill Kossta graduated with a bachelor of administrative studies from York University and a business administration, marketing management, diploma from Centennial College. He has 37 years of sales and management experience with leading companies in consumer packaged goods, including Seagram Company distillers, Carling O'Keefe Breweries, Molson Breweries and Great Lakes Brewing Company. He is sales manager at Cool Beer Brewing Company in Toronto. Kossta was appointed to PEO council in November 2006 and has been a member of the Complaints, Registration, Audit and Legislation committees, and the Volunteer Expense Appeals subcommittee. **vkossta@peo.on.ca**

MARY LONG-IRWIN
Mary Long-Irwin is the executive director of Northern Ontario Angels, an organization that matches entrepreneurs with investors. Prior to this, she was the president/CEO of the Thunder Bay Chamber of Commerce for 10 years. She worked closely with member businesses and three levels of government to ensure the growth of business and economic development opportunities throughout northwestern Ontario. She was also the CEO for the Northwestern Ontario Associated Chambers of Commerce. Long-Irwin began her career as a self-employed businesswoman in Thunder Bay. In 1988, she accepted a position with Confederation College, Northwest Enterprise Centre, as a small business advisor and instructor. In 1990, she joined Superior North Community Futures Development Corporation (a FedNor community development initiative) as the general manager, lender and business consultant to over 500 businesses and continued in the position for 10 years. Born, raised and educated in Thunder Bay, she continues to provide business advisory services and remains a strong advocate for business and industry. Long-Irwin continues to serve on many boards and non-profit organizations and is active in her community. Past president of the Cystic Fibrosis Foundation, she is involved with fundraising, awareness, public speaking and education for many non-profit and charitable organizations. **mirwin@peo.on.ca**

SHARON REID, C.TECH

Sharon Reid graduated from the electronics engineering technician program at Fleming College. She is currently employed as a senior technician at Canadian Instrumentation Services Group, Peterborough, where her responsibilities include the calibration and verification of electronic and electromechanical test equipment, maintenance of medical equipment and assistance with acceptance and efficiency testing of hydro generators in Canada and abroad. Reid's community service has included work with Girl Guides of Canada, regional and Canada-wide science fairs, National Engineering Month activities and over a decade of involvement with the Ontario Association of Certified Engineering Technicians and Technologists (OACETT). Reid is a certified member of OACETT and has served OACETT as chapter director, chair of the Women in Technology Committee, regional secretary/treasurer and eastern regional councillor. She was also a delegate to the OACETT technology exchange in China in 2008. Reid was inducted to the Klaus Woerner Skilled Trades Hall of Fame in 2010 and was a recipient of OACETT's Women in Technology Award for 2012. Reid is a lieutenant governor appointee to PEO council and sits on PEO's Equity and Diversity Committee. **sreid@peo.on.ca**

CHRIS D. RONEY, P.ENG., BDS, FEC

Chris Roney holds an honours BSc degree in civil engineering from Queen's University. A third-generation engineer, he heads Roney Engineering Limited, a Kingston consulting firm offering a full range of structural engineering services related to building design and construction, investigations and restorations. Roney is a practising structural engineer, and is accredited as a building design specialist and consulting engineer. He represented PEO at the Elliot Lake Inquiry roundtables in November of last year. He served as chair of the Part 4 (structural) Technical Advisory Committee for the *Ontario Building Code 2012*, and is a member of the Ministry of Municipal Affairs and Housing's Building Advisory Council. He was Eastern Region councillor from 1998 to 2000 and elected vice president of PEO from 2000 to 2001, before being appointed to council in 2007 as a lieutenant governor appointee. He has served on numerous PEO committees and task forces, including EABO, Finance, Audit, Complaints, Communications, Enforcement, Executive, PEO-OAA Joint Liaison, PEO-OACETT Joint Management Board, PEO-OSPE Joint Review Board, BRAAG (Bill 124) Task Group, Certificate of Authorization Task Group, Consulting Engineering Designation Committee (Liaison), Strategic Planning Steering Committee, and others. Roney is also a director on the board of Engineers Canada, where he has served on the Executive Committee, Finance Committee, the Canadian Engineering Accreditation Board, Labour Market Study Steering Committee, Communications Committee and National Campaign Committee. He currently chairs the International Committee. Roney is a warden with the Corporation of the Seven Wardens and with Camp #3 of the Ritual of the Calling of an Engineer. **croney@peo.on.ca**

RAKESH SHREEWASTAV, P.ENG., AVS, FEC

Rakesh Shreewastav obtained his MSc degree in civil engineering from Moscow State University, Russia, and works for the Ministry of Transportation's (MTO) Windsor Border Initiatives Implementation Group in London. Previously, he worked for MTO's northeastern region, Ontario Power Generation, and multi-disciplinary engineering companies and government sectors in Russia and Nepal. Shreewastav has actively participated on several PEO chapter committees, Conference for Internationally Educated Professionals engineering panels, and been involved in other professional organizations, such as the Ontario Society of Professional Engineers, the Canadian Society for Civil Engineering and the Canadian Society of Value Analysis and Value Society (SAVE) International. Dedicated to science awareness and community involvement, Shreewastav has served on judging panels in FIRST Robotics Canada competitions and regional science fairs and also served on the board of directors of the Rotary Club of Nipissing and London South. Shreewastav was selected among thousands as one of 17 people in Canada to be featured on the video vignette Potential to Prosperity, a project sponsored by the Canadian Foundation for Economic Education. Shreewastav is also a member of PEO's Discipline and Equity and Diversity committees, board member of Engineers Canada and a past member of the Sustaining the Ontario Centre for Engineering and Public Policy Task Force. **rshreewastav@peo.on.ca**

MARILYN SPINK, P.ENG.

Marilyn Spink began her career in northern Ontario's mining and pulp and paper industries in mechanical design. After specializing in materials and metallurgical engineering at Queen's University, she joined Dofasco, working in both their Hamilton and Kentucky operations. Her proven aptitude for project engineering took her to Hatch, where she executed projects globally. While at SNC-Lavalin, she managed both the basic engineering phase for the nickel refinery and then the detailed design for the processing plant, the US$6+ billion Ambatovy nickel laterite project located in Madagascar. Spink offers more than 25 years of multi-discipline project execution experience, covering the entire project life cycle, from feasibility studies to basic and detailed engineering, construction and commissioning. Currently, Spink operates as an independent advisor in her own consulting practice, GS Group, which feeds her strong interest in corporate governance and provides flexibility to volunteer as a board member for Scientists for School (SiS), a national, not-for-profit science outreach organization, and now as an LGA to PEO council. For the past six years, she has been a member of the Institute of Corporate Directors and takes advantage of the many director's continuing education programs. Spink's passion for technology and science education stems from her engineering career and past teaching positions at Queen's, Humber College and as a presenter for SiS. She has been a licensed professional engineer since 1995, a member of the Ontario Society of Professional Engineers since its inception, and supports several industry associations with her membership. Spink and her husband, Jamie Gerson (another metallurgist!), live in Etobicoke with their three boys, all of whom are also passionate about math and science. **mspink@peo.on.ca**

MARTHA STAUCH, MEd

Martha Stauch retired in 2000 from her career as a language educator. She holds a bachelor of arts degree from Queen's University, a diploma in education from the University of Western Ontario, and a master of education degree from the University of Toronto. Stauch serves on PEO's Discipline and Registration committees and acts as council liaison for the Education Committee. Stauch has served as a member of the Canada Pension Plan Tribunal and in several capacities with St. Mary's General Hospital. Her positions included president of the Volunteer Association, member of the board of trustees and member of the Festival of Trees Steering Committee. She has been active on the K-W Rogers Oktoberfest Women of the Year Committee and is a volunteer with the Canadian Exchange Foundation. **mstauch@peo.on.ca**

COUNCIL GREENLIGHTS CONTINUING PROFESSIONAL DEVELOPMENT, COMPETENCY AND QUALITY ASSURANCE TASK FORCE

492ND MEETING, MARCH 21, 2014

By Jennifer Coombes

PEO'S PLANS TO develop a continuing professional development (CPD) program are moving ahead. At the March meeting, council approved the terms of reference for the Continuing Professional Development, Competency and Quality Assurance Task Force, which will be responsible for preparing a plan for a "a comprehensive program of professional development and quality assurance with a strong focus on competency." The terms of reference also state: "Council is implementing this policy in recognition of the fact that PEO should be proactive in regulating the profession. A proactive stance focuses on preventing faulty engineering practice rather than relying on a system for punishing licence holders for practice failures that could possibly have caused harm."

