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JULY/AUGUST 2015



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BRINGING STRATEGIC GOALS INTO FOCUS



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

THE FIRST THREE months of the 2015-2016 council term was certainly a busy and productive time at PEO. Here's a look at what we've been working on to increase the relevance of our profession.

COUNCIL WORKSHOP

Under the theme of "Bringing strategic goals into focus," council worked together at its June retreat/workshop to hammer out PEO's priorities for this year. These include:

1. potential act changes to implement the Elliot Lake recommendations;
2. follow-through on Elliot Lake recommendations;
3. continuing professional development;
4. specialist designation; and
5. repeal of the industrial exception.

Council also gave strong direction that we must keep you informed and seek your input throughout the process of developing our proposals aligned with the above priorities. Look for the president's messages in *Engineering Dimensions* and other articles throughout the magazine, as well as updates from PEO via other media channels such as the PEO website, email and PEO's LinkedIn, Twitter and Facebook feeds.

In line with our focus on "innovation, recognition and collaboration," we are planning to hold five regional town halls this fall. See page 15 for the date in your region. Please help spread the news and invite other members to attend, either in person or via web conferencing or teleconferencing, to enable accessibility for more members, including those who live in remote areas of Ontario. It will be a great opportunity for neighbouring chapters in each region to pool their resources and share their expertise to ensure these town halls are a success in each region.

ELLIOT LAKE INQUIRY RECOMMENDATIONS

For those who were unable to attend PEO's annual general meeting luncheon in Toronto, Peter Doody delivered an important and informative presentation on the findings of the Elliot Lake Commission of Inquiry. As former counsel to the inquiry, Doody reminded PEO to continue its efforts to imple-

ment the commission's recommendations, many of which were originally submitted by the association and are now included as high-priority strategic objectives in PEO's 2015-2017 Strategic Plan. With permission, I've provided a portion of his remarks that put into context the importance of our efforts and capture how many outside our profession perceive the situation:

"Now, it is three years after the collapse [of Algo Centre Mall in Elliot Lake], two-and-a-half years after the [PEO] practice bulletin, one-and-a-half years after the policy roundtables, and seven months after the report was released. But:

- The practice bulletin is not yet a performance standard;
- There are no legally enforceable requirements of what must be done when carrying out a structural adequacy inspection;
- There are no legal requirements for the contents of a structural adequacy report;
- There is no certified specialist program, so any professional engineer can provide an opinion with respect to the structural integrity of a building to which the public has access;
- There is no mandatory continuing professional development (CPD) education requirement for professional engineers in Ontario, so engineers are not required to certify they are taking steps to stay current with new developments; and
- There is no clear direction that engineers should not alter a draft report simply because a client asks them to do so.

"I urge PEO to take the steps necessary to fix these things. I learned today that the newly adopted strategic plan includes an objective that the inquiry recommendations be implemented. That objective should be given a high priority.

"There are many things left undone that are beyond PEO's control because they require action by the province, but in which you could help:

- There are still no province-wide minimum maintenance standards;
- There are still no requirements to ever inspect buildings after they are occupied;
- There is still no ability to order work be done to prevent future structural safety issues;
- There is still no way for a member of the public to learn whether a building to which she has access is safe; and
- There is still no way to ensure that engineers conducting structural inspections can be assured they have all the relevant reports and documents.

"Members of the public have the right to expect that when they enter a building, they can be sure it was not only built safely and soundly but maintained so it is still safe and sound. Their lives depend on that. This organization can help to satisfy that expectation.

PRESIDENT'S MESSAGE

"I urge you to take all necessary steps to carry through on your commitments made to the public and to the inquiry, and put into place those aspects of the inquiry's recommendations that are within your power. And please go further. Lobby the provincial government to put in place the other recommendations. Peoples' lives may depend on it."

CONTINUING PROFESSIONAL DEVELOPMENT

In May, council was updated on the progress of the work of the Continuing Professional Development, Competence and Quality Assurance Task Force. It has developed the framework for a proposed Continuing Professional Development (CPD) program that:

- is a made-in-Ontario solution;
- recognizes there are both practising and non-practising licence holders; and
- ensures CPD requirements will be based on the risk that the work of each member presents to the public and the profession.

The task force continues to refine its proposed program and carry out research to justify the kinds of program elements that should be included. Its recommendation will be provided to council in December 2015.

As Doody alluded to in his AGM keynote address, ensuring members' competence and ethical conduct are core responsibilities of every self-governing regulatory body. To remain relevant to the public, PEO must meet the public's ever-increasing demand for accountability. A properly designed CPD and quality assurance program helps provide such assurance to the public, government and employers of the competence of our PEO licence holders.

NEW LET CLASS OF LIMITED LICENCE

In May, long-awaited amendments to Regulation 941/90 of the *Professional Engineers Act* were filed. These amendments included changes that will introduce the new licensed engineering technologist (LET) class of limited licence on July 1, Canada Day. This change provides qualified limited licence holders a protected title and designation from PEO that reflect the holder's willingness to be held professionally accountable by both the licensing and certification bodies.

PEO has also changed its Certificate of Authorization (C of A) to permit limited licence holders to be responsible for engineering services offered or provided to the public. We believe that enabling limited licence holders to be responsible for engineering services offered or provided under a C of A, within the limitations of their licences, meets the needs of both the marketplace and the practitioner.

Further, the academic requirement for a limited licence has been generalized to accommodate applicants with technical degrees, or diplomas in a broader range of disciplines.

Applicants for a limited licence will now be expected to demonstrate an equivalent depth of knowledge within the proposed limitation of their licences to that expected of applicants for a professional engineer licence.

These are exciting changes in our profession that come after more than 13 years of constructive and continuous collaboration and negotiation involving PEO, the Ontario Association of Certified Engineering Technicians and Technologists and the office of the Attorney General of Ontario. I encourage you to visit the PEO website for more details: www.peo.on.ca/index.php/ci_id/2201/la_id/1.htm.

INTERNATIONAL ENGINEERING GRADUATES

One of the most rewarding benefits of serving as PEO president is having the opportunity to engage with many groups within the greater engineering community to exchange ideas, discuss PEO initiatives and celebrate the profession and those within it who make significant contributions.

Recently, I had the pleasure of attending the Bangladesh University of Engineering and Technology (BUET) Alumni Night event. Together with the high commissioner of Bangladesh of Canada, I was honoured to commemorate the great successes of prominent scholars and engineers, such as BUET alumnus Fazlur Rahman Khan, a Bangladeshi-American structural engineer who ushered in a renaissance in skyscraper construction during the second half of the 20th century. Canada and Bangladesh continue to enjoy a co-operative relationship as members of the Commonwealth, the United Nations and the international network of communities. I very much enjoyed celebrating alongside my professional colleagues in the Bangladeshi community.

The event allowed me to elaborate on the work PEO has undertaken in recent years to enable newcomers to better use the skills, education and experience they bring with them. For example, obtaining an Ontario professional engineer licence no longer requires Canadian citizenship, or to have permanent resident status in Canada. With the elimination of the residency requirement, we have seen qualified applicants arrive in Canada with many of the licensure requirements already met and ready to immediately enter the engineering workforce. Further, through our Financial Credit Program, qualified newcomers to Ontario may be eligible to apply for licensure at no cost if they do so within six months of arriving.

Immigrants are the talent pool for building a skilled and diverse work force. And, with about one-third of the almost 80,000 professional engineers licensed by PEO educated outside of Canada, international engineering graduates are a significant and integral part of our profession. I know that because I am an internationally trained engineer myself.

As part of our strategic plan, we are currently reviewing ways to better communicate to newcomers the requirements for licensure and the process involved so their journey and transition into the Ontario workforce is as smooth as possible.

As always, I welcome your suggestions for improvement. Σ

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DIVING RIGHT IN



Jennifer Coombes
Editor

IT'S CLEAR NEW President Thomas Chong, P.Eng., FEC, is not afraid of hard work. A PEO volunteer at York Chapter for many years and then on council for many more, Chong is now putting all of his energy and experience to work leading the organization to which he has already shown tremendous commitment (p. 32).

He's wasting no time in tackling the many projects slated for 2015-2016, while, remarkably, still managing to hold down his day job as senior system lead at the Ontario Ministry of Health and Long-term Care and fit in a wide array of off-hour activities and interests. Chong and council plan to dive into the priorities they, working collaboratively with PEO's senior management team, set at the annual council workshop in June.

These priorities are following through with the recommendations set out in the report of the Elliot Lake Commission of Inquiry, drafting act changes to pave the way for implementing those recommendations, developing a continuing professional development (CPD) program, developing a specialist designation, and securing the repeal of the industrial exception (pp. 3, 10, 14).

While all of these projects are important, developing a CPD program that PEO, its licence holders and the public can live with is perhaps the project with which members will have the most direct input and that may ultimately be the most challenging. In this issue, we report on the progress of the Continuing Professional Development, Competence and Quality Assurance Task Force over the past eight months in devising a CPD program for PEO (p. 22). The task force is proposing a tiered model that connects the amount of professional development a licence holder must undertake to the risk his or her engineering work presents to the public.

One thing's for sure: this program is far from a done deal. Licence holders will have ample opportunity to comment on the proposed model through an Ipsos Reid survey launching July 27 (p. 19), at a series of town hall meetings President Chong will hold in Ottawa, North Bay, London and Toronto starting in late September (p. 15) and, at any time, by emailing CPDCQA@peo.on.ca. A backgrounder on the proposed CPD plan is available to download directly from PEO's home page, www.peo.on.ca.

It's rare, but sometimes our issue theme—in this case, enforcement— dovetails perfectly with current events. Such was the case in early May when a so-called “engineer” working at Hydro One harassed a female reporter on air covering a Toronto FC soccer game. While that ugly incident turned out to be a career-limiting move for him, it presented PEO a perfect teachable moment to help both the media and the public better understand who is and who isn't an engineer, and how to use engineering titles correctly. Michael Mastromatteo covers the work PEO has been doing to measure the general public's awareness of its enforcement efforts and how the organization deals with infractions in “What's in a name?” (p. 35).

Finally, I'd like to thank everyone who took the time to respond to our 2015 *Engineering Dimensions* survey. Your answers and comments will help us shape the content we deliver to you both in the magazine and on an exciting new platform currently under development. Σ

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Professional Engineers Ontario

THIS ISSUE: As President Thomas Chong, P.Eng., FEC, takes the helm at PEO, we'll look at what course he's charting for more effective engineering regulation. We also touch on some recent developments in PEO enforcement.

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.

Increased member involvement urged at 2015 AGM

By Michael Mastromatteo



New PEO President Thomas Chong, P.Eng., FEC, makes his inaugural remarks at the AGM April 25 in Toronto.

ANOTHER MULTI-TERM PRESIDENT has completed his service and handed leadership of Ontario's engineering regulator over to a first-timer.

New President Thomas Chong, P.Eng., FEC, took over from outgoing president David Adams, P.Eng., FEC, just as PEO is beginning to implement a new strategic plan to guide its activities over the next three years. As president, Chong has pledged to keep a close eye on PEO spending while furthering Adams' long-expressed desire to involve more rank-and-file members in the regulator's governance.

Attended by about 150 members, EITs and guests from other engineering associations, PEO's 2015 annual general meeting (AGM) April 25 served as a forum for the new president to offer a vision for the upcoming year, while the departing president reflected on achievements of the past term.

To that end, Adams called for ongoing effort to involve more PEO members in the regulator's future decision making.

"I've always been very member-oriented, so I'm going to try to get more of what happened yesterday [at the Volunteer Leadership Conference] into our thinking and our decision making," Adams said.

The departing president cited the Elliot Lake mall collapse and subsequent Bélanger Commission of Inquiry as opportunities for engineers to recommit to their mandate to protect the public. Adams described the June 2012 mall collapse as "the greatest loss of reputation for Ontario's engineers."

He also mentioned securing proclamation of the repeal of the industrial exception and implementing PEO's new Aptify database as special challenges for PEO over the next several months.

President Chong picked up on the need for more member involvement in his inaugural remarks at the meeting. He referred to annual fees as an investment that members should seek to nurture through their involvement with the regulator.

"For this investment to bear fruit, I need your help and your participation," he said. "We need fresh voices to bring their broad experience to council, our committees and our chapters. We need more of our membership to participate in council elections. Our annual budget is \$25 million—that's quite an investment you have made. The best way to protect that investment is to take an active part in selecting the councillors who will administer it."

Chong later paid tribute to PEO staff and volunteers for their efforts over the past year, and outlined his personal priorities as president. These include reducing costs and improving operational effectiveness, enhancing the self-regulatory function of the profession, and expanding PEO's volunteer leadership base.

Guests attending the 2015 AGM included then Engineers Canada President-elect Digvir Jayas, PhD, P.Eng., FEC, and CEO Kim Allen, P.Eng., FEC. Danny Young, P.Eng., outgoing president and chair of the Ontario Society of Professional Engineers, brought greetings from the advocacy association and new CEO Sandro Perruzza. Other guests included Ann English, P.Eng., CEO and registrar, Association of Professional Engineers and Geoscientists of British Columbia; Andrew Loken, P.Eng., FEC, president, and Dennis Paddock, P.Eng., FEC, executive director and registrar, Association of Professional Engineers and Geoscientists of Saskatchewan; Marcia Friesen, P.Eng., then past president, Association of Professional Engineers and Geoscientists of Manitoba; Anne Baril, ing., board member, Ordre des ingénieurs du Québec; Anna Godo, P.Eng., presi-



PEO members and council gather for PEO's annual business meeting.

dent, Municipal Engineers Association; and Toon Dreesen, president, Ontario Association of Architects.

A highlight of most annual meetings is discussion and debate of member submissions. While submissions presented at annual meetings are not binding on PEO council, they offer a glimpse at member priorities and may help guide council members' thinking about possible new initiatives. There were five resolutions presented at the 2015 meeting.

A submission from former president Denis Dixon, P.Eng., FEC, calling for an external supplier to enhance PEO's Aptify database was defeated. Another IT-related submission, brought by Ray Linseman, P.Eng., FEC, calling for the creation of PEO webmail accounts for volunteers was supported by members present.

Nancy Hill, P.Eng., FEC, LLB, a presidential candidate in the most recent council election, spoke to her submission urging term limits for all positions on council. "The time has come for council to listen to and put in practice the will of the membership as represented by the volunteer leadership here today," Hill said. "We expect council to move forward with the implementation of term limits for all positions on council."

The submission was carried with suggested term limits of: president—one term, vice-president—two terms, councillor-at-large—three terms, regional councillor—three terms, lieutenant governor appointees—two terms (to be proposed to the government).

Outgoing council member Rob Willson, P.Eng., FEC, authored a submission asking for a system to identify potential candidates for PEO elections. This submission, which also supported the concept of term limits for sitting councillors, was carried, despite objections from some members that it might operate at odds with PEO's established and mandated Central Election and Search Committee.

The final submission, submitted by former president Patrick Quinn, P.Eng., FEC (now elected vice president), focused on budgetary and policy considerations. The Quinn submission was ultimately divided into three parts. A call that future budgets be based on needs rather than "raising revenue to match projected income," was carried. Mem-

bers present defeated the second budget-related part that would see line items in excess of \$100,000 require a two-thirds majority of council to be approved. Also defeated was Quinn's policy-related item calling for "major policy changes," such as compulsory professional development, to be subject to two-thirds council approval and ratification by member referendum.

Prior to the ceremonial swearing in of President Chong, Adams paid tribute to retiring council members Annette Bergeron, P.Eng., FEC; Michael Wesa, P.Eng., FEC; Rob Willson; Chris Roney, P.Eng., FEC, BDS, and Martha Stauch.

Once sworn in, Chong introduced the newly elected members of the 2015-2016 council and those assuming new positions: David Adams (past president), George Comrie, P.Eng., FEC (president-elect), Patrick Quinn (elected vice president), Dan Preley, P.Eng. (Northern Region councillor), and Warren Turnbull, P.Eng. (West Central Region councillor).

P.Engs key to establishing safer building inspection regime: Elliot Lake counsel

By Michael Mastromatteo

Lead counsel to the recently completed Elliot Lake Commission of Inquiry is urging engineers to continue their forthright response to the June 2012 mall collapse that killed two Elliot Lake residents and injured several others.