Council has directed Gerard McDonald, P.Eng., PEO registrar, to find volunteers for the task force according to the membership requirements set out in the terms of reference. McDonald will present a list of volunteers to council for approval at its June 2014 meeting.

The plans for CPD began anew in September with a unanimous council vote in favour of developing a program, and discussion of the matter continued at the February meeting. Any CPD program put in place for PEO is expected to take several years to develop and will involve broad consultation with stakeholders. In addition, several councillors are calling for the matter to go to member referendum.

EVIDENCE-BASED REGULATIONS DEVELOPMENT

The ongoing work and policies of many of PEO's committees and task forces that form the basis of regulation changes in the works are coming under increased scrutiny by the Ministry of the Attorney General (AG). As of January 2014, the AG's office introduced a preliminary regulatory impact assessment requirement as part of a new emphasis on evidence-based policy. The new requirement applies to all current and future regulation amendments under development, including the limited licence/LET regulation amendment, the discipline-specific Certificate of Authorization, and academic and experience requirements.

A preliminary regulatory impact assessment requires PEO to identify the policy intents, stakeholders, and qualitative and quantitative impacts of any proposed regulation change.

According to background information in the briefing note for council, "many of the originating council motions cannot be drafted in regulation because their policy intent was not clear enough to support drafting and to meeting the government's new regulatory impact assessment criteria, and did not pass PEO's peer review requirement."

To facilitate PEO's compliance with the new government requirements, where the need for a regulation is required, the Legislation Committee will work with the applicable committees and/or task forces that put forward recommendations to council for regulation changes that are now in the works. Each committee or task force will be asked to clarify policy intents and analysis to support the preparation of a preliminary impact assessment document. To expedite PEO's regulation-making process, any future regulation developments will be done on a smaller scale to produce a series of regulation amendments rather than an omnibus amendment having an impact on several areas.

CANADIAN FRAMEWORK FOR LICENSURE

Council has accepted the recommendation of PEO's National Framework Task Force (NFTF) and will not be concurring with two of the most recent elements (component documents) of Engineers Canada's Canadian Framework for Licensure (CFL)–dealing with the Code of Ethics, and titles, rights and responsibilities–presented to constituent associations for concurrence. Council based its decision on task force commentaries explaining its objections to the two elements. While the task force provided considerable input into the development of both documents at a prior stage, few, if any, of its previous suggested changes were accepted with no feedback as to why the input was not accepted.

The CFL Code of Ethics document is proposed to "promote a common standard across the country, enhancing the safety of the public and providing a unifying statement of the high standard expected in the profession." The document proposes an enforceable Code of Ethics focusing on professionalism and ethical engineering issues and a complementary code of conduct, both of which could be used as grounds for disciplining engineers by constituent associations.

Council unanimously agreed with the task force that a Code of Ethics is "a non-enforceable statement of ideals and aspirational goals and is distinct from an enforceable code of professional conduct."

With the titles, rights and responsibilities element, Engineers Canada's intent is to institute consistent titles for engineering licence holders across Canada with defined rights and responsibilities associated with the titles. The policy direction for the element states, "common titles, rights and responsibilities will promote a common standard across the country, enhancing the knowledge of safety of the public, facilitating increased mobility and allowing for licence holders to work wherever necessary."

PEO's NFTF opposed the document for several reasons, among them that rights and responsibilities are associated with licences not titles. It is the licence that allows the right to practise and the right to use titles. Also, it said, the document appears to require associations to create separate classes of members for P.Engs, limited licence holders and EITs (engineering interns), and to provide all members with the same membership rights, regardless of class. In Ontario, limited licence holders and EITs do not have the same rights as P.Engs, not having, for example, the right to vote in council elections and the right to run for council.

Council directed the registrar to forward the commentaries to Engineers Canada with notice that PEO council does not concur with the elements in their current state.

PEO STRATEGIC PLAN

At the March meeting, Registrar McDonald outlined his intentions for developing a new strategic plan for PEO and solicited council's views on launching the process. PEO's most recent strategic plan, spanning the years 2005 to 2009, was approved in 2005, but yielded mixed results, according to McDonald. In his presentation, McDonald told council he looks at a strategic plan as "not an ends, but rather a means" to chart a clear direction for the organization. Part of the June council workshop will be devoted to strategic planning discussions.

ENGINEERS CANADA BOARD OF DIRECTORS

Council appointed new PEO directors to Engineers Canada's board at the March meeting. Past President Annette Bergeron, P.Eng., FEC, will serve a three-year term on the board, as will George Comrie, P.Eng., FEC. Diane Freeman, P.Eng., FEC, will continue in her role as a director for a further two years. All of the terms will be effective as of the 2014 Engineers Canada annual general meeting on May 24. Former PEO and Engineers Canada president Catherine Karakatsanis, P.Eng., FEC, and former PEO councillor Phil Maka, P.Eng., FEC, will retire as PEO representatives on the board at the AGM.

WEB PUBLICATION OF COUNCIL ATTENDANCE AND RECORD OF VOTES

Council has approved publishing a record of attendance and recorded votes of all council members on PEO's website, to be implemented with the first meeting of the 2014-2015 council. While this information is currently available in meeting minutes in the council section of PEO's website, publishing it in summary form will make it more accessible to those interested in the attendance and performance of members of council.

COUNCIL HONORARIA

Council defeated a motion to draft a bylaw that would provide PEO presidents and councillors with an honorarium for their service on council. The suggestion for providing such a stipend was made to attract more people to run for council.

Under the proposed plan, an honorarium of $70,000 to $90,000 would have been paid to the president to offset leave without pay from his or her full-time employment, to compensate for lost earning time, or to hire an assistant. Elected and member-appointed councillors would have been paid between $125 and $500 a day, depending on the length of the meeting or whether attending in person or by conference call. Non-member council members would have been paid the difference between what they receive through the government's per diem rate and the elected/member appointed councillor honorarium.

The majority of councillors expressed the view that being paid for their work on council would be self-serving and contrary to the spirit of volunteerism.

LIMITED LICENCE EXPERIENCE GUIDE

Council unanimously approved the *Guide to the Required Experience for a Limited Licence in Ontario*. The guide was required because it is referenced in a proposed amendment to section 46(1)2 of Regulation 941. The guide will be available on PEO's website once the regulation is approved. Σ

TO THE MEMBERS OF THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF ONTARIO

We have audited the accompanying financial statements of the Association of Professional Engineers of Ontario, which comprise the balance sheet as at December 31, 2013, and the statement of revenue, expenses and changes in net assets and of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the financial statements

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

Auditor's responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of the Association of Professional Engineers of Ontario as at December 31, 2013, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Deloitte.