Peter Doody, LLB, a partner with the Ottawa office of Borden Ladner Gervais, was luncheon speaker April 25 at PEO's annual general meeting.

Doody was lead counsel to Commissioner Justice Paul Bélanger in his inquiry into the causes of the partial collapse of the rooftop parking deck of the Algo Centre Mall in Elliot Lake. The commission released its exhaustive, two-volume report last October.

Much of Doody's address covered Part 1 of the inquiry, at which PEO had standing, focused on the events leading up to the collapse and the activities of engineers, architects, property owners and municipal building officials involved with the mall over its 33-year history.

Doody reiterated Bélanger's general conclusion that while it was material failure in the form of rust and corrosion that led to the parking lot roof collapse, there was an equal measure of human failure at play.

"The commissioner's criticisms did not all apply to every engineer who came into contact with the mall over its 33 years of existence," Doody said. "Nor do they apply to the vast majority of professional engineers who practise their profession in this province. But tragedies such as the mall collapse are opportunities to discover gaps in the systems that we rely on to ensure our modern infrastructure is safe. The commission uncovered not only human failings, but gaps in our systems that allowed those failings to flourish. Those gaps can be bridged, and future tragedies averted, if the commissioner's recommendations are implemented."

Doody praised PEO for its aggressive response to the disaster, adding that PEO immediately sought standing in the inquiry and issued a practice bulletin on the inspection of existing buildings four months before the inquiry called its first witness. One of the most glaring gaps coming to light in the inquiry, he said, was the lack of a safety inspection regime for the province's existing buildings.

Doody also pointed out how many of the recommendations PEO offered the commission in its submission and at November 2013 roundtable discussions found their way into the final report.

Despite the positive response from the engineering community, however, there is still work to be done, Doody said. In particular, he called for PEO to work quickly to develop a practice standard (rather than the practice bulletin) for the inspection of existing buildings. He also urged the regulator to work with the province to speed implementation of



Peter Doody, LLB, lead counsel for the Elliot Lake Commission of Inquiry, urged engineers to work with provincial and municipal governments to improve building safety in Ontario.

other key recommendations in the Bélanger report to close the oversight gaps that contributed to the Elliot Lake incident.

"There are many things left undone that are beyond PEO's control because they require action by the province," Doody said, "but the province listens to important organizations like PEO, particularly in areas like this."

In closing, Doody reiterated his call to action: "Few professionals can say that their obligations to the public are as great as professional engineers. I urge you to take all necessary steps to carry through on your commitments made to the public and to the inquiry, and put into place those aspects of the inquiry's recommendations that are within your power. And go further: urge the provincial government to put in place the other recommendations."



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2015 AWARDS FOR academic achievement



Moises Pimienta, P.Eng., and Lisa De Angelis, P.Eng., were honoured as recipients of PEO's annual examination program awards at PEO's 2015 annual general meeting luncheon. Pimienta received the S.E. Wolfe Award for his engineering report, *How Kanban and Total Productive Maintenance (TPM) Can Improve Assembly Line Production*. The award is given to a professional engineer licensed during the last year through writing technical examinations whose engineering thesis was judged to be the best of the reports received. De Angelis received the V.G. Smith Award for successfully completing a total of six technical exams with an average of 78 per cent. The award is given to a professional engineer licensed during the past year through examinations who achieved the highest mark in any three examination papers. Each recipient received \$1,000. The awards honour professors V.G. Smith, P.Eng., and S.E. Wolfe, P.Eng., who were members of PEO's Board of Examiners (now called the Academic Requirements Committee).

Conference examines new ways of bringing ideas to light

By Michael Mastromatteo



Chris Kan, P.Eng., FEC (right), with presenter Jim Harris at the 2015 Volunteer Leadership Conference.

PEO's Volunteer Leadership Conference, April 24 in Toronto, focused on two traditionally distinct groups—chapter and committee volunteers—looking for ways of working together to help PEO fulfill its core objectives.

The “connecting volunteers” event, held the day before the annual general meeting (AGM), replaced the pre-AGM Penta Forum held for the last few years.

“Our goal for today is to bring together a wide cross-section of PEO's volunteer base to consider how volunteers and chapters, committees and task forces can collaborate to advance PEO's regulatory mandate,” said George Comrie, P.Eng., FEC, PEO then vice president (now president-elect) and a member of the conference planning committee. “At the very least, we hope to plant some preliminary seeds of cross-pollination and to encourage greater understanding, appreciation and interaction among our chapters and committee and chapter volunteers.”

Keynote presenter and conference facilitator Jim Harris, author of the international bestseller *Blindsided*,

and a well-known management consultant, outlined the advantages of crowd sourcing and social media-enabled networking as businesses and corporations around the world look to innovate and build healthier returns on their investments.

Harris cited other management consulting experts who have observed that “systems and structures” govern performance for just about any organization. If PEO wants to increase member participation in regulatory affairs, he said, it should look for new ways to make itself more relevant, especially in an era of instantaneous mobile communication.

“In the case of PEO elections with very low voter turnout, if we want to change that, we have to go back and ask how we can better engage our people on key issues,” Harris said.

Harris later led participants in a series of small group discussions focused on the recommendations of the recently completed Elliot Lake Commission of Inquiry, and on issues related to licensing of professionals.

The Elliot Lake discussion topics were continuing professional development, specialist designations, public access to information in PEO’s register, ethical behaviour, proactive enforcement and protecting whistleblowers.

Licensure topics related to the Canadian experience requirement, foreign credential recognition, matching applicants’ knowledge and experience, structuring engineering

internships, assisting applicants with the licensing process, and the contentious repeal of the industrial exception.

Chapter and committee volunteers were assigned seating in the small group discussions to allow an optimal exchange of ideas and information.

Volunteer Leadership Conference Chair Christopher Kan, P.Eng., FEC, was made an officer of the Order of Honour later in the day at the annual gala (see “Order of Honour 2015 recognizes eight extraordinary volunteers,” May/June 2015, p. 9). Kan also chairs the Advisory Committee on Volunteers (ACV) and is an executive of PEO’s Simcoe Muskoka Chapter.

In reflecting on the conference discussions, Kan reiterated the importance of ongoing volunteer collaboration. “In the past, a lot of our work has been kept to separate silos,” he said. “We are hoping now that, in some cases, chapters and committees can find common ground to work for the betterment of the organization and members.”

Kan said the discussion and feedback from the conference will be collected and shared with chapters and with PEO’s ACV to help spur new action. “It’s the hope of the volunteer leadership planning committee that we have gained momentum toward something new and unique, and to harness the power of our volunteers to reach our mandate,” he said.

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PEO SEEKS MORE DATA to buttress case to repeal the industrial exception

By Michael Mastromatteo

ONTARIO'S ENGINEERING REGULATOR has entered the next phase of its effort to have the province finalize the repeal of the industrial exception clause in the *Professional Engineers Act*.

The industrial exception, clause 12(3)(a) of the act, permits unlicensed people to do engineering on manufacturing equipment within their employer's facilities.

PEO believes the exception, which exists only in Ontario, creates a safety gap in the industrial and manufacturing sectors.

PEO recently entered into a research project with McMaster University and the Ontario Ministry of Labour to study accident rates in manufacturing. PEO is looking to establish if there is a link between the industrial exception and the general level of safety in Ontario manufacturing.

PEO Registrar Gerard McDonald, P.Eng., outlined the regulator's position April 25 during its annual general meeting.

"Council felt in order to make a concerted effort to get the exception repealed, we should first have the data that shows there is a safety issue in not having the exception repealed," McDonald said.

The Ontario government agreed to repeal the exception in October 2010 with passage of its Open for Business legislation. At the time, the attorney general asked PEO to help manufacturers prepare for the repeal. In response, PEO established its Repeal of the Industrial Exception Task Force, which for the next three years undertook extensive consultation with affected stakeholders. The province then announced that repeal of the exception would be effective in the spring of 2013.

In June 2013, however, the province abruptly changed its position and decided to postpone proclamation indefinitely.

It's believed lobbying, primarily by the Society of Manufacturers and Exporters (CME), convinced the government safety is not an issue in Ontario manufacturing, so there is no need to go forward with the repeal.

"We are in the midst of doing data collection in coordination with the Ministry of Labour and McMaster University," McDonald said. "That project is ongoing right now, and council wants to have a look at the data to ensure we have a defensible business case when we go back to the government with the next push."

The results of the research project will be presented to PEO council in November.

P.ENGs KEEP UP PRESSURE FOR MATH CURRICULUM REVISIONS

By Michael Mastromatteo and Wanda Juricic, P.Eng.

PEO Education Committee (EDU) volunteers are again urging the education ministry to consider changes to the province's math and physics curricula to help ensure Ontario high school graduates are more technically informed.

At the May 29 to 30 PEO Education Conference, titled Shaping our Future with Math and Physics, engineers, educators and engineering interns engaged in lively debate on the impact of curriculum changes on future practitioners. It continued last year's conference discussion on school curriculum and what individual engineers and PEO might do to boost science, technology, engineering and math (STEM) learning.

Presenter Phil Sullivan, PhD, P.Eng., of the University of Toronto, and a long-time volunteer with both the EDU and PEO's York Chapter, shared the contents of his recent letter to Ontario Minister of Education Liz Sandals about problems with math and science learning. In addition to concerns about the overuse of electronic calculators in math and physics programs, Sullivan urged the ministry to restructure the math curriculum "to ensure introduction of time-tested standard mathematical operations, together with instruction based on extensive use of worked examples."

Sullivan also promotes "mental arithmetic" as central to instilling in graduates the required mathematical fluency for engineering and other technology-dependent professions.

Sullivan also shared the education minister's response to his letter, which, while largely defending the status quo, agreed the Ontario education system requires more study of how mathematics is taught and understood.

In her overview of the kindergarten to Grade 12 math curriculum, Anna Stokke, PhD, of the University



of Winnipeg, and author of the May 2015 CD Howe Institute study, *What to Do about Canada's Declining Math Scores*, discussed the "discovery" teaching method and how she believes it has a negative impact on student understanding. She used examples to illustrate the new method of teaching and how it is being used. Discovery learning allows students to "discover" solutions to mathematical problems.

"Recent shifts in math teaching practices coupled with radical, discovery-based math curricula are seriously hampering math learning by Canadian students," Stokke said in her CD Howe commentary. "Evidence shows that direct instruction techniques work better than discovery-based techniques, so teachers should follow an 80/20 rule, devoting at least 80 per cent of their math instructional time to direct, instructional techniques."

At PEO's 2013 Education Conference, Minister Sandals invited input from PEO and the engineering community in seeking to revise the math and physics curricula in Ontario. "Ontario's education system and you engineers share common goals in preparing students to compete in a global economy," she said.

Delegates at the 2015 conference also discussed PEO's Engineer-in-Residence (EIR) program and education outreach-related success stories from the regulator's 36 local chapters.

EDU member Ravi Peri, P.Eng., also presented PEO's education outreach website, www.education.outreach.peo.on.ca, as a tool that most members aren't aware of. He invited chapter education coordinators to visit the site and provide their ideas for improvement to the EDU.

EDU member Wanda Juricic, P.Eng., who chaired the 2015 Education Conference planning committee, said engineering support for math and physics continues to inspire committee volunteers.

"Last year's conference showed the organizing committee how important the topic of the Ontario curriculum was to us as individuals, as community leaders and as a professional organization," she said. "It was a topic that sparked a lot of discussion. Although controversial, we felt it was worth building on last year's theme and continuing to explore what we can do as engineers at all levels."

She said the annual Education Conference is an opportunity for PEO chapters to show what they have been doing in their local communities and to provide them information on what PEO can do to assist in their local planning.

"We feel we have provided a solid program this year and everyone was able to take at least one thing home that was new and/or useful to them. We did recognize that a lot of newer members attended this

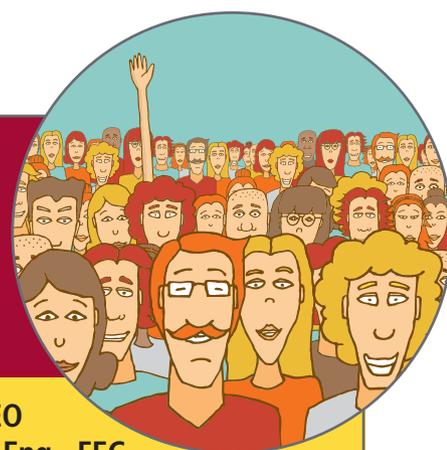


PEO's Education Committee (EDU) and conference planning membership (left to right): Paymon Sani, P.Eng., Shafquat Alam, P.Eng., Vajahat Banday, P.Eng., Peng Zhang, P.Eng., Ravi Peri, P.Eng., Michael Arthur, P.Eng., Priscilla Williams, EIT, Wanda Juricic, P.Eng., Samer Inchasi, P.Eng. (EDU chair), and Rami Ghattas, P.Eng.

year, so we are looking at changing the theme for next year and focusing more on the chapters again."

Nearly 60 people attended the 2015 conference, including one councillor, 33 chapter volunteers, and six EDU members.

Attention PEO members—save the dates!



Town hall meetings with PEO President Thomas Chong, P.Eng., FEC, are coming soon.

President Chong wants to discuss current PEO issues with you and hear your views. Details of the meetings are still being finalized, but the host cities and dates are:

Eastern Region.....	Ottawa	September 29
Northern Region	North Bay.....	October 6
Western Region	London	November 3
West Central Region	Toronto	November 9
East Central Region	Toronto	November 12

Watch your inbox and www.peo.on.ca for further details.

We hope to see you there!

KAREN CHAN TAKES REINS at OSPE

By Michael Mastromatteo



OSPE's 2015-2016 board: Back row, left to right, Milica Radisic, PhD, P.Eng., Steven Rose, P.Eng., FEC, Sandra Ausma, P.Eng., Jonathan Hack, P.Eng. (treasurer), Peter Marcucci, P.Eng., and Michael Monette, P.Eng. (vice chair); and front row from left to right, Helen Wojcinski, P.Eng., FEC, Sue Tessier, P.Eng., Daniel J. Young, P.Eng. (past chair), Karen Chan, P.Eng. (president and chair), and M. Clare Morris, P.Eng. (secretary).

LONG-TIME PEO VOLUNTEER Karen Chan, P.Eng., is the new president and chair of Ontario's engineers' advocacy and member services organization.

An active volunteer with PEO's Lake Ontario Chapter, Chan succeeded Danny Young, P.Eng., during the Ontario Society of Professional Engineers' (OSPE) annual general meeting May 5 in Toronto.

Currently a manager of digital ad systems at Rogers Digital Media, Chan worked for more than 10 years with General Motors in manufacturing, quality, design, communications and government relations.

OSPE's new president and chair has high expectations for the coming year.

"My goal as president is to build the society's reputation as the trusted resource on all engineering issues in Ontario," Chan told *Engineering Dimensions*. "OSPE will ensure the

media and government understand and appreciate engineers' contributions to the public interest, as well as the difficulties we are facing in this economy. We must be involved in creating infrastructure and transit solutions, as well as climate change and energy action plans that will protect the environment and create jobs and wealth in this province."

Chan also supports the Engineers Canada initiative to raise the percentage of newly licensed female engineers to 30 per cent by the year 2030.

The annual meeting was preceded by OSPE's general assembly, which featured a presentation on its recently released engineering underemployment report, along with two breakout sessions, one dealing with the "commoditization" of engineering, the second offering an engineering perspective on climate change.

This was the first annual meeting presided over by CEO Sandro Perruzza, who joined the OSPE staff in July 2014.

Perruzza and outgoing president and chair Danny Young led an open forum outlining OSPE's new five-year strategic plan, with the theme Engage-Amplify-Excel.

A key objective for OSPE is to increase its membership base by 25 per cent over the next five years. It now has 9500 full members and 4500 student members.

Described as OSPE's "boldest strategic plan yet," the initiative is based on creating member value, raising public awareness, building community engagement, and concentrating on public policy input.

In his opening remarks, Young said that despite a strong record of advocacy and member services, OSPE throughout its history has lacked a clear value proposition.