Chartered Professional Accountants
Chartered Accountants
Licensed Public Accountants
March 21, 2014

[FINANCIAL STATEMENTS]

BALANCE SHEET
as at December 31, 2013

			2013	2012
ASSETS	CURRENT	Cash in interest-bearing accounts	$ 3,052,243	$ 1,363,674
		Marketable securities at fair value	5,350,515	5,197,580
		Accounts receivable	379,240	334,954
		Prepaid expenses and deposits	173,193	203,488
		Other assets	285,412	58,860
			9,240,603	7,158,556
	Capital assets (Note 3)		36,729,079	36,467,068
	TOTAL ASSETS		45,969,682	43,625,624
LIABILITIES	CURRENT	Accounts payable and accrued liabilities (Note 15)	1,660,977	1,070,804
		Fees in advance and deposits	8,919,164	8,907,075
		Current portion of long-term debt (Note 5)	878,000	854,000
			11,458,141	10,831,879
	LONG TERM	Long-term debt (Note 5)	9,368,000	10,246,000
		Employee future benefits (Note 6)	7,931,000	6,929,600
	TOTAL LIABILITIES		28,757,141	28,007,479
	Net assets (Note 7)		17,212,541	15,618,145
	TOTAL LIABILITIES AND NET ASSETS		45,969,682	43,625,624

On behalf of council: Annette Bergeron, P.Eng., MBA, FEC, president; J. David Adams, P.Eng., MBA, FEC, president-elect.

STATEMENT OF CASH FLOWS
year ended December 31, 2013

			2013	2012
	OPERATING	Excess of revenue over expenses	$ 1,594,396	$ 1,397,902
		Add (deduct) items not affecting cash		
		Amortization	1,761,531	1,764,934
		Amortization–other assets	32,896	45,101
		Employee future benefits	2,419,700	2,231,300
		Change in unrealized losses on marketable securities	(17,415)	29,053
		Loss (gain) on disposal of marketable securities	12,322	(13,292)
			5,803,430	5,454,998
		Change in non-cash working capital items (Note 10)	588,271	752,865
			6,391,701	6,207,863
	FINANCING	Repayment of mortgage	(854,000)	(826,400)
		Contributions to employee future benefit plans	(1,418,300)	(1,551,839)
			(2,272,300)	(2,378,239)
	INVESTING	Proceeds of disposal of marketable securities	1,857,745	5,361,528
		Acquisition of marketable securities	(2,005,587)	(7,195,102)
		Additions to capital assets	(2,023,542)	(1,323,223)
		Additions to other assets	(259,448)	(103,961)
			(2,430,832)	(3,260,758)
	Increase in cash		1,688,569	568,866
	Cash, beginning of year		1,363,674	794,808
	Cash, end of year		$ 3,052,243	$ 1,363,674

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

STATEMENT OF REVENUE, EXPENSES AND CHANGES IN NET ASSETS

year ended December 31, 2013

		2013	2012
REVENUE	P.Eng. revenue	$ 14,630,128	$ 14,367,398
	Application, registration, examination and other fees	5,788,072	5,452,203
	Building operations (Note 4)	2,937,867	2,848,021
	Advertising income	426,567	447,158
	Investment income	183,296	114,353
		23,965,930	23,229,133
EXPENSES	Staff salaries and benefits/retiree and future benefits	10,689,976	10,483,525
	Building operations (Note 4)	2,383,229	2,347,270
	Purchased services	1,069,658	1,179,776
	Amortization	950,980	960,662
	Occupancy costs (Note 4)	902,378	846,281
	Engineers Canada	867,094	847,971
	Volunteer expenses	852,302	869,324
	Computers and telephone	644,523	606,110
	Chapters (Note 13)	610,795	590,794
	Contract staff	506,580	331,831
	Transaction fees	487,760	489,294
	Legal (corporate, prosecution and tribunal)	461,735	514,531
	Postage and courier	357,372	544,204
	Consultants	353,962	248,933
	Advertising	198,040	111,300
	Recognition, grants and awards	187,326	129,861
	Professional development	156,409	103,056
	Printing	152,244	153,642
	Office supplies	121,376	110,545
	Insurance	98,600	115,375
	Staff expenses	85,283	107,307
		22,137,622	21,691,592
Excess of revenue over expenses before the undernoted		1,828,308	1,537,541
Council discretionary reserve expenses (Note 8)		233,912	139,639
Excess of revenue over expenses		1,594,396	1,397,902
Net assets, beginning of year		15,618,145	14,220,243
Net assets, end of year (Note 7)		$ 17,212,541	$ 15,618,145

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

NOTES TO THE FINANCIAL STATEMENTS

DECEMBER 31, 2013

1. NATURE OF OPERATIONS

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

2. SIGNIFICANT ACCOUNTING POLICIES

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

(a) Financial instruments

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

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

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

Transaction costs are expensed as incurred.

(b) Hedge accounting

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

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

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

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

(i) the hedged item or the hedging item ceases to exist other than as designated and documented; or

(ii) the critical terms of the hedging item cease to match those of the hedged item, including, but not limited to, when it becomes probable that an interest-bearing asset or liability hedged with an interest rate swap will be prepaid.

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

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

(c) Revenue recognition

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

(d) Donated services

The association receives substantial donated services from its membership through participation on

council and committees and as chapter executives. Donations of services are not recorded in the accounts of the association.

(e) Employee future benefits

The association accrues its obligations under employee benefit plans and the related costs, net of plan assets. The association has adopted the deferral and amortization approach, which includes the following policies:

- The cost of pensions and other retirement benefits earned by employees is actuarially determined using the projected unit credit method pro-rated on service, and management's best estimate of expected plan investment performance, salary escalation, retirement ages of employees and expected healthcare costs;
- The pension plan assets are valued at fair market value;
- Based on an actuarial assessment that is conducted every three years, the asset base of the pension plan may have to be adjusted and the amount of the adjustment could be material. The most recent actuarial valuation was performed as at January 1, 2011;
- All past service costs and actuarial gains or losses arising after January 1, 2000, are amortized starting with the fiscal year following the occurrence in accordance with the requirements of chapter 3461 of the CICA handbook;
- The excess of the unamortized cumulative actuarial gains and losses, as of the beginning of the period, over 10 per cent of the greater of the accrued benefit obligations and market value of assets at the same date, will be amortized over the employee average remaining service lifetime of active members, which is nine years as at January 1, 2011; and
- When the restructuring of a benefit plan gives rise to both a curtailment and a settlement of obligations, the curtailment is accounted for prior to the settlement.

(f) Capital assets

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

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

The association's investment in capital assets is included as part of net assets on the balance sheet.

(g) Use of estimates

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

3. CAPITAL ASSETS

	Cost	**Accumulated ammortization**	**2013 Net book value**	2012 Net book value
	$	**$**	**$**	$
Building	**19,414,668**	**1,866,313**	**17,548,355**	17,936,647
Building improvements	**7,485,398**	**1,065,831**	**6,419,567**	6,303,771
Building improvements, common area	**6,181,499**	**1,013,247**	**5,168,252**	5,554,203
Land	**4,366,303**	**-**	**4,366,303**	4,366,303
Computer hardware and software	**2,503,228**	**2,028,098**	**475,130**	502,556
Furniture, fixtures and telephone equipment	**1,369,489**	**532,888**	**836,601**	950,629
Audio visual	**950,924**	**305,932**	**644,992**	803,824
Work in progress	**1,269,879**	**-**	**1,269,879**	49,135
	43,541,388	**6,812,309**	**36,729,079**	36,467,068

4. BUILDING OPERATIONS

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

	2013	2012
	$	$
Revenue		
Rental	**1,295,119**	1,080,969
Operating cost reimbursements, tenants	**1,410,533**	1,490,013
Parking	**156,150**	150,582
Miscellaneous	**76,065**	126,457
	2,937,867	2,848,021
Operating cost reimbursements, PEO	**819,374**	1,001,307
Total revenue	**3,757,241**	3,849,328
Recoverable expenses		
Property taxes	**452,586**	631,642
Utilities	**479,628**	463,960
Amortization and interest	**422,258**	589,106
Janitorial	**218,299**	208,651
Payroll	**251,908**	255,093
Repairs and maintenance	**201,377**	100,496
Property management and advisory fees	**78,797**	76,875
Administrative	**31,620**	33,781
Insurance	**20,915**	22,397
Road and ground	**19,217**	15,722
Security	**21,826**	23,784
	2,198,431	2,421,507
Other expenses		
Amortization of deferred costs	**32,896**	48,701
Amortization of building	**388,293**	388,293
Interest expense on note and loan payable	**527,834**	560,424
Other costs (net of imputed interest) on recoverable expenses	**55,149**	(70,348)
	1,004,172	927,070
Total expenses	**3,202,603**	3,348,577
Excess of revenue over expenses	**554,638**	500,751

For purposes of the statement of revenue, expenses and changes in net assets, the operating cost re-imbursements from PEO have been eliminated. The portion of costs allocated to PEO is reallocated from building operations to occupancy costs.

	2013	2012
	$	$
Building revenue per above	**3,757,241**	3,849,328
Eliminated PEO portion	**(819,374)**	(1,001,307)
	2,937,867	2,848,021
Building expenses per above	**3,202,603**	3,348,577
Eliminated PEO portion	**(819,374)**	(1,001,307)
	2,383,229	2,347,270

5. BUILDING FINANCING

In 2009, the association financed $14,100,000 of the cost of its building acquisition with a credit facility from the Bank of Montreal, capital markets division. The facility is secured by a first mortgage on the property located at 40 Sheppard Avenue West, a general security agreement, and a general assignment of tenant leases. The facility is repayable in monthly installments of principal plus interest maturing on March 11, 2019, and bears a floating interest rate based on variable bankers' acceptances. The balance outstanding at December 31, 2013 is $10,246,000.

Principal repayments are due as follows:

	$
2014	878,000
2015	901,000
2016	928,000
2017	952,000
2018-2019	6,587,000
	10,246,000

The association has entered into a swap agreement related to this loan, whereby the floating rate debt is swapped for a fixed-rate debt with an interest rate of 4.95 per cent and settled on a net basis. The notional value of the swap is $14,100,000. The start date of the swap was March 11, 2009, with a maturity date of March 11, 2019.

6. EMPLOYEE FUTURE BENEFITS

The association's pension plans and post-retirement benefits plan covering participating employees (full-time and retirees) are defined benefit plans as defined in section 3461 of the CICA handbook. The pension plans provide pension benefits based on length of service and final average earnings. The post-retirement benefits plan provides hospitalization, extended healthcare and dental benefits to active and retired

employees. Participation in the pension plans and benefits plan (for post-retirement benefits) has been closed to all new employees as of May 1, 2006. All employees joining after this date have the option of participating in a self-directed RRSP (registered retirement savings plan). During the year, the association recognized $134,919 (2012–$129,442) in employer contributions to the self-directed RRSP. The funded status of the association's pension plans and post-retirement benefit plan using actuarial assumptions as of December 31, 2013, was as follows:

	Basic pension plan	Supplemental pension plan	Other non-pension benefit plan	Total
	$	$	$	$
Accrued benefit obligation	(22,309,800)	(1,180,800)	(9,712,000)	(33,202,600)
Plan assets at fair value	20,098,200	1,752,200	-	21,850,400
Funded status, plan surplus (deficit)	(2,211,600)	571,400	(9,712,000)	(11,352,200)
Unamortized transitional (asset) obligation	(91,300)	79,200	363,500	351,400
Unamortized net actuarial loss	2,468,400	223,400	378,000	3,069,800
Accrued benefit asset (liability)	165,500	874,000	(8,970,500)	(7,931,000)

Details of the accrued benefit obligation are as follows:

	Basic pension plan	Supplemental pension plan	Other non-pension benefit plan	Total
	$	$	$	$
Accrued benefit obligation, beginning of year	(22,851,900)	(1,143,700)	(11,019,000)	(35,014,600)
Current service cost	(939,400)	(48,500)	(160,300)	(1,148,200)
Contributions by the employees	(209,800)	-	-	(209,800)
Interest cost on accrued benefit obligation	(940,100)	(46,600)	(444,300)	(1,431,000)
Benefit payments	788,200	54,400	144,700	987,300
Actuarial gain on accrued benefit obligation	1,843,200	3,600	1,766,900	(3,613,700)
Accrued benefit obligation, end of year	(22,309,800)	(1,180,800)	(9,712,000)	(33,202,600)

The plan expense for the year is determined as follows:

	Basic pension plan	Supplemental pension plan	Other non-pension benefit plan	Total
	$	$	$	$
Current service cost	939,400	48,500	160,300	1,148,200
Interest cost on accrued benefit obligation	940,100	46,600	444,300	1,431,000
Expected return on plan assets	(935,400)	(44,100)	-	(979,500)
Amortization of transitional obligation	(22,800)	26,600	90,900	94,700
Amortization of net actuarial gain	553,300	23,000	149,000	725,300
Benefit expense	1,474,600	100,600	844,500	2,419,700

The employer contributions to the plans amounted to $1,418,300 (2012–$1,551,839). The decrease in contributions reflects the most recent actuarial valuation performed as at January 1, 2011.

The significant actuarial assumptions adopted in measuring the association's accrued benefit obligation are as follows:

	Basic pension plan	Supplemental pension plan	Other non-pension benefit plan
	%	%	%
Discount rate	4.75	4.75	4.00
Expected long-term rate of return on plan assets	6.00	3.00	n/a
Salary projection	3.00	3.00	n/a
Medical benefits cost escalation			
Hospitalization			(a)
Extended health care			(b)
Dental benefits cost escalation			(c)

(a) 7.50 per cent cost escalation in fiscal 2014, decreasing 0.75 per cent per year, until an ultimate rate of 5 per cent per annum
(b) A 10 per cent cost escalation in fiscal 2014, decreasing 1 per cent per year, until an ultimate rate of 5 per cent per annum
(c) A 4 per cent cost escalation per annum

7. NET ASSETS

The net assets of the association are restricted to be used at the discretion of council and includes the association's investment in capital assets of $26,483,079 (2012–$25,367,068).

8. COUNCIL DISCRETIONARY RESERVE

The council discretionary reserve is an internal allocation from the operating reserve used at the discretion of council to fund expenses related to special projects approved by council. Expenditures from the discretionary reserve were as follows.

	2013	2012
	$	$
Legal reserve–Elliot Lake/Other	**177,362**	73,875
Experienced Practitioners Task Force	**30,381**	3,600
Emerging Discipline Task Force	**9,612**	14,074
Overlapping Practices Committee	**6,755**	14,084
Building Development Committee	**5,865**	-
National Framework Task Force	**2,382**	347
Licensure Engineering Task Force	**1,555**	-
Elections webcasting	**-**	23,370
EWB sponsorship	**-**	7,417
Professional Technologist Task Force	**-**	1,517
Repeal Industrial Exception Task Force	**-**	1,355
	233,912	139,639

9. FULL-TIME SALARIES AND BENEFITS

During the year, the association incurred a total of $10,841,516 (2012–$10,525,793) for salary and benefits costs for its full-time staff of which $151,540 (2012–$42,268) was directly attributable to special projects approved by council and disclosed under Note 8.

10. CHANGE IN NON-CASH WORKING CAPITAL ITEMS

	2013	2012
	$	$
Accounts receivable	**(44,286)**	763,559
Prepaid expenses and deposits	**30,295**	38,770
Accounts payable and accrued liabilities	**590,173**	(364,485)
Fees in advance and deposits	**12,089**	315,021
	588,271	752,865

11. CUSTODIAL ACCOUNT

The association maintains a separate bank account for the Council of Ontario Deans of Engineering. Cash totaling $127,695 in this account (December 31, 2012–$72,567) is not reported on the association's balance sheet as it is held in trust for the Council of Ontario Deans of Engineering.