"Our strategic, five-year plan answers the questions OSPE members and non-members have been asking for too long: Why should I be a member? What value do I get?" Young said. "I believe this is a big turnaround for the society. We realize that to grow we need to engage the entire profession, including all disciplines of engineers and engineering professionals."

Perruzza later complimented PEO and Registrar Gerard McDonald, P.Eng., for effecting a healthy working relationship between the two organizations.

McDonald, along with Kim Allen, P.Eng., FEC, Engineers Canada; David Thomson, C.E.T., Ontario Association of Certified Engineering Technicians and Technologists; and former PEO and OSPE presidents Bob Goodings, P.Eng., FEC, and Catherine Karakatsanis, P.Eng., FEC, were among the many guests attending the meeting.

The 2015-2016 OSPE board comprises: Karen Chan, P.Eng., president and chair; Danny Young, P.Eng., past chair; Michael Monette, P.Eng., vice chair; Jonathan Hack, P.Eng., treasurer; M. Clair Morris, P.Eng., secretary; Milica Radisic, P.Eng.; Steven Rose, P.Eng., FEC; Sandra Ausma, P.Eng.; Peter Marcucci, P.Eng.; Sue Tessier, P.Eng.; and Helen Wojcinski, P.Eng., FEC.

Consulting engineers celebrate 40 YEARS

By Jennifer Coombes

This year, Consulting Engineers of Ontario (CEO) had more to celebrate than usual at its annual meeting, held June 10 in Niagara Falls. The non-profit organization that represents the business interests of Ontario consulting engineering firms turned 40 and prepared a video to commemorate the milestone (www.youtube.com/watch?v=kDiflaHAABU). The video captures the organization's major achievements, from its inception in 1975 to where it stands today, counting as members 200 consulting engineering firms, which collectively employ more than 20,000 people.

At the meeting, Bruce Potter, P.Eng., B.M. Ross and Associates Ltd., took over as chair from Dave Bannister, P.Eng., R.J. Burnside and Associates Ltd., for the 2015-2016 term.

Reflecting on CEO's 40 years as an organization, Bannister said: "Forty years is a major milestone for any association. The year 1975 was perhaps an eventful year, if not a year of contrasts. For example, *Saturday Night Live* premiered, the CN Tower was completed, Jimmy Hoffa disappeared, Disney's Space Mountain took flight, Environment Canada switched to celsius, Microsoft formed, and I began to pursue a career in engineering. I did not get the opportunity to discuss with Roy Tredgett [CEO's first chair] what he and the others had in mind when they pioneered the creation of Consulting Engineers of Ontario, but what I'm certain of is the efforts of those involved with CEO since 1975 led us through the early years to be in our prime today."

Potter said he is honoured to serve CEO as chair of the board of directors for the coming year and praised Bannister's continued efforts: "Your commitment to the work of CEO has been extraordinary. You've provided steady, consistent guidance throughout the year in support of CEO's four strategic pillars: government relations, client relations, member services and communications."

This fall, as CEO gears up to produce the organization's 2016-2017 strategic plan, Potter said it must "review and recommit to those pillars."

Another priority in the coming year will be CEO's first-ever Queen's Park Day in October. "We've had some big wins with our ongoing work with government," said Potter. "And while we celebrate those accomplishments, we need to remember there is a lot more work to do."

Other members of CEO's newly installed board of directors are: Peter Mallory, P.Eng. (chair elect); Mike Tulloch, P.Eng. (treasurer); Nadine Miller, P.Eng. (secretary); and directors Bill Allison, P.Eng., Jeremy Carkner, P.Eng., Tyrone Gan, P.Eng., Christine Hill, P.Eng., John Krug, P.Eng., John McGill, P.Eng., Rex Meadley, P.Eng., and Fouad Mustafa, P.Eng.

An additional item on CEO's AGM agenda was a review of the *Construction Lien Act* (CLA) launched by the attorney general to address the growing problem of delinquent payments in the design and construction sectors. CEO has an opportunity to participate in the government's CLA review as one of 64 stakeholders and asked members at the meeting for their feedback on the issue to help CEO articulate its position on payment reform. David Zurawel, CEO's manager, stakeholder relations, noted the importance of the initiative: "This will shape the environment your business will operate in in the coming years. We need to tell the government how delays in payment are affecting your business. Now is the time to tell us what you like and what you don't and we'll take that to government as a unified voice."



Past chair Dave Bannister, P.Eng., passes the gavel to incoming chair Bruce Potter, P.Eng., at CEO's annual meeting June 10.



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ENGINEERS CANADA appoints 2015-2016 president

By Nicole Axworthy

Digvir Jayas, PhD, P.Eng., FEC, took over as Engineers Canada president May 22.



Digvir Jayas, PhD, P.Eng., FEC, has been appointed to head the federation of Canada's engineering regulators as president of Engineers Canada for the 2015-2016 term. Engineers Canada is the body that supports the provincial and territorial engineering regulators across the country.

Jayas, a member of the Association of Professional Engineers and Geoscientists of Manitoba (APEGM), has served with Engineers Canada in many capacities since 1992, when he began as a member of the Canadian Engineering Qualifications Board, serving as chair from 2000 to 2002. He became an Engineers Canada director in 2010. Jayas is also a member of Engineers Canada's executive committee, most recently chaired the Linkages Task Force and Indigenous People Subcommittee, and sat on the Sustainability Membership Committee.

Jayas received his undergraduate degree from G.B. Pant University of Agriculture and Technology in India, an MSc from the University of Manitoba, and a PhD from the University of Saskatchewan. Also a registered agrologist, his expertise lies in stored-grain ecosystems. He is vice president, research and international, and distinguished professor, biosystems engineering, University of Manitoba.

He has served as president of APEGM, the Agricultural Institute of Canada, Canadian Institute of Food Science and Technology, Canadian Society for Bioengineering, and Manitoba Institute of Agrologists.

Jayas has also received numerous awards from several organizations in recognition of his research and professional contributions.

Jayas began his term May 22 at Engineers Canada's annual general meeting in Calgary.

APEGBC practice guidelines will improve province's dam safety

By Jennifer Coombes

RESPONDING TO RECOMMENDATIONS made in January in the wake of a serious breach at the Mount Polley tailings storage facility, the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) announced in April that new professional practice guidelines are in the works.

The new guidelines are part of a plan to beef up dam safety in the province and will specifically address dam site characterization assessments. According to an APEGBC press release, the guidelines will outline "the standard of care and professional obligations professional engineers and geoscientists must uphold when conducting these assessments, and will define the roles and responsibilities of the various participants and stakeholders involved in this process."

The work is being conducted by four senior dam experts, including Dirk van Zyl, P.Eng., who was also on the independent engineering panel that reviewed and reported on the Mount Polley breach. The guidelines will be vetted by a group comprising expert engineers and geoscientists, as well as representatives from the Canadian Dam Association, and staff from the ministries of energy, mines and natural gas, and forests, lands and natural resource operations.

The August 4, 2014 breach of the Mount Polley Mine dam in BC's northeast caused water and slurry from a four-square-kilometre pond to flow into Polley Lake and other waterways, causing the lake to rise by 1.5 metres overnight. The report on the breach (www.mountpolleyreviewpanel.ca/sites/default/files/report/ReportonMountPolleyTailingsStorageFacilityBreach.pdf), released January 30, concluded the accident was caused by the shear failure of the dam foundation materials.

When complete, the new guidelines will complement the existing guidelines APEGBC has in place for professional engineers and geoscientists whose work relates to dams, including APEGBC's *Guidelines for Legislated Dam Safety Reviews in BC*.

The new guidelines are expected to be released in March 2016.

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Value of safety training in engineering promoted at annual forum

By Michael Mastromatteo



Minerva Canada President and Chair Tony Pasteris, P.Eng., welcomed guests to the organization's April 23 learning forum for safety.

Educators are urged to promote health and safety awareness in engineering undergraduate curricula so the next generation of practitioners is better versed in all areas of risk reduction.

Participants at the April 23 Minerva learning forum for safety also debated engineering undergraduate education as a natural place to inculcate the next generation of health and safety conscious practitioners.

This year co-sponsored by York University's Lassonde School of Engineering, the forum featured presenters from universities, industry, the Canadian Engineering Accreditation Board (CEAB), and the US National Safety Council, who outlined recent developments in health and safety in the workplace.

Minerva Canada is a not-for-profit organization that promotes the teaching of safety, health and environmental management in postsecondary institutions across Canada. Since 2001, Minerva has presented to more than 500 engineering educators in 12 universities.

continued on p. 20

What direction should PEO continuing professional development take?

...take part in the upcoming CPD survey!



On July 27, Ipsos Reid will **launch an online survey** to gather opinions from PEO members about a proposed mandatory continuing professional development (CPD) program, a key recommendation of the Elliot Lake Inquiry.

All PEO members are invited to participate in the survey and you should receive an email invitation soon directing you to the survey site.

A PEO task force has been researching the approaches to maintaining professional competence used by other professional regulators and analyzing PEO's past efforts to deal with this issue. The task force has developed a program it believes deals with PEO members' concerns, while ensuring the public is well served by competent professional engineers. An overview of the proposed program is available at www.peo.on.ca.

Please read the overview provided by the task force **before taking the survey**. PEO council is relying on well-informed and considered responses to guide its decisions on the proposed program.

If you don't receive an email invitation but wish to participate, please email PEO at CPDSurvey@peo.on.ca. Questions or comments about the proposed program can be emailed to CPDCQA@peo.on.ca.

continued from p. 19



Panelists discussed best practices in health and safety education. Left to right, Graeme Norval, PhD, P.Eng., Ralph Buchal, P.Eng., John Dony, Paula Klink, PhD, P.Eng., and Marc Rosen, PhD, P.Eng.

The forum also included presentations from York’s human resources, emergency preparedness and risk management departments, outlining what the university is doing to protect students, staff and visitors on site.

In welcoming participants, York Engineering Vice Dean (Academic) Richard Hornsey, PhD, P.Eng., said it’s never too early to instill safety awareness and risk-reduction thinking in future engineering practitioners.

Later, Alidad Amirfazli, PhD, P.Eng., chair of mechanical engineering at the Lassonde School, described administrative advances in the university’s health and safety regime.

Over the last eight years, Minerva Canada has developed 11 engineering student teaching modules for use in schools across the country. Minerva eventually hopes to produce up to 22 health and safety teaching modules.

Ben Smith, a graduate engineering student at Dalhousie University in Halifax, outlined that school’s efforts to implement one of the Minerva modules into the university’s engineering curriculum. The project is supervised by Dalhousie’s Paul Amyotte, PhD, P.Eng., a leading engineering safety authority and past president of Engineers Canada.

In a presentation of the “business case for safety,” Deborah McPhee, PhD, a professor of human resource management at Brock University in St. Catharines, said human resources professionals sometimes receive more health and safety instruction than do engineering undergraduates. She suggested that, as a profession dedicated to protection of the general public, engineers should strive for health and safety becoming a fully entrenched component of their undergraduate education.

The undergraduate curriculum figured prominently in a “teaching about safety” panel discussion involving Marc Rosen, PhD, P.Eng., University of Ontario Institute of Technology; Graeme Norval, PhD, P.Eng., University of Toronto; Ralph Buchal, PhD, P.Eng., University of Western Ontario; John Dony, director of environmental, health,

safety and sustainability, National Safety Council; and Paula Klink, PhD, P.Eng., Queen’s University and a member of Engineers Canada’s Canadian Engineering Accreditation Board (CEAB).

Panelists discussed the intricacies of CEAB’s efforts to infuse health and safety awareness into the attributes expected of graduates from accredited Canadian engineering schools. Safety isn’t a discrete attribute at present, but is a component of one-quarter of the other attributes expected of today’s graduating engineer.

“I think safety is not seen as something separate or apart from engineering, but an integral part of the engineering process,” said Klink. “As such, it is important to begin teaching health, safety and the environment when students enter university, and this foundation be built upon as they begin their discipline-specific courses so that by the time the students work on their capstone courses and projects, health and safety considerations, including environmental impacts, are an integral part of decisions. I think many university graduates are industry ready, but some Canadian engineering programs may need a renewed focus on this area. In the past, the role of safety education may have been assumed by a single person in the department. With the graduate attributes and their focus on continual improvement, aspects of the environment, health and safety can be more consciously integrated into the curriculum.”

In a post-forum interview with *Engineering Dimensions*, UOIT’s Rosen, a member of Minerva Canada’s board of directors, said it’s crucial that undergraduates get a head start on safety awareness.

“I feel safety thinking is critically important to any engineering undergraduate curriculum because of the potential health and safety risks associated with many engineering activities graduates are likely to undertake throughout their careers,” he said. “The consequences of neglecting health and safety can be extremely serious. Instilling a culture of safety early is crucial, as even undergraduates can encounter serious safety issues.”

Fellow Minerva board member Vic Pakalnis, P.Eng., CEO, MIRARCO Mining Innovation, said safety and risk management are fundamental to the practice of engineering and to its being recognized as a profession. “Protecting the public interest and ensuring the public’s safety are at the root of PEO’s raison d’etre,” Pakalnis said.

COMMUNITY-ENGAGED LEARNING ADVOCATED AT 2015 CEEA MEETING

By Michael Mastromatteo

At the Canadian Engineering Education Association (CEEA) conference, held May 31 to June 3 at McMaster University in Hamilton, leading educators from a dozen universities discussed how to keep education in tune with changing expectations of graduates.

The theme was experiential education and what it means for students.

CEEA is a national organization dedicated to improving the competence and relevance of graduates from Canadian engineering schools through continuous improvement in engineering and design education. It was reorganized in 2010 from the remnants of the former Canadian Design Engineering Network and the Canadian Congress on Engineering Education.

Keynote speaker William Oakes, PhD, PE, director, Engineering Projects in Community Service (EPICS) program and a founding faculty member of the school of engineering education at Purdue University, discussed the benefits of “service-learning” and community engagement for university pre-university students.

Second keynote speaker Joe Kim, PhD, associate professional of psychology at McMaster, outlined how cognitive principles can inform instructional design and critical issues in education to bridge the gap between the lab and classroom.

In a post-conference interview, Oakes said the service-learning discussion proved popular among CEEA conference delegates.

“Participants seemed very receptive to the ideas of my talk,” Oakes said. “There is a growing interest in community-engaged learning within the Canadian engineering education community and a growing amount of work being done in this area. Much of it is very similar to EPICS.”

Founded at Purdue, EPICS is a recognized model for using community-engaged learning to teach design, while meeting the needs of local and global communities.

“The results shared show that EPICS can help prepare students for careers as engineers in industry, prepare them to be engaged citizens and address diversity challenges within engineering,” Oakes said.



Other presentations at the conference were focused on teaching engineering students to design solutions to “wicked problems,” how engineering educators can bring life-long learning to life, and the importance of a “sustainability thrust” in an undergraduate engineering program.

CEEA’s long-term objectives include supporting development and sharing of best practices between Canadian engineering educators, and interacting with Canadian deans of engineering and the Canadian Engineering Accreditation Board (CEAB) to facilitate alignment of objectives and mutual support.

Andrew Fisher, PhD, P.Eng., FEC, associate dean (undergraduate studies), faculty of engineering and applied science, Memorial University in St. John’s, was elected president of CEEA for 2015. He takes over from Susan McCahan, PhD, P.Eng., University of Toronto.

David Strong, P.Eng., a professor and Natural Sciences and Engineering Research Council Of Canada (NSERC) chair in design engineering, Queen’s University, told *Engineering Dimensions* the organization has “come a long way since the first few years when the monthly conference calls for the ad hoc CEEA organizational group originated from my office.” Strong completed his term as CEEA past president at the Hamilton meeting.

He is now heading up another initiative to garner better funding for engineering education research, citing the limited funds available as a key issue suppressing advancement of engineering education research and development in Canada.

CEEA’s 2016 conference is scheduled for June 19 to 22 in Halifax, NS.