12. COMMITMENTS

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

	$
2014	652,114
2015	405,725
2016	16,836
	1,074,675

13. CHAPTERS OF THE ASSOCIATION

The financial information of the 36 chapters of the association are individually not material and, therefore, have not been consolidated in these financial statements. Furthermore, management believes that the effort and cost required to prepare financial statements from each chapter for consolidation purposes far exceed the benefits from doing so. During the year, the association paid chapter expenses totaling $610,795 (2012–$590,794) including $392,945 (2012–$388,540) in chapter allotments and $217,850 (2012–$202,254) in other disbursements to individual chapters. In 2013, the association also incurred additional costs of $525,924 (2012–$487,167) related to chapter operations, including staff salaries and benefits, and for various support activities. These amounts have been included in the various operating expenses reported on the statement of revenue and expenses and changes in net assets.

14. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

Interest rate risk

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

Liquidity risk

PEO's objective is to have sufficient liquidity to meet its liabilities when due. PEO monitors its cash balances and cash flows generated from operations to meet its requirements. As at December 31, 2013, the most significant financial liabilities are: accounts payable and accrued liabilities, and long-term debt.

15. GOVERNMENT REMITTANCES

Accounts payables and accrued liabilities include $198,219 (2012–$208,275), with respect to government remittances payable at year end.

REGISTRAR'S FINANCIAL REPORT

FOR THE YEAR ENDED DECEMBER 31, 2013

PEO GENERATED an excess of revenue over expenses of $1,828,308, before council discretionary reserve expenses, for the 2013 fiscal year, as compared to a budgeted surplus of $536,215. Highlights having an impact on performance include continued growth in the P.Eng. membership; a strong, positive contribution of $554,638 from building operations; and lower than planned costs as management continued to control costs in light of economic conditions and building requirements.

The excess of revenue over expenses was reduced by council discretionary reserve expenditures of $233,912. The investment in capital assets for the year was $2,023,542 ($1,323,223 in 2012) and the closing balance in net assets increased to $17,212,541 in 2013.

REVENUE

Total revenue was $23,965,930, which is 2 per cent above budget, due to higher than budgeted application and exam revenue, as well as higher building operations revenue. Approximately 61 per cent of revenue comprised P.Eng. licence revenue, which is consistent with budget expectations.

COST MANAGEMENT

Total expenses were $22,137,622, which is $809,996, or 4 per cent, lower than budget. Major expense variances from budget are:

- Costs for purchased services were $296,199 lower than budget;
- Building operations costs were $162,244 lower than planned;
- Legal (corporate, prosecution and tribunal) was $157,275 lower than planned;
- Amortization costs were $154,686 lower than budget;
- Staff salaries and benefits/retirees and future benefits were $126,594 lower than planned; and
- Contractors and temporary staff costs were $361,433 above budget.

2013 BUDGET VARIANCES BY BUSINESS UNIT

Corporate Services

Expenditures were on budget in 2013. Variances within the department include higher than planned retiree and future benefits costs ($261,399) based on actuarial assumptions as of December 31, 2013; lower than planned building operations costs ($162,244), partially due to lower administration fees and janitorial costs; higher contract staff costs ($161,671) to fill vacant roles; lower PEO amortization ($154,686) due to timing in completion of approved budgeted capital projects; lower purchased services in 2013 ($117,420), which includes lower costs for meals and catering ($46,357); lower PEO building occupancy costs ($67,928); lower volunteer expenses ($67,887); and lower professional development expenses ($66,729).

Executive

Expenditures were $475,150 or 5 per cent below budget, resulting from lower than planned salaries and benefits ($442,550) due to staff vacancies; lower staff expenses ($26,294); lower contract staff expenses ($22,700); lower consultant expenses ($20,219); and offset by higher than planned volunteer expenses ($38,856).

LICENSING AND FINANCE

Expenditures were $198,594 or 4 per cent above budget due to the council-approved expenditures related to the initial proclamation of the repeal of the industrial exception. Contract staff costs were higher than budget in the licensing area ($107,967); salaries and benefits costs were higher than budgeted ($58,386); volunteer expenses were higher than budgeted ($31,715), partially related to volunteer costs for mileage; postage and courier costs were higher than planned ($13,120); offset by lower cost for purchased services ($48,446), although exam marking and invigilation costs were higher than budgeted ($28,964).

REGULATORY COMPLIANCE

Expenditures were $13,706 or 1 per cent lower than budget in 2013. Salaries were lower than budgeted ($163,601) due to vacancies in the business unit; however, higher than budgeted contractor expenses ($109,212) filled the positions on a temporary basis. Consulting expenses were above budget for government public relations consultants related to the repeal of the industrial exception clause in section 12(3)(a) of the *Professional Engineers Act* ($31,992). Lower volunteer expenses ($14,949) somewhat offset these higher than budgeted expenses.

TRIBUNALS AND REGULATORY AFFAIRS

Expenditures were $498,613 or 16 per cent below budget. Variances include lower than planned costs for legal expenses ($224,524) related to independent counsel for the Discipline

Committee and the use of minimal administrative law counsel; less than budgeted purchased services costs ($117,862); lower volunteer expenses ($71,533); and below budget costs for printing and mailing of *Engineering Dimensions* ($47,654).

COUNCIL-DIRECTED INITIATIVES

For 2013, the net expenditures for the projects approved by council amounted to $233,912. This figure includes $189,768 for the Elliot Lake Commission of Inquiry expenses; $30,381 for costs associated with the Experienced Practioners Task Force; $9,613 for the Emerging Disciplines Task Force; $6,754 for the Overlapping Practices Committee; and $5,865 for the Building Development Committee, which were offset by an expense of $12,406 for cost recovery related to a prior year insurance claim.

Staff and volunteers contributed in carrying out these council-directed initiatives. Included in the projects listed above is a total of $151,540 in staff salaries and benefits costs directly attributable to these initiatives.

BUILDING OPERATIONS

The building generated $3,757,241 in revenue, including PEO's share of recoverable expenses, but excluding the base rent that would have been paid if PEO had paid market rent for its space. Total recoverable expenses were $2,198,431 and other expenses totalled $1,004,172, thereby creating an excess of revenue over expenses of $554,638 (after all expenses, including loan interest), which was $387,492 or 19 per cent higher than budgeted. Total revenues came in slightly over budget by 3 per cent and total expenses came in over budget by 16 per cent. Other expenses were $187,450 higher than budgeted, due to higher leasing and legal fees to renew tenants. PEO's share of recoverable expenses totalled $819,374, which costs were reclassified from building operations to occupancy costs in the financial statements. Since PEO is a not-for-profit organization, it received a preferred property tax rate (residential rate instead of commercial rate), thereby reducing PEO's overall occupancy cost. Total occupancy costs for 2013 were $902,378, which included storage and other occupancy costs. PEO's total accommodation expense (including interest) was $1,430,212.

PEO occupied a total of 40,786 square feet at December 31, 2013. The market rent of this space is $20 a square foot and operating costs are $23.09 a square foot. Therefore, PEO's equivalent costs for rent and operating costs would be $1,757,469 for 2013, leading to a net value of ownership estimate of $327,257 for 2013.

CAPITAL EXPENDITURES

Capital expenditures for the year totalled $2,023,541 and were 9 per cent below budget.

The largest capital project closed in 2013 was $214,498 for the HVAC upgrades in suites 506 and 507, the registrar's office and the fifth floor meeting room. PEO completed two other leasehold improvement projects in 2013: the exterior signage project ($143,567) and blinds replacement for floors 5, 6, 7 and 8 ($82,546).

The Aptify licence management software project to replace LicenseEase was initiated in 2013 and by year end spending for the project was $686,240.

Projects initiated in 2013 that have been closed in early 2014 include the relocation of staff from the second floor to the sixth ($515,541), and the seventh floor tribunal door relocation ($47,730).