[IN COUNCIL]

COUNCIL HEARS CONTINUING PROFESSIONAL DEVELOPMENT TASK FORCE UPDATE

501st MEETING, MAY 28, 29 2015

By Jennifer Coombes

AT THE MAY council plenary session, councilors got their first look at the work of PEO's Continuing Professional Development, Competence and Quality Assurance Task Force (CPDCQA TF). The task force's mandate is to devise a rigorous and comprehensive program of continuing professional development and quality assurance that takes into account both practising and non-practising licence holders and, ultimately, satisfies the public, PEO and its members.

Task force Chair Annette Bergeron, P.Eng., FEC, presented an overview of the group's work

to date. Specifically, the task force proposes a tiered system that differs from the one-size-fits-all systems of other provinces in that it links CPD requirements to the level of risk the work of each member presents to the public and the profession. The system would have each licensee carry out a standardized engineering practice risk management assessment that takes into account such factors as a practitioner's discipline, external industry certifications held, responsibility level and scope of practice. Based on the results of the assessment, each licence holder would be assigned a specific set of CPD requirements. For example, a non-practising engineer's CPD requirements would be minimal. CPD requirements for a P.Eng. directly responsible for safeguarding the public would be greater.

The CPDCQA TF is using a set of guiding principles to develop PEO's proposed CPD program, specifically that the program must:

1. be necessary to improve the regulation of professional engineering;
2. include program requirements relevant for practice;
3. be pragmatic;
4. recognize diversity of practitioner's needs and resources;
5. be scalable and proportional to risk to the public; and
6. be effective.

The CPDCQA TF comprises 11 volunteers representing different subsets of the PEO membership. An additional review network of 54 members was established to review and comment on task force proposals.

PEO plans to solicit further input on the program from stakeholders and has engaged Ipsos Reid to survey PEO licence holders to gauge their perceptions of and attitudes towards the proposed program. The task force has prepared a backgrounder on its work, which members should read before taking the survey, which starts July 27 (see p. 19). The task force will report to council in December. Σ



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YOU NEVER KNOW WHAT TO EXPECT WITH ELECTIONS

By Howard Brown

SINCE OUR LAST GLP JOURNAL article, the Canadian political scene has been full of surprises.

Here in Ontario, Patrick Brown, MP, defeated Ontario PC Deputy Leader Christine Elliott, MPP, for leadership of their party. Elliott had the support of 17 of the 28 caucus members as well as former PC Premier Bill Davis, and was a runner-up in the 2009 leadership race won by Tim Hudak. She was a sure bet to win.

Surprisingly, Brown, a 36-year-old lawyer and four-term MP from Barrie, signed up over 40,000 new members. And, on May 9, he defeated Elliott by garnering 62 per cent of the eligible votes.

“With fewer high-profile Conservative endorsements but with more new membership sign-ups, Patrick Brown handily won 83 out of 107 Ontario ridings,” wrote Steve Paikin, host of TVO’s *The Agenda with Steve Paikin*. “He triumphed by understanding leadership campaigns are won in ways big and small, and he cornered the market on both.”

Another surprise in Canadian politics this year was the May 24 election of Rachel Notley as the new premier of Alberta. Notley was elected as the leader of her party only last fall with a caucus of just four of the 87 total members of Alberta’s legislature. Notley’s father, Grant Notley, NDP leader from 1968 to 1984, died in a plane crash when his daughter was 20. Despite the family’s political history, no one expected Notley to win the race.

PC leader and outgoing premier Jim Prentice, a former federal cabinet minister and a former vice-president of CIBC, was widely expected to win the race. The PCs finished with just 10 seats, and the Wildrose Party became the official opposition under another former conservative MP, Brian Jean.

“Welcome to the first day of Alberta’s new government,” Notley told the crowd as she was sworn in as Alberta’s premier. “Today we open up a new chapter in the story of Alberta.”

The message in both of these elections is that you never know what to expect. With a fall federal election set for October 19, 2015, anything could happen.

How does this affect public policy for engineering? Despite the dramatic changes across the country, it’s unlikely the public’s perception on issues related to the regulation of engineering will demand more change.

The federal and Ontario provincial spring budgets were good news for the engineering profession, due to the continued focus on infrastructure issues across the country. The Ontario budget outlined priorities that include such transportation initiatives as The Big Move and GO Rail improvements, as well as a focus on the areas of education, health, energy and justice.



Underdogs Rachel Notley and Patrick Brown have recently shaken up politics as usual in their respective provinces. NDP candidate Notley unexpectedly became premier of Alberta in May, and Brown surged ahead of favourite Christine Elliot to take the leadership of the Ontario PC party.

Under the Moving Ontario Forward plan, over \$31.5 billion will be invested in public transit and critical infrastructure over the next 10 years. The budget has allocated money for developing new transit and improving existing lines, building and expanding schools, and creating new trade centres and court houses.

The national budget indicates the priorities to be fixing the deficit, introducing more benefits for seniors and tax cuts for families. The federal government has also called for new voluntary contributions to Canadian pensions as opposed to requiring increased contributions—an idea proposed by the opposition.

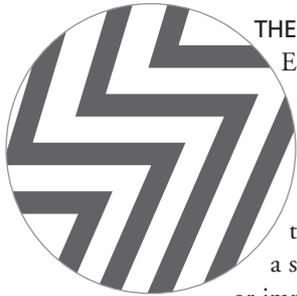
One thing’s for sure: The next several months will be interesting to watch as the Canadian political scene unfolds. Σ

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

[ORDER OF HONOUR]

CALL FOR NOMINATIONS

PEO's 2016 ORDER OF HONOUR



THE ORDER OF HONOUR is an honorary society of Professional Engineers Ontario. Its purpose is to recognize and honour those professional engineers and others who have rendered conspicuous service to the engineering profession in Ontario. Inclusion in the order may be awarded by PEO council to members of the association who have served the profession diligently for many years and/or have made a substantial contribution to the operation of the profession or improvement in its status.

The Awards Committee invites members to submit nominations by the deadline, **October 9, 2015 at 4 p.m.** For nomination forms and guidelines, visit PEO's website at www.peo.on.ca/index.php/ci_id/2085/la_id/1.htm.

New members of the order will be invested at a special ceremony at PEO's annual general meeting in Toronto next April.

Nominators should supply complete details on their nominee. Individual statements from each nominator must accompany the nomination.

Following is PEO's Service Award Honours List. (Only living members are listed. A complete list is available online at www.peo.on.ca.)

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C. John Dunning, P.Eng. '80
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K.S. Senathirajah, P.Eng. '80

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Allan D. McNabb, P.Eng. '79
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Edwin M. Peto, P.Eng. '79
Michael Sava, P.Eng. '77
Richardus G. Van Heeswijk, P.Eng. '77
Arthur Leonard Braund, P.Eng. '76
James H. Flett, P.Eng. '76
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W. Allan Campbell '86
R. Scott White '85
Stanley J. Friesen '81
Alexander L. McLoughlin '80

DECISION AND REASONS

In the matter of a hearing under the *Professional Engineers Act*, R.S.O. 1990, c. P.28; and in the matter of a complaint regarding the conduct of PAUL D. REW, P.ENG., a member of the Association of Professional Engineers of Ontario, and RUBICON ENVIRONMENTAL INC., a holder of a Certificate of Authorization.

The panel met by teleconference on September 10, 2013 to consider the written submissions on costs provided by the parties. The panel received the following:

- (a) submissions on costs on behalf of Paul Rew, P.Eng. (Rew), dated July 5, 2013;
- (b) responding submissions of Professional Engineers Ontario (the association), dated August 7, 2013;
- (c) legal advice from the independent legal counsel regarding the above, dated September 9, 2013.

OVERVIEW

Rew and Rubicon were charged with professional misconduct in a previous hearing. The discipline panel found them not guilty after an extensive hearing lasting five days. Counsel for Rew and Rubicon submitted claims for their costs, which the association opposed.

Section 28(7) of the *Professional Engineers Act* gives the discipline panel the power to award costs, only under the following circumstances:

“Where the Discipline Committee is of the opinion that the commencement of the proceedings was unwarranted, the Committee may order that the Association reimburse the member of the Association or the holder of the certificate of authorization, temporary licence, provisional licence or limited licence for the person’s costs or such portion thereof as the Discipline Committee fixes.”

The issues for the panel to decide are:

- whether the commencement of the proceedings was unwarranted;
- if so, whether an award of costs is appropriate; and
- if so, the appropriate amount of cost.

REW’S SUBMISSIONS

Counsel for Rew argued that the commencement of the hearing was unwarranted as Rew and Rubicon had done nothing wrong. He argued that all the association’s investigator did was to read a letter from Phillip Bye on the Ministry of the Environment letterhead, accepted all the facts stated there, and concluded that a disciplinary action was warranted.

Counsel for Rew also argued that there were five witnesses (Norm Prince, Bruce Thom, Barry Hatt, Harold Sutherland, and Kevin Prentice), who should have been interviewed by the investigator and would have given evidence favourable to his client, such that the matter would not have proceeded. Why did the prosecution not call the investigator as a witness? Why did the prosecution accept Phillip Bye’s letter without further investigation, especially as Rew had previously filed a complaint against Ian Mitchell of the Owen Sound office of the Ministry of the Environment? Clearly, Bye’s complaint was retaliation for the complaint laid by his client.

Counsel argued that the discipline panel’s decision, finding Rew and Rubicon not guilty of the allegations, supported his contention that the commencement of proceedings was unwarranted.

ASSOCIATION’S SUBMISSIONS

Counsel for the association argued that the Complaints Committee had seven documents before it, not just Bye’s letter, as Robertson alleged. These were:

- (a) a detailed written complaint from a government agency, the Ministry of the Environment (MOE);
- (b) a letter (the letter), which appeared to have been authored by Rew, which made serious allegations about contamination in the local water wells;
- (c) evidence that Rew had alleged, at a public meeting, that there was contamination in the local water wells;

- (d) evidence that Rew had refused to provide the MOE with his back-up data or report in connection with the allegations made in the letter and at the public meeting, despite numerous requests;
- (e) evidence that the foregoing allegations (concerning contamination in the water wells) were unsupported by the data in Rew's own report;
- (f) a written "Phase II Environmental Site Assessment" report from the respondent, Rubicon Environmental Inc., signed and sealed by Rew; and
- (g) an expert opinion to the effect that the Phase II Environmental Site Assessment Report contained a large number of deficiencies, and that:
 - (i) "the work performed by Rew and Rubicon did not meet industry standards outlined in documents available from CSA and MOE", and that
 - (ii) "the conduct of Rew did not meet the minimum standard of practice for engineering work of this type."

An order for costs cannot be made unless it is found that the proceeding should never have been initiated in the first place. The Complaints Committee has no power to hold a hearing, and is not in a position to conduct a detailed evaluation of the credibility of witnesses nor to determine disputed facts. The onus is on the member or holder to not only establish that the commencement of the proceedings was "unwarranted" but also that the panel should award costs because the panel retains a discretion to refuse costs, even if it finds that the proceedings were "unwarranted." Further, the *Professional Engineers Act* requires that all complaints be investigated by the Complaints Committee. The committee cannot simply ignore a complaint made by a member of the public.

Counsel for Rew referred to a number of individuals who (he asserts) could have been interviewed as potential witnesses, and claimed that their evidence would have been helpful to the respondent's case. None of these witnesses testified, and counsel provided no sworn affidavits from any of them. Counsel's assertions regarding what these people would have said is not evidence and cannot be considered by the panel. The panel is required to act solely on evidence properly admitted before it. It cannot take into account the unsubstantiated

assertions of counsel. Moreover, it is inappropriate for counsel to give evidence after the fact, and in a way that prevents the association from cross-examining the witnesses. In any event, the various things counsel for Rew alleges various people "would have" said do not relate to the issue of whether the referral was warranted.

AMOUNT OF COSTS CLAIMED

The total costs claimed for Rew's defence amounted to \$64,768.03. This included legal fees of \$43,620.00, disbursements of \$13,697.32, and HST of \$7,450.71. Rew also asked for lost opportunity costs of \$40,950.00. These costs were based on time spent addressing the allegations that he (Rew) asserted could have been spent on billable work.

ASSOCIATION'S RESPONSE

Counsel for the association submitted that:

- Rew and Rubicon are not entitled to any costs as they do not meet the test under section 28(7) of the *Professional Engineers Act* (that the commencement of the proceedings was unwarranted);
- The amount of legal costs sought is excessive in all the circumstances; and
- There is no jurisdiction to grant "lost opportunity costs."

DECISION

In order for a claim for costs to be considered, Rew must prove that the commencement of proceedings was unwarranted. The test for determining whether proceedings were unwarranted, applied by the Discipline Committee in the case of *PEO v. Lim*, is as follows:

The meaning of the word "unwarranted," as used in a disciplinary proceeding, is considered in *Re Anthony Michael Speciale*, Decision of the Law Society of Upper Canada, February 25, 1994. In *Speciale*, the tribunal ruled that, "The term 'unwarranted' means 'without reasonable justification, patently unreasonable, malicious, taken in bad faith, or for a collateral purpose.'" The tribunal further stated, "Hindsight, while often instructive, should not be slavishly relied upon when determining whether disciplinary proceedings were unwarranted." The panel is not convinced on the evidence that the Complaints Committee decided to refer the matter to the Discipline Committee without reasonable justification, patently unreasonably, maliciously, in bad faith or for a collateral purpose."

Having considered the arguments of both parties and the advice of the independent legal counsel, the panel finds that Rew's submissions fail to prove this. The panel, therefore, declines to award costs. Accordingly, there is no need to further consider the arguments regarding the quantity of the costs.

REASONS FOR THE DECISION

Counsel for Rew asserts that the Complaints Committee proceeded based on the sole evidence of a letter on Ministry of the Environment letterhead read by the association's investigator.

The association asserts that it proceeded based on seven documents before the Complaints Committee:

- (a) a detailed written complaint from a government agency, the Ministry of the Environment (MOE);
- (b) a letter (the letter), which appeared to have been authored by Rew, which made serious allegations about contamination in the local water wells;
- (c) evidence that Rew had alleged, at a public meeting, that there was contamination in the local water wells;
- (d) evidence that Rew had refused to provide the MOE with his back-up data or report in connection with the allegations made in the letter and at the public meeting, despite numerous requests;
- (e) evidence that the foregoing allegations (concerning contamination in the water wells) were unsupported by the data in Rew's own report;
- (f) a written "Phase II Environmental Site Assessment" report from the respondent, Rubicon Environmental Inc., signed and sealed by Rew; and
- (g) an expert opinion to the effect that the Phase II Environmental Site Assessment report contained a large number of deficiencies, and that:
 - (i) the work performed by Rew and Rubicon did not meet industry standards outlined in documents available from CSA and MOE, and that
 - (ii) the conduct of Rew did not meet the minimum standard of practice for engineering work of this type.

The panel finds the association's submission, particularly the list of documents before the Complaints Committee, entirely credible and convincing, providing sufficient reason to refer the matter to the Discipline Committee.

Rew further argued that the investigator should have interviewed five witnesses (Norm Prince, Bruce Thom, Barry Hatt, Harold Sutherland, and Kevin Prentice), who would have given evidence favourable to his client. Rew could have called these witnesses that he alleges would have provided evidence favourable to his client, but chose not to do so. The panel gives no weight to this claim as no evidence was heard from these witnesses.

J.E. (Tim) Benson, P.Eng., signed this Decision and Reasons for the decision as chair of this discipline panel and on behalf of the members of the discipline panel: Ishwar Bhatia, P.Eng., Phil Maka, P.Eng., and John Vieth, P.Eng.

REMINDER: ALL REGULATION 941/90 CHANGES NOW IN EFFECT

All Regulation 941/90 amendments published in the May/June 2015 issue of *Engineering Dimensions* (p. 35) are in effect as of July 1.

The amendments that became effective July 1 pertain to changes in the requirements to obtain a limited licence, allow limited licence holders to provide engineering services to the public under a Certificate of Authorization, outline the requirements to obtain the newly created licensed engineering technologist (LET) class of limited licence, and establish the engineering intern class of person and protected EIT title.

Updated application forms for the limited licence (now including the LET class of limited licence) and the Certificate of Authorization, and the updated *Guide to the Required Experience for a Limited Licence in Ontario*, can be found on the PEO website (www.peo.on.ca) under the Forms and Publications tab.