PEO invested $272,049 in computer hardware and software during 2013, including projects such as server virtualization, desktop computer replacement and upgrades to support the Aptify implementation.

Base building improvements totalled $36,307, which is recoverable from tenants. This includes capital planning and tenant HVAC upgrades.

The remaining $25,063 of capital expenditures was made for furniture and several 2012 carryover leasehold improvement projects.

PEO incurred no additional debt from its capital expenditures in 2013, as they were funded from PEO's cash reserves.

CONCLUSION

The association has managed its affairs responsibly and has produced a sizable surplus for the year, leaving 2013 with a healthy reserve to carry out its regulatory mandate in the public interest. Σ

[DATEPAD]

MAY 2014

MAY 28-31
Canadian Society for Civil Engineering Annual Conference,
Halifax, NS
www.csce2014.ca

MAY 30
Ontario Centre for Engineering and Public Policy Annual Conference,
Toronto, ON
www.ocepp.ca

JUNE 2014

JUNE 2-4
2014 Tissue Engineering Congress,
London, UK
www.tissueengineeringcongress2014.com

JUNE 2-4
Canada Green Building Council National Conference & Expo,
Toronto, ON
www.cagbc.org

JUNE 4-6
Western Manufacturing Technology Show,
Edmonton, AB
wmts.ca

JUNE 8-11
Canadian Engineering Education Association Annual Conference,
Calgary, AB
www.ceea.ca

JUNE 8-13
ASME International Conference on Ocean, Offshore & Arctic Engineering,
San Francisco, CA
www.asmeconferences.org/OMAE2014

JUNE 9-12
RAPID 2014 Conference & Expo,
Detroit, MI
rapid.sme.org

JUNE 9-13
ASME 2014 Manufacturing Science & Engineering Conference,
Detroit, MI
www.asmeconferences.org/MSEC2014

JUNE 16-20
11th AIAA/ASME Joint Thermophysics & Heat Transfer Conference,
Atlanta, GA
www.aiaa.org

JUNE 23-24
ASME 2014 Conference on Information Storage & Processing Systems,
Santa Clara, CA
www.asmeconferences.org/ISPS2014

JUNE 23-25
Railway Engineering Education Symposium,
Overland Park, KS
csce.ca

JUNE 25-27
12th Biennial Conference on Engineering Systems Design & Analysis,
Copenhagen, Denmark
www.asmeconferences.org/ESDA2014

JUNE 30-JULY 2
ASME 2014 8th International Conference on Energy Sustainability & 12th Fuel Cell Science, Engineering & Technology Conference,
Boston, MA
www.asmeconferences.org/ESFUELCELL2014

JULY 2014

JULY 9
Fail Forward 2014 (conference),
Toronto, ON
https://failforward.org/ff2014

JULY 13-16
American Society for Agricultural and Biological Engineering and Canadian Society for BioEngineering Joint Conference,
Montreal, QC
www.asabemeetings.org

JULY 13-17
16th International Symposium on Antenna Technology & Applied Electromagnetics,
Victoria, BC
antem.ee.umanitoba.ca

JULY 13-18
2014 IEEE International Geoscience & Remote Sensing Symposium,
Quebec City, QC
www.ieee.org

JULY 20-24
2014 ASME Pressure Vessels & Piping,
Anaheim, CA
www.asme.org

JULY 27-31
2014 IEEE Power & Energy Society General Meeting,
National Harbour, MD
www.pes-gm.org/2014

JULY 28-31
ASME 2014 Power Conference,
Baltimore, MD
www.asmeconferences.org/power2014

[PROFESSIONAL DIRECTORY]

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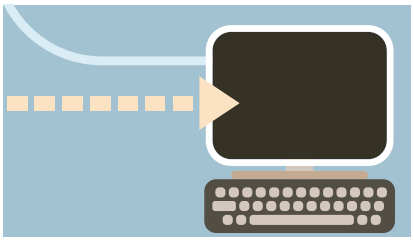
DEADLINE FOR SEPTEMBER/OCTOBER 2014 IS JULY 29, 2014.
DEADLINE FOR NOVEMBER/DECEMBER 2014 IS SEPTEMBER 23, 2014.



DISAPPOINTED IN LICENSING PROCESS

I have recently gone through the arduous process of licensure with PEO and I would like to give some constructive feedback.

My academic requirements (Washington Accord-accredited) and experience record are obviously of a suitable standard (five years pre-graduation and 10 years postgraduation experience) to have received my PEO licence two years after the start of the application process. However, the amount of effort required and the elapsed time is rather disappointing. I have had the luxury of moving to Canada to work for the Canadian office of my global company but I can understand the concern from other migrant engineers about the limiting nature of not obtaining a licence, the duration of time this requires, and the prospect of an internationally educated engineer landing here and being unemployable for several years.

The licensing process in theory, I believe, is sufficient and sets the bar at the correct level to verify that a candidate has achieved the required academic qualifications and experience to competently perform their roles. I support this approach fully to protect public safety.

However, where theory and reality depart is often the source of much consternation and I have been somewhat disappointed with how much of this actually occurs.

1. During my university years, I was led to believe that I was obtaining a degree that was recognized by the Washington Accord. Thus, mobility in the global marketplace would not be a problem. However, in Ontario, PEO does not seem to recognize this agreement, which they say is signed by Engineers Canada and not by PEO. As a result, I had to submit all of my academic transcripts and an additional description of the content of every single course I attended at university (around 30 pages)–something that is extremely difficult to do so many years down the line. This effectively means the Washington Accord is worth very little in Ontario.
2. I manage a group of around seven mechanical engineers (mostly Canadian-educated) at my Toronto office, most of whom have been through the licensure process in recent years. I was asked by PEO to elaborate more on my experience and produce additional reports (around 100 pages) to substantiate it. I asked some of my colleagues to review the experience report I submitted and compare this to the information they submitted and there appears to be a discrepancy between the amount of experience information required from locally educated versus internationally educated engineers.
3. I have recently read the articles in PEO's magazine on the Canadian experience requirements and how this could be viewed as discriminatory ("What's in store for the Canadian experience requirement?" *Engineering Dimensions*, January/February 2014, p. 32). I strongly believe that engineers need to understand not only the codes and regulations but, equally importantly, the different design principles and industry practices required to generate competent and effective designs and construction methods in this harsh climate. There are two schools of thought on this–experience and prescriptive learning–and rather than choosing one or the other, I would recommend either as a requirement, or perhaps even both!

Kenneth Murray, P.Eng., Toronto, ON

FLAHERTY FACILITATED OSPE

It was a meeting at Queen's Park in 2000 that I will always remember. A number of us from PEO, including Pat Quinn, met with then Attorney General (AG) Jim Flaherty and his staff to discuss the final details of proposed changes to the *Professional Engineers Act* regulations to allow the formation of the Ontario Society of Professional Engineers (OSPE).

We discussed the successful results of the referendum, in which PEO members authorized the creation of this member-interest group for Ontario professional engineers, to be later known as OSPE. Flaherty agreed with the proposal, especially the mandatory assessment against registered PEO members of $30 for several years. We asked that it be for five years, but he said that three years was all he could agree with and it really should be enough to finance this new society of professional engineers. His final remarks were: "I hope I do not get 30,000 letters from engineers objecting to all this."

It was his acceptance of all our planning with him and the AG staff that made OSPE a reality.

Bob Goodings, P.Eng.
Chair, OSPE (2001) and President, PEO (2005)
Toronto, ON

FLAHERTY–A FRIEND TO ENGINEERS

Since the *Professional Engineers Act* changes in 1984, one attorney general after another told PEO that advocacy was not its role–which led to the setting up of an advocacy body, and PEO's intersection with the career of Jim Flaherty.

When I was serving as president, PEO required the consent of government through the attorney general for approval to fund the launch of OSPE from PEO's retained earnings, and to provide assisted funding from PEO members for a finite time. That attorney general was Jim Flaherty, in ultra-conservative Mike Harris' government–an environment that would, at first glance, not be seen as too inclined to facilitate an advocacy body.