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

ONTARIO LICENCE HOLDERS AND ENGINEERING STUDENTS HONOURED WITH NUMEROUS AWARDS

By Nicole Axworthy



Suresh Neethirajan, P.Eng., Jonathon Rose, P.Eng., and Samantha Espley, P.Eng., were presented with 2015 Engineers Canada Awards.

Monique Frize, P.Eng., FEC, distinguished professor, faculty of engineering and design, Carleton University, was recently honoured with several awards during the World Congress on Medical Physics and Biomedical Engineering in Toronto, including the Life Achievement Award from the Canadian Medical and Biological Engineering Society. She was named a fellow of the society two years ago. Frize was also named an honorary life member of the International Federation of Medical and Biological Engineering, and received an award for dedication and outstanding contributions as the North America regional group representative and chair of the Women in Biological Engineering Committee.

Paul Smeltzer, P.Eng., was recently named one of the American Public Works Association's (APWA) 2015 Top 10 Public Works Leaders of the Year. Smeltzer has 35 years of industry experience and is the Niagara Region's director of water and wastewater services. One of his greatest contributions to APWA was chairing the 2014 APWA International

Public Works Congress and Exposition. Together with his organizing committee, he made the 2014 Toronto congress the "Best Show in Public Works." The APWA Top 10 Public Works Leaders of the Year program honours excellence and dedication in public service by recognizing career service achievements of public works professionals and officials from both the public and private sectors.

Three PEO members have been presented 2015 Engineers Canada Awards. Suresh Neethirajan, P.Eng., assistant professor, school of engineering, University of Guelph, received the Young Engineer Achievement Award, which is presented to an engineer 36 years of age or younger for outstanding contributions in a field of engineering. Jonathon Rose, PhD, P.Eng., professor, Edward S. Rogers, Sr. department of electrical and computer engineering, University of Toronto, received the Medal for Distinction in Engineering Education, which is presented to an engineer for exemplary contributions to engineering education at a Canadian university. Samantha Espley, P.Eng., general manager, mines and mills technical services, Vale Canada, received the Award for the Support of Women in the Engineering Profession, which is presented to an engineer for outstanding support of women in the engineering profession and engineering excellence.

[AWARDS]

Fifty new fellows, including 16 Ontario practitioners, have been inducted into the Canadian Academy of Engineering (CAE). PEO licence holders inducted are: Kim Allen, P.Eng., FEC, Thomas Robert Beamish, P.Eng., Kamran Behdinin, P.Eng., Pu Chen, LEL, Greg Evans, P.Eng., Rick Hohendorf, P.Eng., Robert Magee, P.Eng., V. Mohan Malhotra, P.Eng., Sushanta Mitra, P.Eng., Osama Moselhi, P.Eng., Natalia K. Nikolova, P.Eng., Vladimiro Papangelakis, P.Eng., Michel J. Pettigrew, P.Eng., Anne Sado, P.Eng., Michael V. Sefton, P.Eng., and James S. Wallace, P.Eng. The CAE is an independent, self-governing, non-profit organization established in 1987. Members of the CAE are nominated and elected by their peers to honorary fellowships, to recognize their distinguished achievements and career-long service to the engineering profession.

Twenty PEO licence holders have been recognized with an Amethyst Award, the most prestigious award given by the Ontario Public Service, for their involvement in the Value Engineering Coordinator Committee of the Ontario Ministry of Transportation. The recipients are: Frank Hochstenbach, P.Eng., Steve Holmes, P.Eng., Makael Kakakhel, P.Eng., Manal Kasim, P.Eng., David Kerr, P.Eng., Peter Korpala, P.Eng., Norm Meyers, P.Eng., Mike Pearsall, P.Eng., Roch Pilon, P.Eng., Dan Preley, P.Eng., Dennis Regan, LEL, Scott Reid, P.Eng., Dan Remollino, P.Eng., Don Rowat, P.Eng., Rakesh Shreewastav, P.Eng., FEC, Michael Sit, P.Eng., Angela Stewart, P.Eng., Frank Vanderlaan, P.Eng., Lola Vaz, P.Eng., and Rita Venneri, P.Eng. The Amethyst Awards recognize exceptional Ontario Public Service staff who create new ways of delivering service, develop time- and cost-saving technology, or showcase professionalism and care in performing tasks.

Shiping Zhu, PhD, P.Eng., professor, department of chemical engineering, McMaster University, recently became a Distinguished University Professor at McMaster. The title, created in 1996, goes only to those who achieve the highest level of excellence in teaching, learning and research. Those recognized with the honour are considered complete scholars and have demonstrated an outstanding and sustained research record, innovation in teaching and learning, and a history of service that has had an impact on the community.

Todd Hoare, PhD, P.Eng., associate professor, department of chemical engineering, McMaster University, has been honoured with a University

Scholarship prize from McMaster. The title recognizes faculty members in mid-career who have already distinguished themselves as international scholars. Recipients are considered global leaders in several diverse research areas and academic disciplines. Hoare was awarded for the next four years and will receive \$15,000 a year from McMaster provost David Wilkinson and the faculty dean.

Zhen Ming Jiang, EIT, professor, York University, has received the 2015 IEEE Best Software Engineering in Practice Paper Award for a paper he co-authored called *An Industrial Case Study on the Automated Detection of Performance Regressions in Heterogeneous Environments*. The award is viewed as the most prestigious paper award in software engineering for industrially relevant research. The paper was published at the 2015 International Conference on Software Engineering in collaboration with researchers from BlackBerry, Queen's University and École Polytechnique de Montréal.



Alourdes Sully, P.Eng., FEC, is presented with a Leading Women, Leading Girls, Building Communities Award by Kevin Flynn, Oakville MPP and Ontario minister of labour.

Alourdes Sully, P.Eng., FEC, has been honoured with a Leading Women, Leading Girls, Building Communities Award from the Ontario Women's Directorate. The award recognizes her enthusiasm to inspire the next generation of female engineers. An outstanding role model for young women, Sully is also a member of the Women in Trades, Technology and Engineering Network at Hydro One. The leadership award acknowledges and celebrates women and girls who demonstrate exceptional leadership in working to improve the lives of others in their communities.

The Canadian Engineering Memorial Foundation (CEMF) has announced its 2015 scholarship recipients. Laura Brown, a natural resources engineering student at Laurentian University, has been named the 2015 Vale Master's in Engineering Scholarship winner. This \$10,000 scholarship is awarded annually to the most promising woman interested in the mining or metallurgical field, who is a full-time graduate engineering student at the master's level in Canada. Lauren Rose, a University of Ottawa student working towards her master's in chemical engineering, is the recipient of the Rona Hatt Master's Scholarship in Chemical Engineering.



The 2015 University of Toronto Gordon Cressy Student Leadership Award winners are: (top row, left to right) Praneet Bagga, Ivan Damnjanovic, Eric Ma, Piyush Gupta, Ishan Gupta, Gordon Tang, Vinson Truong; (bottom row, left to right) Nicole D'Mello, Cassandra Rosen, Kimberly Shen, Cristina Amon, ScD, P.Eng. (dean), Mehran Hydary, Amanda Aleong, Alice Ye and Marissa Goldsmith. Missing from the photo are Amanda Santos and Ananya Tandon-Verma.

Photo: Roberta Baker

This new scholarship, worth \$5,000, is awarded annually to a woman enrolled full-time in a graduate chemical engineering program at the master's level. **Crystal Säbel**, **Sarah Hall** and **Paige Clarke** are recipients of the 2015 Vale Undergraduate Engineering Scholarships. The \$10,000 scholarships are awarded annually to the most promising women in an accredited undergraduate engineering program in Canada interested in the mining and metallurgical fields. Säbel is in her fourth year of the chemical engineering co-op program at Laurentian University, specializing in environmental sustainability. Hall is a third-year chemical engineering student at McMaster University. Clarke, a second-year student at the University of Toronto, is enrolled in the mineral engineering program. **Kelly Gribbons**, a second-year systems and computing engineering student at the University of Guelph, has been named the 2015 Allstream Information and Communication Technology Engineering Scholarship winner. The \$5,000 scholarship is awarded annually to the most promising woman interested in the information and communication technology engineering field at the university level. **Samantha Stuart**, a first-year engineering student with a specialty in materials, is the winner of the CEMF Ontario region scholarship. This \$5,000 scholarship is awarded annually to the most promising woman in an accredited undergraduate engineering program in Canada.

Linda Chigbo, a second-year electrical engineering student at York University's Lassonde School of Engineering, has been selected to receive the Hydro One 2015 Women in Engineering Scholarship. Part of Hydro One's student scholarship program, the Women in Engineering Scholarship recognizes outstanding postsecondary achievement by women in the electrical engineering discipline in Ontario. Winners receive

a \$5,000 financial reward and an opportunity to work for Hydro One in a paid developmental work placement.

Sixteen University of Toronto engineering students were recently honoured at the 2015 Gordon Cressy Student Leadership Awards ceremony. The students are: **Amanda Aleong**, **Praneet Bagga**, **Ivan Damnjanovic**, **Nicole D'Mello**, **Marissa Goldsmith**, **Ishan Gupta**, **Piyush Gupta**, **Mehran Hydary**, **Eric Ma**, **Cassandra Rosen**, **Amanda Santos**, **Kimberly Shen**, **Ananya Tandon-Verma**, **Gordon Tang**, **Vinson Truong** and **Alice Ye**. The leadership award recognizes students who have made outstanding extra-curricular contributions to their college, faculty or school, or to the university as a whole. The award was established in 1994 and is named after a former U of T vice president of development and university relations.

CALL FOR ENTRIES

The International Tunnelling and Underground Space Association is accepting entries for its first organized awards initiative to identify and celebrate outstanding achievement in tunnelling and underground space development, and to promote international recognition of the industry's contributions to engineering and society. The ITA Tunnelling Awards will spotlight individuals, companies and owners behind the best projects and innovations. Submissions are due August 14, 2015. For more information, visit awards.ita-aites.org. Σ



Innovation, recognition, collaboration key to Chong presidency

Whether it's at the helm of a dragon boat or PEO, Thomas Chong looks to bring out the best in all team players to reach common objectives.

By Michael Mastromatteo

Thomas Chong is thrilled to be the first member of a visible minority to become president of PEO. The new president of Ontario's engineering regulator sees his election in 2014 as a high-water mark in the profession's embrace of diversity.

But Chong is probably uncomfortable being regarded as a trailblazer. Despite the alphabet soup of designation letters affixed to his name (MSc, P.Eng., FEC, PMP), Chong would rather be seen as a faithful steward of PEO's fiscal, administrative and human capital. He also appears down to earth and truly grateful to find himself at the helm of PEO council for 2015-2016.

He also sees himself as a chapter person and "a members' president." "My election as president proves that PEO embraces diversity and inclusion," Chong said in a recent sit-down with *Engineering Dimensions*. "It reflects the multi-cultural communities in which we live and work. Every member is valued and treated with respect and dignity." At the recent PEO annual general meeting (AGM), Chong referred to his win as "your [members'] victory" in his opening remarks as president.

Chong might also be thought of as embodying the diversity and ethnic richness of Ontario's engineering community, especially over the last two decades. He was born in Hong Kong, studied engineering in Glasgow and was recruited to work in Ontario from London, UK, in 1976. Along the way, he has acquired fluency in six languages—English, Chinese, Japanese, Korean, Italian and French—and has made it a point to break into French when speaking at public functions.

Chong and his wife, Lily Yan, have been married for more than three decades. "I wouldn't be the man I am today without the woman who agreed to marry me over 30 years ago," he said at the recent AGM.

The couple has two grown children, a son and daughter. In his rapidly diminishing spare time, Chong enjoys singing, dancing, sightseeing and dragon boat racing. He is also a big supporter of biking marathons for charity and has been highly active with associations for Asian professionals.

AWARD-WINNING VOLUNTEER

A member of PEO council since 2006, and an active member of York Chapter well before that, Chong is equally well known for a strong volunteer spirit. As senior system lead at the Ontario Ministry of Health and Long-term Care, Chong has twice won the coveted Amethyst Award for excellence in the Ontario public service, as well as the Queen Elizabeth II Diamond Jubilee Medal in 2013. Overall, he has picked up 16 major awards over the last five years.

The most recent award came just prior to the AGM, when PEO's Simcoe-Muskoka Chapter presented Chong a certificate for his "unwavering commitment" to the professional engineering community.

Chong's colleagues in the Ontario public service recognize his collaborative, team-building approach to life and work.



PEO President Thomas Chong, P.Eng., FEC, at the April 25 annual general meeting: "This is your victory!"

Fang (Amy) Wang, a configuration management specialist, Ontario Ministry of Government and Consumer Services, has known Chong for six years. She and Chong are part of the wider Ontario public service community and she got to know the new PEO president through the Ontario government's East Asian Network Group (EANG).

"There is no doubt Thomas is a good leader with a talent for organization and community involvement," Wang told *Engineering Dimensions*. She added that, despite Chong's hectic professional and social agenda, he still finds time for philanthropic activities, such as the annual Heart and Stroke Big Bike campaigns.

SETTING PRIORITIES

In reflecting on why he decided to become more involved in PEO governance back in 2006, Chong cited his desire to be at the decision-making table and his interest in working for "better policy" for PEO members.

"I was a grassroots candidate after working in the executive at PEO York Chapter for eight years," he says. "As a practising engineer, I care deeply about the profession and its obligation to protect the public interest."

But awards and citations aside, Chong is now called on to put his talent and enthusiasm to work meeting regulatory and licensing objectives, especially as PEO seeks to make better known the value of engineering self-regulation and the importance of its licence holders to economic competitiveness, innovation and the development of sound, technically informed public policy. "To remain relevant to the public, and to increase public trust, PEO must meet the public's ever-increasing demand for accountability," he says.

In his first president's message, and at the recent AGM, Chong cited three priorities for his presidency: innovation, recognition and collaboration. Chong is looking to find innovative

ways for PEO management to reduce costs and improve the organization's efficiency and operational effectiveness.

He is keen to win greater recognition of PEO by enhancing its core, self-regulatory function. Key to this is stepped-up enforcement of the *Professional Engineers Act*—particularly as PEO looks for proclamation of the already approved repeal of the industrial exception—and the development of more professional guidelines and standards.

Collaboration, the third arrow in Chong's quiver of strategies, will aim at expanding PEO's volunteer leadership base with a new communication strategy to develop with members a "shared vision" of success for PEO, as defined in the strategic plan.

Chong also wants to be known as a fiscally prudent president, who treats member fees as "an investment" rather than a tax or bureaucratic expense. It's a sentiment that clearly strikes a chord with PEO members who, like any citizenry today, expect more respect, accountability and transparency from elected leaders.

Engineering Dimensions asked Chong for his views on two other hot topics: term limits for presidents and council members, and the selection of PEO presidents from within elected members of council.

Chong is somewhat supportive of term limits for councilors, committee members and chapter executives as "good for succession planning to allow the injection of new blood to the organization."

As for electing presidents from within council's ranks, an issue that created quite a stir under former presidents, Chong holds to the more traditional view: "We need to respect our members' democratic rights to elect their president."

ENGINEERING AS INVESTMENT

Chong comes to the leadership position at PEO at an opportune time. Not only is the profession poised to exert its influence in government policy-making circles, but PEO is also facing the twin challenges of raising awareness of the value of the engineering licence, while engaging rank-and-file members in its governance.

"We live in an age which, arguably, is dependent on engineers and technology, like no other time in history," Chong says. "Yet engineers are rarely recognized as the main contributors to our society's progress. We need to tell the manufacturing industry and the government that engineering is not a cost of production."

The new president wants engineering to be recognized as an investment in the general well-being of the entire community. "Good engineers reduce costs, improve productivity, and protect the health and safety of all Ontarians," he says. "Canadian companies need engineering help to ensure they stay in business for the long term."

Extending the idea to PEO's 80,000-plus licence holders, especially as the regulator looks to attract more women to engineering, and recruit new and younger volunteers and future leaders, he says: "To raise the relevancy and value of our profession, we need to start with this fundamental belief in ourselves. If we as engineers want to change our province and the world, we have the power and the means to do it." Σ



PEO president Thomas Chong, with his wife, Lily Yan, a woman who has supported his career successes, including his rise to the position of PEO president.

Chong and other members of the Ontario Public Service East Asian Network Dragon Boat Team display their 2014 Civil Service Challenge Cup award. With Chong are (left to right) Zoe Lam, P.Eng., Kit-Mei Chan and Lele Chiu.

Chong and his two immediate predecessors, David Adams, P.Eng., and Annette Bergeron, P.Eng., signing PEO's strategic plan.



WHAT'S IN A NAME?

With apologies to Juliet Capulet and her oft-cited rhetorical question, PEO is looking to promote better public understanding of what is really at stake with the use of the title “engineer.”

BY MICHAEL MASTROMATTEO

A May 10, 2015 incident in which a Toronto soccer fan made sexist, profane comments to a TV reporter has provided PEO a high-profile opportunity to increase public understanding of the correct use of engineering titles.

In its coverage of the incident, media described the man in question as an “assistant network management engineer” for Hydro One, the utility responsible for Ontario’s power lines and transmission grid. He was subsequently fired by the utility, likely, in part, for bringing disgrace upon the organization.

For PEO, however, the event became an opportunity to educate both the media and the public about who should be and should not be described as an engineer. The incident also raised questions as to why the man’s employer included the word engineer in his job title in the first place.

Immediately after the news broke, PEO issued a media release explaining that the person fired by Hydro One was not and never had been an engineer and that, by law, only those licensed by PEO may be identified as an “engineer,” or “professional engineer,” or use the abbreviation “P.Eng.” PEO’s

May 13 media release also invited the public to verify whether a person described as an engineer is licensed by searching the licence holder directory on the PEO website, and, because of the nature of the incident, pointed out that for licensed engineers harassing behaviour like that exhibited by the soccer fan would be considered a form of professional misconduct.

The PEO release was picked up by at least one Toronto daily newspaper, which repeated PEO’s message about misuse of the engineering title. The aftermath also generated a fair bit of traffic on PEO’s Twitter feed (@PEO_HQ) and LinkedIn discussion group.

Outside of a high-profile incident such as this one, however, how much attention does the public generally pay to engineering titles? To find out, PEO has engaged Ipsos Reid several times over the past six years to survey the public on its awareness in this area.

SURVEYING THE PUBLIC

Ipsos Reid conducted the latest PEO Enforcement Tracking Survey late last year. The research was aimed at tracking the general public’s awareness of PEO and its enforcement work, and comparing the results to earlier surveys.

The survey gauges public awareness in five areas considered key to PEO’s enforcement efforts: whether professional engineers require a licence; who, in fact, is a professional engineer; the types of work for

which a P.Eng. is required; misuses of the P.Eng. designation; and the consequences of misusing it.

The survey found that the public is generally aware that engineers require a licence to practise, but not as aware as they are that doctors, nurses and lawyers are required to be licensed. About 40 per cent of respondents knew that the term professional engineer, an engineer's stamp or seal, and the P.Eng. designation after one's name indicate a licence to practise engineering.

But the survey results indicated confusion about whether an engineering degree is equivalent to a licence in terms of allowing engineering graduates to practise.

Of more immediate concern for PEO's enforcement team were results indicating the public is generally not aware of where to complain about an engineer. Only 4 per cent of the 803 survey respondents, for example, identified PEO as where they would check a practitioner's qualifications. Nearly 20 per cent identified the Ministry of Labour as the place to go with questions about engineering practice. More than 30 per cent had no idea how to find out if an engineer is licensed, or what kind of work must be performed by an engineer.

PEO's public surveys over the past six years have shown that about 70 per cent of the general public know that to practise professional engineering a person needs a licence; however, fewer than 50 per cent know to associate an engineer with the title professional engineer, and even fewer with the designation P.Eng. or engineer title.

Marisa Sterling, P.Eng., PEO's manager of enforcement and staff advisor to the Enforcement Committee, says this latest survey shows the public's awareness of the engineering licence and its implications has not increased since the last survey was undertaken (in 2012). As an immediate response, enforcement staff and the Enforcement Committee plan to further examine barriers to enforcement and are looking at publishing a pocket guide for the public and practitioners on PEO's enforcement and reporting processes.

CRACKING DOWN ON TITLE VIOLATIONS

In 2014, 95 per cent of enforcement files PEO opened were title violations, representing more than 370 cases. More than 70 per cent of them were initiated by PEO staff reviewing social media and other sources.

Sterling says awareness-raising is "an ongoing priority" for the regulator's enforcement group. She notes that when PEO uncovers multiple cases of title misuse with one employer, it assesses taking enforcement action against that employer, but that "PEO's policy is to seek compliance first. If we are not successful, we can proceed to file charges in court or seek court orders to stop the behaviour."

However, PEO's efforts in achieving compliance are not always explicitly publicized. "PEO routinely deals with illegal titles, usually through voluntary compliance or a legal undertaking to change the title," Sterling says. "Both of these methods are treated as confidential matters and, therefore, members don't see reports from PEO on these successes. PEO, however, does report annual statistics in its annual review."

BEEFING UP ENFORCEMENT POWERS

Other priorities for the enforcement team include determining if PEO needs to enhance its legislated enforcement powers and if higher pen-



alty amounts need to be considered as a form of deterrence. The department is also investigating strategies to encourage reporting of enforcement violations, and wants to fine-tune the understanding of the definition of professional engineering in industrial and manufacturing sectors, including the appropriate division of work between technologists and engineers. The latter effort is aligned with the regulator's ongoing work to have repeal of the industrial exception proclaimed into effect (see "PEO seeking more data to buttress case to repeal the industrial exception," p. 14).

Indeed "judicious" and "continuously improved" enforcement is a strategic objective of PEO's 2015-2017 strategic plan. Compliance action statistics will be a key performance indicator of success.

STREAMLINING ENQUIRIES

PEO's enforcement team has also consolidated its information gathering. As of June 1, the intake of all enforcement matters was centralized, including inquiries to PEO's enforcement hotline. The move is expected to deliver improved customer service, enable better tracking of inquiries, and use staff resources most efficiently.

Matters that should be referred to the enforcement hotline include: questions or reporting related to job titles, the practice of professional engineering, and use of the words engineer or engineering in a business name.

To reach the enforcement hotline, call 800-339-3716, ext. 1444, or email enforcement@peo.on.ca. 

JULY 2015

JULY 30-AUGUST 1
IEEE Conference on
Technologies for
Sustainability,
Ogden, UT
sites.ieee.org/sustech

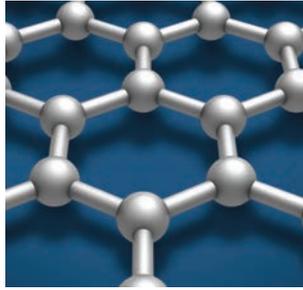
AUGUST 2015

AUGUST 2-5
ASME International
Design Engineering
Technical Conferences
& Computers and
Information in
Engineering Conference,
Boston, MA
www.asmeconferences.org/IDETC2015



AUGUST 9-13
Environmental
Degradation of Materials
in Nuclear Power Systems-
Water Reactors,
Ottawa, ON
www.envdeg2015.org/envdeg2015_html/envdeg2015_home.html

AUGUST 9-13
SPIE Optics & Photonics,
San Diego, CA
spie.org/optics-photonics.xml



AUGUST 10-12
International Conference
& Exposition on Advanced
& Nano Materials,
Ottawa, ON
icanm2015.iaemm.com

AUGUST 10-14
AES-ATEMA 25th
International Conference:
Advances and Trends in
Engineering Materials
and their Applications,
Toronto, ON
toronto2015aesatema.wordpress.com

AUGUST 10-14
Structural Mechanics
in Reactor Technology
(SMiRT-23),
Manchester, UK
smirt23.uk

AUGUST 18-20
8th International
Symposium on Resilient
Control Systems,
Philadelphia, PA
resilienceweek2015.inl.gov/ControlSystems

AUGUST 31-SEPTEMBER 2
AIAA Space and
Aeronautics Forum and
Exposition,
Pasadena, CA
aiaa-space.org

SEPTEMBER 2015

SEPTEMBER 7-8
2015 International
Conference on
Industrial Engineering &
Management (ICIEM 2015),
Toronto, ON
iciem.org

SEPTEMBER 9-11
9th International
Symposium on Field
Measurements in
Geomechanics,
New South Wales,
Australia
www.fmgm2015.com



SEPTEMBER 10-11
International Symposium
on Geohazards &
Geomechanics,
Coventry, UK
www2.warwick.ac.uk/fac/sci/eng/research/civil/geo/conference

SEPTEMBER 14-15
Odour Management
Conference & Technology
Showcase,
Toronto, ON
odourconference.com

SEPTEMBER 19-26

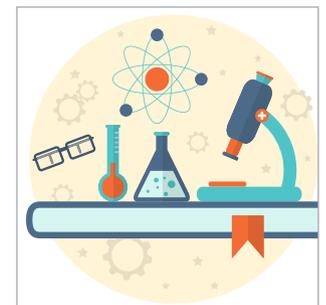
Association of
Environmental &
Engineering Geologists
2015 Annual Conference,
Pittsburg, PA
www.aegannualmeeting.org



SEPTEMBER 23-25
Mining Agreements:
Contracting for Goods
and Services,
Vancouver, BC
www.rmmlf.org

OCTOBER 2015

OCTOBER 4-7



65th Canadian Chemical
Engineering Conference:
Shaping Energy
Technology for the
Future,
Calgary, AB
csche2015.ca

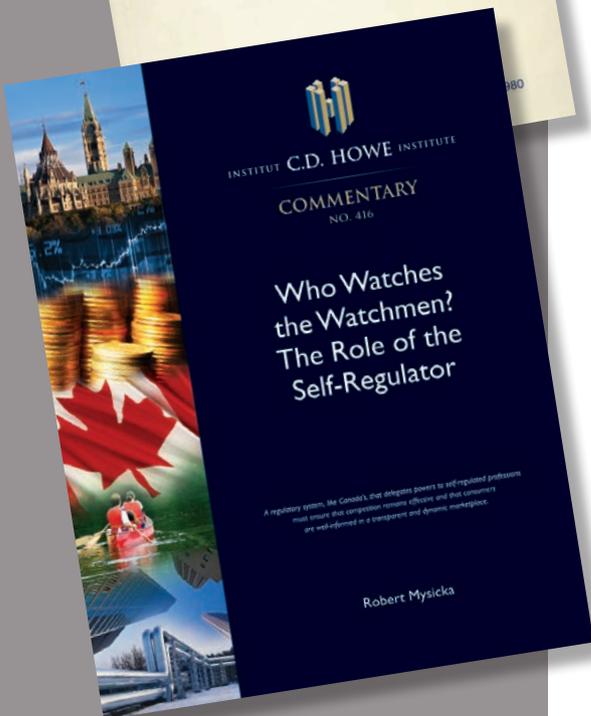
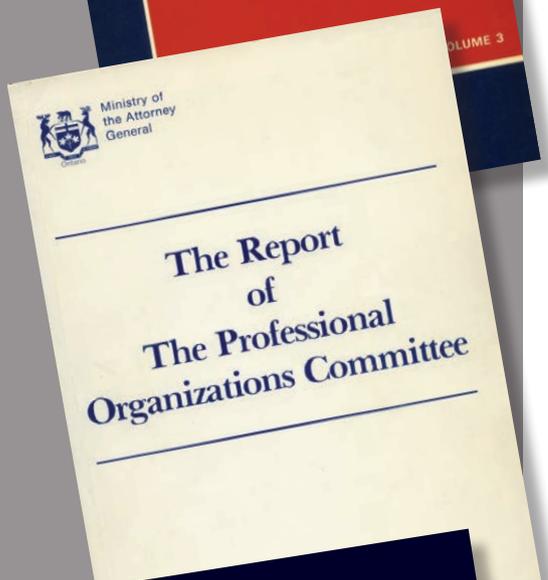
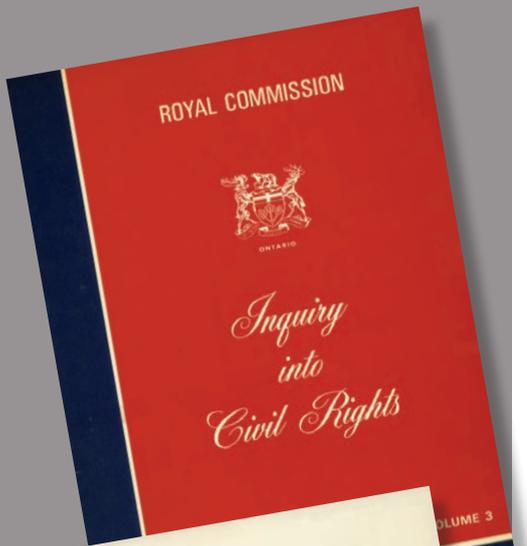
WHAT IS SELF-REGULATION?

In this first of a series of *Engineering Dimensions* articles on governance for regulators, we review the concept of self-regulation and its role in serving the public interest. [By Michael Mastromatteo](#)

In September 2008, self-regulating organizations took note when the British government's Legal Services Board took over as the independent regulator for all bodies involved in the regulation of legal services in England and Wales.

At about the same time, Australia's legal professionals had their self-regulatory authority restricted, thanks largely to a failure to accommodate the government's demand for greater mobility of licensees from one province to another.

The regulators of several Canadian professions have also seen government take a more active interest recently in how they do their jobs. The Ontario government's *Regulated Health Professions Statute Law Amendment Act, 2009* (www.ontla.on.ca/web/bills/bills_detail.do?locale=en&BillID=2189), for example, threatened to put some health regulators under more direct provincial control. The move was inspired in part by concerns that health regulators were too lax in disciplining wayward practitioners.



The Ontario College of Teachers, meanwhile, was criticized in the 2012 LeSage report (www.oct.ca/pdf/lesage_report_e.pdf) for delays in dealing with certain disciplinary issues, and for failing to put sufficient information about its discipline system on the public register.

While Ontario's engineering regulator has not recently been under as direct scrutiny, such developments are reminders that the privilege of self-regulation shouldn't be taken for granted. Engineering, as well as the other self-regulating professions, would do well to review its governance underpinnings and stay vigilant to looming discord.

PUBLIC INTEREST ONLY JUSTIFICATION

As Glen E. Randall, founding registrar of the College of Respiratory Therapists, noted in a 2007 study (*Understanding Professional Self-Regulation*, www.oavt.org/self_regulation/docs/about_selfreg_randall.pdf), "In the latter half of the twentieth century, criticism of the self-regulating professions became widespread. The public came to see the monopoly control these professions had as simply a means of increasing the personal wealth of their members, rather than as a way to protect the public from incompetent or unethical practitioners. During this time, formal models of self-regulation have undergone fairly dramatic transformations. The emphasis of self-regulation has shifted from a focus on protection of the profession, to a focus on protection of the public."

This notion of putting the public first was the basis for Ontario's most recent audits of the self-regulating landscape. In his discussion of occupational licensing (in Vol 3. of the expansive 1969 report of the Royal Commission on Civil Rights <https://archive.org/details/royalcommissioni03onta>), Commissioner James C. McRuer noted, among other things, that self-regulation should be granted to protect the public rather than to satisfy licensed members' desire for the power of self-government.

In his report, Justice McRuer writes: the "granting of self-government is a delegation of legislative and judicial functions and can only be justified as a safeguard to the public interest."

It was as a result of the McRuer Royal Commission, followed by then-attorney general Roy McMurtry's Professional Organizations Committee study of architecture, engineering, law and account-

ing in the late 1970s that lay appointees came to serve on regulators' governing councils. The reasoning was that lay appointees would better represent the public interest and bring greater diversity into council deliberations.

SELF-GOVERNANCE IN ONTARIO ENGINEERING

Ontario's engineering regulator has been self-governing since the creation of the Association of Professional Engineers of Ontario (now Professional Engineers Ontario or PEO) in 1922, although it was not until 1937 that a true licensing regime was put in place.

PEO presidents George Comrie, P.Eng., FEC (2004-2005 and again in 2016-2017), and Bob Goodings, P.Eng., FEC (2005-2006), have both written about the benefits to the public of self-regulation of professions.