So it was with some trepidation that I and then Past President Walter Bilanski, Bob Goodings and PEO staff met with Jim and his staff one evening in 2000. I flatter myself that my being Irish and that one of his boys was named Quinn was something of an ice breaker. He welcomed us cordially, came across immediately as a likable, friendly man willing to chat generally for a while, and then listened attentively to our case. He was clearly well briefed, had a very open mind, accepted the need and worked with us to come up with a formula that he could sell to cabinet. In the course of a couple of hours we had his agreement and he did indeed sell it to his colleagues. Although that was my only personal dealing with Jim, every year since, I have been very pleased to receive a Christmas card with the family picture and it has meant a lot to me.

I have met many politicians over a long career but Jim Flaherty stands out in my memory as exceptional, personally charming, working for the public good, firm in his beliefs and open to being convinced by the merits of argument. It is said that success has many fathers and so Jim could be considered the father of OSPE, the launch of which could not have been successful without his support. As a profession, we pay tribute to his memory and offer our gratitude for a lasting gift and our deepest sympathy to his family, friends and colleagues.

Patrick Quinn, P.Eng.
President, PEO (1999, 2006)
Toronto, ON

KEEPING AN OPEN MIND

Before writing this letter, I have read and reread Mr. Ross's letter ("Cool it on climate change," *Engineering Dimensions*, January/February 2014, p. 53) several times and I have to admit I am undecided on which position to take on the controversial topic of climate change.

Way back (longer than I like to remember), I can recall Mr. Beatty, my grades 12 and 13 chemistry teacher, and Mr. Pike, my physics teacher, telling the class that energy is neither created nor destroyed but that it only changes its form, whether it's latent chemical energy, potential energy, kinetic energy or heat, and heat is the longest form of energy. All other forms of energy eventually degenerate into heat.

If that is true, man's increasing use of fossil fuels means that more heat is going into the atmosphere, and this may have an impact on climate. Granted, some of this heat may be radiated into space, but the rest must go somewhere on Earth, be it in the air, oceans or soil.

Mr. Ross correctly states that CO_2 is not a pollutant, and that it is necessary for vegetation to grow. All flesh is grass, but it is proven that CO_2 is a greenhouse gas and retains heat in the atmosphere.

But then, the historic and science side of me kicks in. Long before humankind started using fossil fuels, the Earth underwent at least four ice ages, and then glacier retrenchment. What caused those cycles? I have read in journals, etc. and saw in several documentaries that the Earth's progress through space is very complicated.

The orbit around the sun varies; there have been variances in the inclination of the axis. The axis has a wobble to it. There are variances in the sun's brilliance and radiation, so maybe all of those play a significant role in climate change. And then there are volcanoes. They vary and most produce huge amounts of heat and emissions.

So to summarize, I don't know what to accept, but I don't think anyone can take a hard stance on either position, but keep an open mind and learn.

Clayton M. Morgan, P.Eng., Bowmanville, ON

ED NOTE:

As climate change has been well debated in *Engineering Dimensions* over many issues, Mr. Morgan's letter will close the subject in these pages. Should new climate-change-related statutes, regulations, standards, codes, bylaws or rules arise with which PEO licence holders must comply in their professional engineering practice, PEO will endeavour to inform and guide practitioners in adapting to them, to serve and protect the public interest. PEO also encourages practitioners, as engaged citizens, to contribute to public policy formation for this or any other issue for which they believe their input might add value.

ADDRESSING WATER SUPPLY SAFETY

The article "The facts about community water fluoridation" by Abbey, Finkelstein and Ito, published in the March/April 2014 issue of *Engineering Dimensions* (p. 34) does not address the primary concern of water engineers. Whatever the merits are for prescribed fluoridation products under the care of a dental practitioner, it would not concern us as a profession if drinking water supply safety were not involved.

"The addition of fluorides to the water supplies is not coupled with the concern of maintaining or improving the quality of the water or making it safe. No one has suggested that dental caries is a water-borne disease or that water is a cause of dental decay. No satisfactory reason has ever been advanced to show why everyone in a community must be compelled to risk life-long extraordinary exposure to the toxic action of fluorides, particularly when safer, more effective and more economical ways of administering fluorides for caries prevention in children's teeth have been pointed out and are available."

The above is an extract from a must-read letter by NYC civil engineer and former commissioner Arthur C. Ford, written a decade after water fluoridation began at: http://tinyurl.com/pjtv6c2. The original claims of considerable dental benefits as a result of artificial fluoridation were based on an unsound foundation. See Sutton's 1960 statistical critique of the first four North American trials. This has been reinforced by engineer-professor Rudolf Ziegelbecker, whose work was pivotal in many European decisions to stop water fluoridation. And there are five Canadian studies that show water fluoridation is ineffective–one of which is Ito's 2007 master's thesis study! Each of these items is found at: http://tinyurl.com/q8h4uu9. The above fact is reinforced by the US Centers for Disease Control and Prevention 1999/2001 statement that fluoride's effect is primarily topical, not systemic. Therefore, it is unnecessary to swallow fluoride. This questions the ethics of maintaining the purity and wholesomeness of public drinking water. The matter of purity has a direct bearing on the people and involves the determination and evaluation of the tolerance of suspect, hazardous or toxic substances.

Sadly, the engineering profession, yet again, is being played by public health over the issue of water fluoridation, when synergistic effects from all sources of fluoride ingestion are not known or studied. Water fluoridation further exacerbates fluoride uptake due to the feedback effect when water is used to reconstitute formula, beverages or prepared foods.

It's the increased fluoride loading in the body that causes harm. Fetus and child suffer the greatest relative increase in their tissues from low concentrations of fluoride in drinking water, at a time of extreme developmental vulnerability to fluoride's endocrine disrupting effects. As the original article stated, professional engineers as a body should not stand for being manipulated by dental propaganda into giving their expertise and skill to cause increased fluoride in anyone's body, especially not the most vulnerable who cannot choose to avoid it. It defiles principles that underlie our profession's ethics.

Chris Gupta, P.Eng., London, ON

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

FLUORIDE USE IN OTHER COUNTRIES

I note the discussion of fluoridation in the March/April issue, and in the letters column. I was living in Waterloo, Ontario, in June 1981 when a referendum on fluoridation was held. Out of 10,000 votes cast, fluoridation was retained by a margin of 300 votes. During the campaign, a former medical officer of health stated: "Every reputable scientific authority throughout the entire world strongly advocates the addition of fluoride to the water supply…."

That statement motivated me to check on the status in a number of countries. Following are the results of the survey in 1981, published in 1982.

Australia: Overall, 66 per cent of the people receive fluoridated water, but only 7 per cent in Queensland.

Austria: Water fluoridation is not in use. Supply of fluoride is carried out by use of tablets.

Denmark: Water fluoridation is not used. Dentists apply fluoride topically.

Finland: There is very little use of water fluoridation. Tablets and topical application are used. Some surface waters are naturally fluoridated.

Netherlands: After complex back and forth debate, the result as of 1981 was that fluoridation was not in use.

New Zealand: Overall, 65 per cent of the people receive fluoridated water, but some larger towns have rejected fluoridation.

Norway: There is no fluoridation. However, there is extensive use of topical application and toothpaste containing fluoride.

Sweden: Fluoridation is not used. An official commission concluded that improved oral hygiene and individual fluoride treatment can achieve the required results.

Switzerland: Only one town, Basel, is fluoridated. Fluoride is applied through its addition to cooking salt. A recent decision is to increase the level in salt to 250 ppm.

United Kingdom: 9 per cent of the people receive fluoridated water.

West Germany: Water fluoridation is not in use.