The emphasis of self-regulation has shifted from a focus on protection of the profession, to a focus on protection of the public.

"The government gets a good deal out of self-regulation," Comrie wrote in 2004. "The underlying concept is that it would be difficult and costly to create a government department or agency to oversee such a broad and rapidly changing field as engineering; so the responsibility and authority have been turned over to the profession itself. In return for committing to regulate itself in the public interest, the profession has been given considerable latitude in defining what constitutes engineering practice, plus a certain status and prestige associated with their exclusive rights to title and practice."

Comrie made defence of engineering self-regulation a hallmark of his first PEO presidency, and in a more recent letter to *Engineering*

[GOVERNANCE]

Dimensions suggested engineers are doing a better job than other senior regulated professions in living up to their bargain with their political overseers. “The clear message for the professions is that, rather than waiting to be thrown out with the bathwater, we should make it a priority to ensure we are doing the best possible job we can for the public in the discharge of our regulatory mandate,” he adds.

“There is untold benefit in having the profession regulate its practitioners in the public interest, rather than leaving the job to a government agency.”

Bob Goodings, P.Eng., FEC

Goodings, meanwhile, says there is untold benefit in having the profession regulate its practitioners in the public interest, rather than leaving the job to a government agency. In addition to a near incalculable cost savings to the public, he writes in a 2006 memo, the benefits of self-regulation also accrue to industry, universities and all levels of government.

MEETING PUBLIC EXPECTATIONS

Bruce Matthews, a former deputy registrar at PEO, is a long-time member of the Council on Licensure, Enforcement and Regulation (CLEAR), an international resource for self-regulated professions and licensing bodies. After leaving PEO in 2010, he was also deputy registrar for the Real Estate Council of Ontario, before recently establishing Simplifico Inc., a consulting firm specializing in professional and occupational regulation.

“Among the various frameworks for professional and occupational regulation, self-regulation can be among the most controversial,” Matthews told *Engineering Dimensions*. “On the surface, there is a certain logic in allowing the practitioners of a particularly technical or complex field to set the appropriate standards for qualification and practice. Detractors, however, would say that it is tantamount to leaving the foxes in charge of the henhouse and gives rise to protectionism. This is why professional regulators in Canada, almost all of whom follow a self-regulatory model, are facing increased external pressures with respect to accountability, openness and transparency.”

Matthews says that in the wake of such increasing expectation, self-regulated professions can no longer rely on the “trust us” attitude toward the general public. He believes regulators need to evolve in their approach to addressing the risks that regulation is intended to mitigate, or they will become irrelevant.

Says Matthews: “As the public becomes more savvy and has easy access to a variety of sources of information, the regulator must evolve

or else be effectively bypassed by the public it was created to protect.”

Other regulators contacted by *Engineering Dimensions* also say self-regulation can’t remain static. The College of Nurses of Ontario (CNO), for example, has stepped up its efforts to explain the benefits of self-regulation to its stakeholders. The college has also added a “transparency” page to its website to provide the public additional information about CNO activities.

“The CNO isn’t feeling under siege, but we have recognized that public, media and government expectations about accessibility to information about health-care providers have changed,” Bill Clarke, a spokesperson for the CNO, explains. “Several health regulatory colleges—nurses, physicians, pharmacists and dentists—have been involved in a collaborative initiative during the last two years looking at what other information about health-care providers should be available publicly. Work on this project began before the government and the media started calling for greater transparency and access to information.”

Reviews of the recent literature on self-regulation as public policy make little reference to the engineering profession. The bulk of the criticism about self-regulation as an anti-competitive practice not fully in tune with the public interest seems to fall on the legal profession. While most of these studies acknowledge the administrative efficiencies flowing to government by delegating some regulatory oversight to the professions, they all also reiterate the need for regulators of professions to continually demonstrate accountability and transparency of operations.

In his October 2014 study *Who Watches the Watchmen? The Role of the Self-Regulator* (<https://www.cdhowe.org/who-watches-watchmen-role-self-regulator>), written for the C.D. Howe Institute, Robert Mysicka says self-regulation provides professions some protection against “transitory political imperatives” that might negatively influence regulatory decision making, but that those governing these organizations must always be constrained by the public interest. “It is particularly important that independent public membership acts as a counterbalance to professional representation in the SRO’s [self-regulating organization’s] management,” Mysicka says. Σ

THE ROLE, USE AND MISUSE OF EVIDENCE

By Jordan Max

LAST ISSUE, we looked at ways to improve how we identify, define and validate a regulatory policy problem. Let's now look at how evidence can be used to support regulatory policy development.

There is a tendency to make use of data only to substantiate or justify an intended action or theory. From a scientific perspective, this approach is unethical and could jeopardize an entire venture. If we're seeking to address a perceived issue or "problem," we first need to do some fact-finding and explore the issue at hand: Where is it situated? How did it come to be? What information do we know? What information do we need to know but don't have? And, what information do we not have and not even know we need?

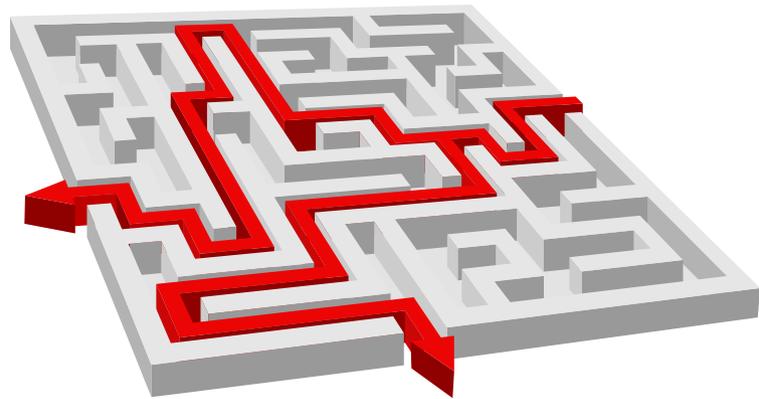
Having good evidence from many different sources and vantage points provides a more grounded analysis than ideology, history or gut feel. It allows for apples-to-apples comparisons to other jurisdictions and models, helps to isolate key variables, actors and drivers, and helps to better understand the system(s) surrounding or generating a perceived problem. It also serves as an objective buffer to counter evidence put forward by others.

There are many available sources of evidence and data to help us understand a perceived problem. These sources can include quantitative statistics; behavioural observations of participants; qualitative experiential data of participants; inputs; outputs; academic studies; regulatory best practices; internal systems (e.g. licence holder databases, and licence holder or Certificate of Authorization directories); practice advisory and enforcement questions; complaints; case law and precedents; big data and business intelligence; econometrics; market studies and intelligence from think tanks, interest groups and researchers; inter-jurisdictional comparisons; "before and after" data; stakeholder surveys, focus groups and interviews; media stories; events; discussions; and opinions.

Gathering data or evidence is the first key step. We need to verify and validate that information by checking if the total evidence captures the entire ecosystem of actors or agents and processes, how relevant or authoritative the evidence or data is, and how well the evidence or data can predict the future. Variables must be analyzed for their relevance to the phenomena.

PEO INTEGRATION

Some other Ontario profession regulators (see sidebar) are using evidence and data not only to improve their program management, but also to support regulatory policy development. It's



noteworthy that system data is being used both across an organization (for example, complaints categories and risk factors in such areas as quality assurance) and proactively to avoid future complaints, through education and other methods.

Perhaps most importantly, we need to hear from licence holders who are actively practising professional engineering about what is really happening in the field. This is an area in which PEO needs to increase its knowledge base. If we rely only on reacting to issues and complaints as our exclusive source of information, we can't be sure we have an accurate picture of what and how practitioners are practising and the challenges they face. So, PEO may be wise to initiate feedback and input from practitioners and engineering clients proactively to get a more accurate read of the engineering working environment and emerging issues—before they become a problem.

LIMITATIONS OF EVIDENCE

We are dealing with people, not machines. Evidence and data can only tell us *how* things happen or don't happen. To complete the picture, we need experiential information from users and actors on *why* they make the decisions or actions they do (rationally, or otherwise).

I can't overstate the importance of establishing causal links of problems to their origins and systems. We must be alert to the dangers of making unsubstantiated statements, such as "there is a need to..." or "this will lead to..." without a solid understanding of the system and contributing factors, facts and how we think it will work. We need to distinguish root causes from symptoms and effects. For example, if we look at the number of complaints made to PEO about licence holders, we could cite the symptom as the low number of complaints relative to the number of practitioners. Is that

[REGULATION]

a good thing or a bad thing? Do we think it is an accurate reflection of the incidence of misconduct among licence holders, or is it an underestimation due to other systemic barriers or factors that make complaining difficult? The potential *causes* of low numbers of complaints could be:

- perceived systemic barriers/onerous to file complaints;
- absence of whistleblower protection;
- relatively few active practitioners, but higher incidence of complaints against them;
- “grey area” issues addressed first by practice advisory calls and professional practice guidelines, standards and bulletins;
- clients resolve problems with engineers through civil law instead of PEO processes;
- statistics and disciplinary actions not well publicized; and
- lack of understanding of duty to report.

We should also distinguish the *effects* of the low complaint numbers, which could include:

- perception of very few “bad apples”;
- PEO complacency about complaints and enforcement;
- few referrals to Discipline Committee; and
- member complacency or perception that PEO doesn’t respond to complaints or enforce the *Professional Engineers Act*.

Using this example, good policy analysis upfront will help to sort the causes, symptoms and effects, and demonstrate whether we are getting a true picture of the real world.

There is a secondary caution: evidence is only as good as available data; it can’t address new theories or ideas. Case in point: the treatment of stomach ulcers. Prior to 1981, the prevalent medical theory was that stomach (peptic) ulcers and gastritis were caused by excessive stomach acid production. Barry Marshall, an Australian doctor, hypothesized the cause of ulcers was bacterial, and his daring research with *Helicobacter pylori* (on himself) eventually led to his theory’s acceptance and the 2005 Nobel Prize in Medicine.

While I would not advise professional engineers carry out similar experiments, it does provide a caution about relying exclusively on data. Public issues continue to evolve and what was an appropriate solution initially may be replaced by better solutions or better technology. A problem might have changed or even disappeared in the interim. If we were only to look at what has worked in the past, we might be ignoring new and disruptive approaches. After all, had Henry Ford asked horse owners how to improve transportation, they would have asked for faster horses.

Finally, we must accept that regulatory policy-making often uses a complex mix of politics and evidence. It is naïve to assume all decisions can be made strictly from a technocratic approach. Political considerations include ideology, strategy (i.e. PEO’s strategic plan), case law, precedents, resource capacity and timing. Well-constructed and consensus-driven evidence, when combined with political and resource factors, can help identify the most effective solutions. Σ

Jordan Max is PEO’s manager, policy.

EXAMPLES OF USING EVIDENCE TO SUPPORT REGULATORY POLICY DEVELOPMENT

LAW SOCIETY OF UPPER CANADA

Focused practice reviews

In March 2004, convocation approved indicators for identifying who should be subject to practice review (see s. 27(2), By-Law 11). They include both the number and type of complaints and information received in the course of investigations or audits. A guide for members, providing details of the indicators, can be consulted. Lawyers experiencing difficulties in relation to their knowledge, skill, judgment, records, systems, office procedures, or attention to the interests of clients, may be referred to practice review via any of the Law Society of Upper Canada’s (LSUC) regulatory units or LawPRO, an insurance company incorporated by LSUC that provides liability insurance to lawyers in Ontario.

Practice management reviews

On June 22, 2006, convocation approved expanding LSUC’s practice review program to include a practice management review component. The expansion was implemented on January 1, 2007. Reflecting the society’s emphasis on quality assurance in service of the public interest, the program is proactive and preventive—designed to support the goals of LSUC members to be efficient, effective and competent. Members one to eight years from the call to the bar and in private practice are eligible to participate.

In November 2008, convocation approved a risk-based random selection process, which ensures those selected also reflect the percentage of law firms presented in LSUC

conduct matters and LawPRO negligence claims for the profession, determined annually, and segregated by firm size.

COLLEGE OF PHYSICIANS AND SURGEONS OF ONTARIO

As part of the College of Physicians and Surgeons of Ontario's (CPSO) policy review process, research is undertaken at several stages. CPSO conducts various types of research, including: jurisdictional research, legal research, and a literature review looking for any published articles on a subject or issue. Consultations, both internal and external, are another tool the college uses to gather evidence. CPSO's *Physicians' Relationships with Industry: Practice, Education and Research Policy* is a recent example of where evidence was used to inform the policy review process. A literature review was undertaken on key issues, which found a strong consensus on these key issues. Revisions were made to the current policy, in part, based on the findings from this literature review.

ONTARIO COLLEGE OF PHARMACISTS

As part of the Ontario College of Pharmacists' Quality Assurance Program, actively practising pharmacists are randomly selected to undergo a peer review assessment. The peer review comprises a clinical knowledge examination and an objective structured clinical examination (OSCE). Results from the first five years of the peer review showed that pharmacists who had recently (within the previous five years) completed the qualifying exam were successful in meeting the standards of the peer review. Based on these results, a policy was created that exempted pharmacists who had completed the qualifying exam within the previous five years. Similar data was then used to extend this exemption to 10 years.



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AFFORDABLE ENERGY FOR HUMANITY

By Jatin Nathwani, PhD, P.Eng., and Joachim Knebel, PhD



ONTARIO CENTRE
FOR ENGINEERING
AND PUBLIC POLICY

A MAJOR GLOBAL change initiative, led by the University of Waterloo and Karlsruhe Institute for Technology, is underway to establish a platform for research and development of innovative energy technologies to drive large-scale adoption of low-cost solutions to reach every global citizen.

The primary goal is affordable energy for humanity.

We offer a working definition of affordable energy: the cost of basic energy services must be less than 10 per cent of disposable income for an individual or household. For a person living on \$2 each day, the energy cost must not exceed 20 cents each day.

This highly challenging target not only has clarity of purpose, it's a metric against which progress can be measured. Realization of the vision rests on critical scientific and technological advances to deliver innovations on a scale large enough to render energy poverty a phenomenon of the past.

Through this global change initiative, we bring into sharp focus the need to develop a cleaner, low-carbon energy system as responsive to the threat of climate change as it is to the needs of those who have very little access to energy.

Affordable energy remains a central feature of human development goals and its linkage to water, food, security, health and well-being is as strong as it

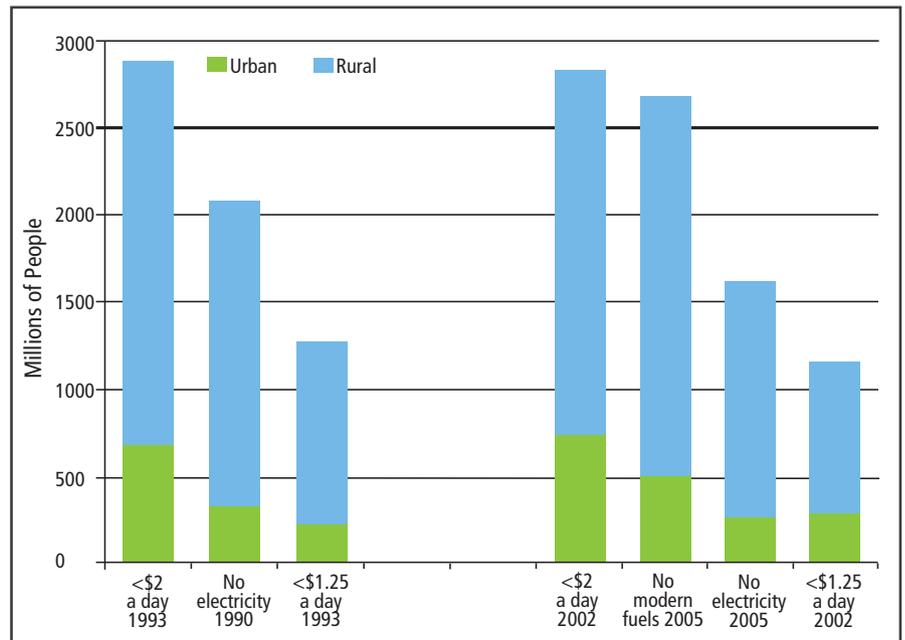


Figure 1: Changes in global poverty level (Global Energy Assessment (GEA), 2012)

is pervasive. Our focus is on scientific research and next-generation technologies—to reduce cost by at least an order of magnitude—with the expectation that such an achievement will be instrumental in delivering affordable energy as a positive force of change.