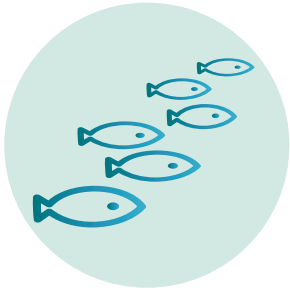
I did not contact Greece and Ireland.

Dr. F. Boettcher, in an article published in 1977, states that in Europe as a whole, on average, only 1 per cent of the people receive fluoridated water.

Edward J. Farkas, P.Eng., Toronto, ON

HEALTH EFFECTS OF WATER FLUORIDATION

The article "The facts about community water fluoridation" by Abbey, Finkelstein and Ito, published in the March/April 2014 issue of *Engineering Dimensions* (p. 34) has missed the promise in its title and failed to present facts on the subject. The authors belong to the list that Sheldon Thomas spoke of in his article "Rethinking the risks and benefits of fluoridation" (*Environmental Science & Engineering Magazine*, January/February 2013). The method used in their article is tautology, as correctly identified by Chris Gupta in his letter to the editor, titled "Supporting evidence" and published in the same March/April 2014 issue of *Engineering Dimensions* (p. 42). Then engineers may be faced with a dilemma whether to accept the tautology of the "list" at face value, or to trust the hard technical facts that they can verify easily on their own. These facts are found in the technical information for products used to "fluoridate" drinking water; and a review of material safety data sheets quickly reveals that hydrofluosilicic acid used to fluoridate comes with health risks contrary to the "benefits" fluoridationists like to promote. For example, section 3 hazard identification of one such document on hydrofluosilicic acid states: "Fluoride is a bone seeker, and excessive amounts will produce weakening and degeneration of the bone structure. Chronic exposure may cause excess accumulation of fluorine (fluorosis) in the teeth and bones. Severe fluorosis in children weakens tooth enamel resulting in surface pitting. After prolonged high intake in adults bony changes occur characterized by hardening or abnormal density of bone (osteosclerosis), benign bony growths projecting outward from the surface of the bone (exostoses) and calcification of ligaments, tendons and muscle attachments to bone. Ingestion and skin contact may cause an abnormal reduction of blood calcium (hypocalcemia) and kidney damage since fluorides precipitate calcium stored in the body. There may also be heart, asthma, nerve, intestinal and rheumatism problems." Then section 12 ecological information states: "Harmful to aquatic life at low concentrations" and "Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers."



continued on p. 66

continued from p. 65

In his letter, Gupta also asked for the toxicology study that proves hydrofluosilicic acid is at least safe for human consumption. Where is that toxicology study? The list has consistently failed to provide such evidence and referencing the NSF Standard 60, which does call for this study, renders their arguments a sham.

Perhaps most ironic of all is the fact that the authors' arguments do not agree with results of their own research. For example, Dick Ito's 2005 Caledon study conclusion starts with: "We found virtually no difference in caries prevalence or severity between 7-year-old children from schools in non-fluoridated Caledon and schools matched on socio-economic factors, in fluoridated Brampton."

This begs the question: What could be the author's motivation to contradict himself?

Given the above, it would serve well for PEO to have a position statement stating why it does not support water fluoridation.

Gerry Cooper, MBA, P.Eng., Toronto, ON
Vladimir Gagachev, P.Eng., Mississauga, ON

AD INDEX

WHOM TO CONTACT AT PEO

Association staff can provide information about PEO. For general inquiries, simply phone us at 416-224-1100 or 800-339-3716. Or, direct dial 416-840-EXT using the extensions below.

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Deputy registrar, licensing and finance Michael Price, P.Eng., MBA, FEC	1060
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ADVERTORIAL

A closer look at health and disability insurance

How coverage can help the self-employed, contractual and underinsured

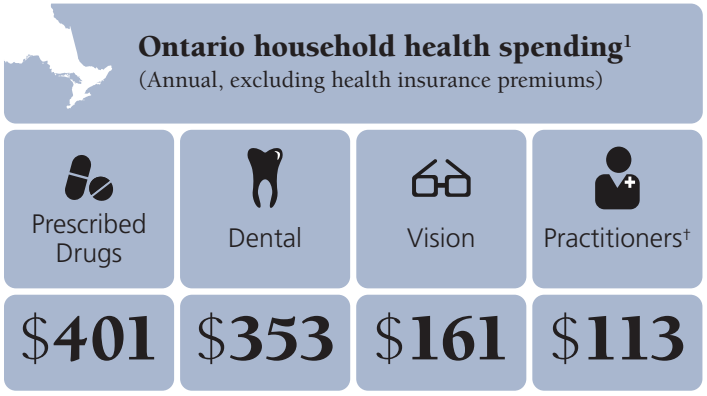
Being ill or injured can be challenging enough without worrying about being driven into debt.

With health and living costs rising steadily, those who are self-employed or don't have coverage at work could face financial hardships. Without an employer's group insurance benefits, you are *left to your own means when it comes to protecting yourself and your family*.

You don't hesitate to insure your home, car and other valuable possessions, so why wouldn't you insure those that are much more valuable than all those things — *your health and your ability to earn an income?*

Health insurance

Supplementary health insurance starts where government coverage ends.



†Other than physicians, dental and vision care professionals

With no supplementary health coverage, you would have to pay *out of your own pocket for common expenses* like prescriptions, dental care, vision care, therapeutic services and more.

If your spouse doesn't have coverage at work, your out-of-pocket medical expenses can get even bigger, especially if you have children.

Private health insurance can be *more affordable than you think*. Plus, if you're self-employed, you may be able to deduct the cost of your health insurance premiums from your business income.[2]

Disability insurance

Disability insurance helps to replace a portion of your income if you become ill or injured and can't work. These plans provide *monthly benefit payments*, based on a percentage of your monthly earnings, while you are disabled and unable to perform your occupation.

Unlike employee disability plans that end when you change jobs, some association-sponsored disability plans can *provide continuation of coverage between jobs* so you are not left without coverage while unemployed. If you become disabled within 12 months of your last job, you remain eligible for a monthly benefit payment.

Look for a disability plan that offers coverage for different types of disability, such as total disability, partial disability, residual disability (you are able to return to your regular occupation but in a limited capacity), and catastrophic loss.

And if you pay your own premiums (not your partnership), your monthly disability benefits may be tax free.[2]

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80% of Ontario residents have supplementary health coverage[3]

34% of Ontario residents have disability income protection[3]

Cost is a common reason offered by those who are not covered by any plans to explain the lack of coverage.

Affordable coverage is available for professional engineers through the **Engineers Canada-sponsored plans**. This allows you to enjoy many of the benefits of a group plan (e.g., lower cost) so you can focus on your recovery, not on the bills.

[1] Average household annual spending (Source: Statistics Canada, 2010 Survey of Household Spending, April 2012).

[2] Contact your financial advisor or the Canada Revenue Agency for details.

[3] Percentages are based on persons covered at end of 2011 (Source: Canadian Life and Health Insurance Association, Facts & Figures, Life and Health Insurance, 2012 Edition) and 2011 provincial population figures (Source: Statistics Canada).

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Due to provincial legislation, our auto insurance program is not offered in British Columbia, Manitoba or Saskatchewan.

*No purchase is required. There is one (1) prize to be won. The winner may choose between an amount of $60,000 CAD to build a dream kitchen of his/her choosing or $60,000 CAD cash. The winner will be responsible for choosing a supplier and for coordinating all of the required work. The contest is organized by Security National Insurance Company and Primmum Insurance Company and is open to members, employees and other eligible persons who reside in Canada and belong to an employer, professional or alumni group which has entered into an agreement with the organizers and is entitled to receive group rates from the organizers. The contest ends on October 31, 2014. The draw will be held on November 21, 2014. A skill-testing question is required. Odds of winning depend on the number of eligible entries received. The complete contest rules are available at melochemonnex.com/contest.