WHY A GLOBAL CHANGE INITIATIVE?

It's an obligation and a matter of global conscience that we bring into the centre of policy discussions the plight of some 2.5 billion people in the world with no access to electricity and basic energy services. As shown in Figure 1, those who live in extreme poverty (on less than \$1.25 each day) and the proverbial poor (on less than \$2 each day) remain with us in about the same numbers from one decade to the next.

The vicious cycle of energy poverty begins with a lack of access to affordable energy. Once trapped in this “vortex of deprivation,” the energy lack translates into low economic productivity, time consumed by drudgery, and limited opportunities for income generation.

This is a major failing of the existing global energy system. While vast in scope, it's persistent in its indifference to the needs of a third of humanity. Through an interconnected system of pipes and pipelines, power plants and processing plants, the global energy system extracts a vast amount of primary energy annually (upwards of 550 exajoules, equivalent to one quintillion joules), yet leaves millions to scour forests for twigs and branches for basic needs. If the energy poor are to be drawn into the

mainstream of global economic well-being, access to low-cost energy is a fundamental requirement.

The arc of human development goals to improve life quality is critically dependent on access to affordable energy. Energy poverty remains a barrier to economic well-being for such a large proportion of humanity that the rationale for action now is compelling.

The importance of energy access has been recognized by several organizations, including the United Nations' Sustainable Energy For All (SE4All) program, the World Energy Council, the World Bank, non-governmental organizations (NGOs) and many charitable foundations. It is also comprehensively documented in the Global Energy Assessment (2012). Although progress at the global level has been tangible, it's been slow and not pervasive enough in scale and scope to address the issue of basic human needs. Massive diffusion of new technologies that can provide energy services at a low cost is the necessary building block to help make a difference in the lives of so many who have so little.

To effect meaningful change, we need to marshal the vast, global intellectual capacity to address two of the most important challenges of the century, and do so in concert: achieve a low-carbon energy system that also meets the requirement of affordable energy for the deprived mass of humanity.

It's clear that universal energy access cannot be achieved without a major scientific and technical push to lower costs by a very large margin, to improve reliability, again by a large margin, and find robust solutions scalable at the global level. Our primary focus is scientific research and the development of next-generation technologies that will yield large improvements in the overall performance of existing energy systems.

In spite of all the good will and positive intent, politicians and policy-makers have been stymied over the decades by several competing demands—the geopolitics of energy supply, demands for energy security, and the compelling evidence of the need to address the threat of climate change from fossil fuel emissions. We observe that it is as much a failure of the scientific and technical community as it is the shortcomings of policy-makers to deliver effective solutions reliable enough to meet the twin goals of affordable access to energy and reduced emissions. In our view, it's incumbent upon the scientific community to go beyond articulating a statement of the problem and proffer a suite of practical solutions to help break the logjam.

RESEARCH DOMAINS FOR INNOVATIVE SOLUTIONS

The primary goal is to develop a platform for rapid diffusion and adoption of low-cost solutions in diverse contexts and markets. A sustained effort—over two seven-year cycles of development—is envisaged in support of such a platform. On an ongoing basis, the outputs of research and any new breakthroughs would be integrated into practical solutions and lessons learned from the field and back to the research activity.

Key domains of research and development activities have been identified to support a multi-layered approach and a program that will draw on insights from several disciplines, from basic sciences to engineering. Research in the social and behavioural sciences will be integral to identifying how new knowledge can support the commercialization of innovations. A successful business model that effectively serves the needs of the poor would be a social innovation in its own right.

Four domains of scientific research and breakthroughs for next-generation technologies remain central to meeting the goals of improving energy access. They are:

- A. Energy supply and advanced materials and devices:
 - solar, wind, bioenergy, hydro, geothermal, and fuel cells, and
 - energy storage;
- B. Micro energy systems for dispersed power:
 - off-grid micro grids,
 - electric mobility, and
 - integration of smart energy networks;
- C. Information systems and science for energy:
 - the convergence of information and communication technology (ICT) and the power system, an area of research encompassing informatics, sensors, devices, data mining and analytics for ubiquitous energy applications and the “Internet of things”; and
- D. Environment, efficiency, markets, human behaviour and social adaptation:
 - sustainability of energy use for human development goals,

[POLICY ENGAGEMENT]

- business models for productive energy use,
- self-financing,
- social acceptance of new technologies, and
- low environmental impacts.

Cost and value

Figure 2 shows that the cost of energy, and the value it delivers at different levels of available quantities, depends on the context—circumstances facing the energy poor (green), versus those in wealthier, energy-intensive areas (blue). It is a powerful depiction of the idea that a level of energy service at different price points has a different value to end consumers, depending on their situation.

Small amounts of energy have high value and high positive impacts on human development potential, albeit at a relatively high nominal cost. It's also important to recognize that the amount of electricity needed to address many of the problems of energy poverty is not great. For people living with no access to electricity, the first few hundred watts can power life-changing tasks: turning on lights for reading and working at night, charging mobile phones to communicate with family, or running small refrigerators.

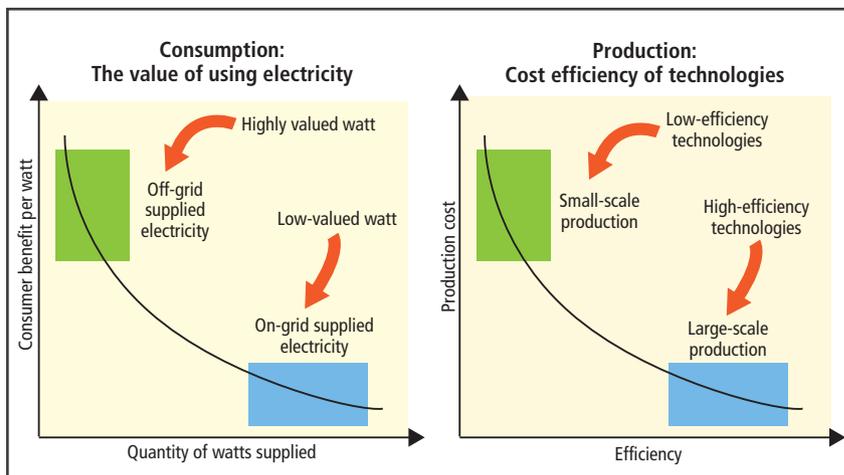


Figure 2: Value and cost of energy

Recognizing the concepts of value and cost (at varying levels of consumption), as well as the cost efficiencies of different technologies to deliver quantities at different price points (reflecting production cost), will, in turn, allow innovation to flourish.

To help unleash the economic productivity of those with very low incomes, provision of even a basic level of energy services can be the tipping point for a range of positive economic, social and cultural developments. For example, many regions with energy-poor individuals are endowed with renewable sources of energy, such as sunlight, wind, biomass or waterways for generating hydroelectricity. A portable but durable solar power (i.e. organic photovoltaic technology)

when compared to burning kerosene at US\$1 each week highlights the savings inherent in using solar energy over the medium term—even when the initial costs of deployment may be high.

A FUNDAMENTALLY DIFFERENT CHALLENGE

Although this global change initiative builds on the current knowledge base of the existing energy system, the global challenge of energy access is fundamentally different in three ways:

1. The existing electricity infrastructure delivers highly reliable service from centralized, large-scale power plants connected to a power grid (transmission and distribution) at a relatively low unit cost of energy. The economies of scale for serving large populations (or load centres) are not the same as those for meeting the needs of the energy poor who live in remote and dispersed communities distant from the existing grid. The costs of extending the power grid to the rural poor have proven to be so prohibitive that the default policy option is taking no action—which effectively perpetuates the cycle of energy poverty.
2. For universal energy access for communities distant from the grid, the development of off-grid energy solutions holds enormous promise. Micro-power, distributed generation, cost-effective storage and a wide range of smart energy technologies can provide an opportunity to leap frog the technological time scales.
3. An analogy is the wireless mobile phone that made the cost of building telephone landlines in emerging economies redundant. We remain confident that an energy revolution is in the making with the potential to effect a similar transition on a global scale. The promise of ubiquitous connectivity through the Internet of Things comprises a pathway that could bring energy to those who need it most by fundamentally altering the business models and economics of providing energy services.

Smart energy networks

A smart energy network (Figure 3) offers a promising path for using advanced ICT to monitor and efficiently manage flows of energy services from source to use. The “smartness” is in the efficient coordination of capabilities, and optimization of all energy flows from fuel suppliers to energy transformation and delivery through intelligent infrastructure to final consumers.

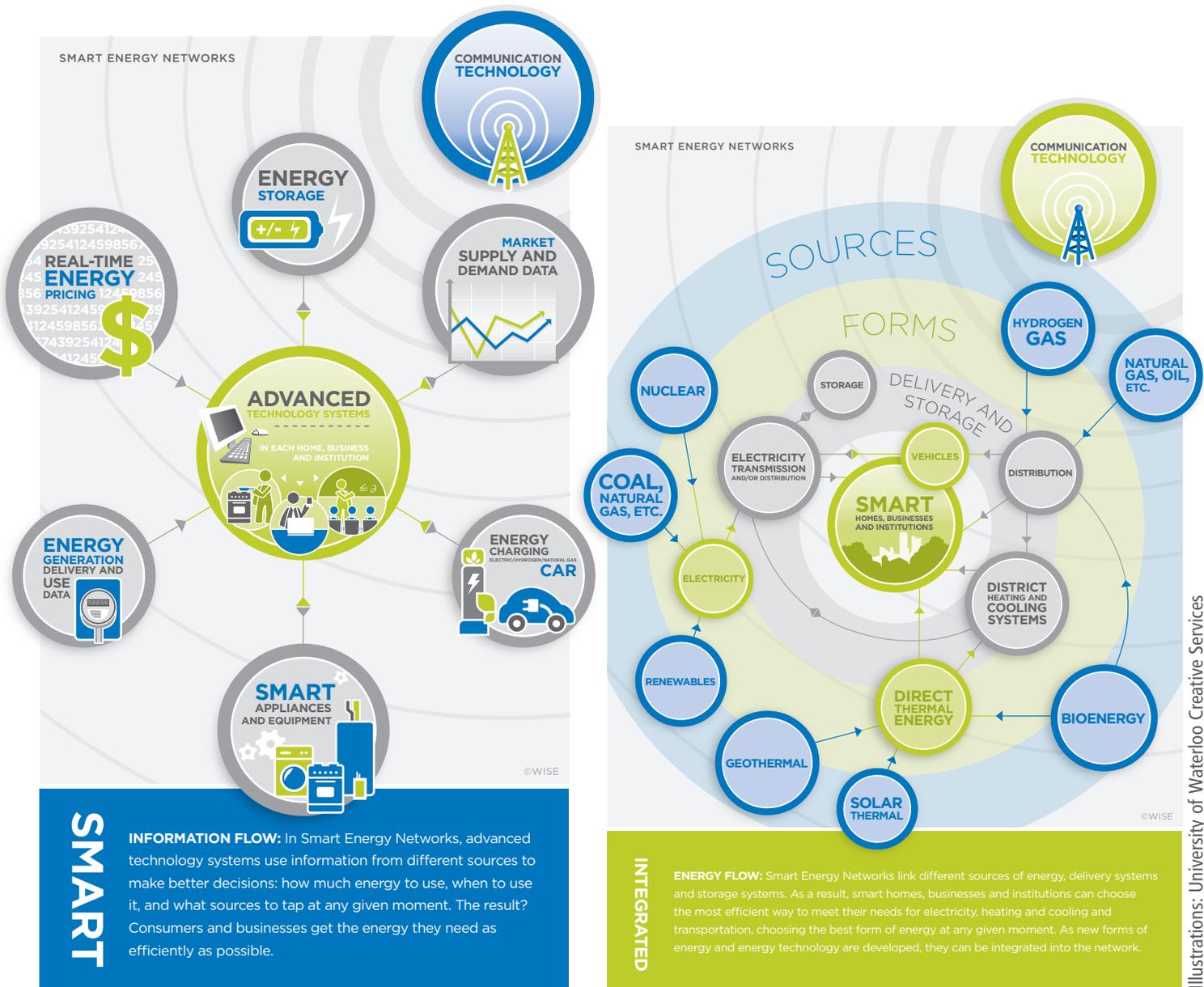


Figure 3: Smart energy networks

The promise and potential of emerging distributed resources can be best realized if it can become an integral part of a smart energy network. This is not a linear path: it is an eco-system view of how energy flows, and information and convergence of the power system with capabilities of ICT can achieve low costs and low environmental impact while achieving reliability, resilience and stability.

We believe the “energy poor” of the world comprise a latent market opportunity but the vision rests on innovations that can deliver solutions at the right cost (i.e. are affordable)

with a clear understanding of how the cost of energy service is linked to the value it delivers in a specific context.

GLOBAL CHANGE INITIATIVE: PROGRAM EXECUTION

The Global Change Initiative for energy access is a multi-layered approach to develop solutions. Its success will depend on the commitment of many talented individuals and organizations. We have initiated intensification of collaborations between the University of Waterloo and Karlsruhe Institute of Technology (KIT) in Germany to focus

[POLICY ENGAGEMENT]

on delivering results from existing research programs that align with the vision. Bringing together the strengths and expertise of the two institutions, with a focus on science, technology and innovation, is a central feature of the strategy for executing the program.

- (i) The University of Waterloo is a leading university recognized for innovation, entrepreneurship and strong faculties in engineering, science and environment. The focus on energy research at the Waterloo Institute for Sustainable Energy (WISE) is complementary to the Energy Research Centre and other institutes at KIT.
- (ii) KIT is strongly integrated in both the European energy network platforms (European Educational Research Association and European Automotive Research Partners Association), and in the knowledge and innovation community KIC InnoEnergy. KIT's history as one of the leading German research and teaching institutions with major research in the energy field is well known.
- (iii) Development of a detailed program to support this global change initiative is under way. A detailed definition of the program elements, identification of research experts, the timelines for deliverables from specific projects and the platform for integrating results for input into the next cycle of technological developments is already under way.

GLOBAL PARTNERSHIPS, NEXT STEPS

We have noted previously that it is indeed a tall order to achieve—in concert—a low carbon energy economy while meeting the challenge of affordable energy for all. The moral imperative is to ensure that the needs of the poor are not ignored anymore.

We invite the participation of researchers and their affiliated institutions, and we look forward to active engagement of thought leaders in the academy, civil society groups, philanthropic organizations, innovators, and government and industry leaders, to provide specific support to help advance the vision of affordable energy for humanity.

This initiative will help us calibrate our understanding of future global economic opportunities that link the challenge of achieving a low carbon energy economy to the needs of the energy poor.

Although obviously complementary to the United Nations' SE4All project's goal, there is a key difference: our focus is on scientific research and developing next-generation technologies, as well as social and business innovations, to drive the costs of energy services to such a low level that markets can deliver solutions without tax incentives and subsidies.

Our requests to different organizations are tailored to their mandates and are:

- Universities and research institutes—We invite individual researchers and research teams to identify their domain-specific expertise and commitment to participate.
- Philanthropic foundations and individual commitments—We welcome individual philanthropic commitments and we will work with established foundations to obtain the necessary resources to support underlying research and provide expertise to ensure successful deployment of projects.
- NGOs with field experience—We invite input and welcome the knowledge and expertise obtained by these groups to help shape the research agenda and to evolve practical solutions that will have an impact on people's lives.
- Civil society groups—We invite participation and seek your commitment to raise the profile and awareness of this initiative through traditional and social media, conferences and meetings.
- Business and industry leaders and innovators—We seek your active engagement in specific domain areas to identify the potential for further development of practical solutions emerging from research findings. It is our expectation that markets will drive the innovation cycle and the emergent solutions will provide the opportunities for the creation of sustainable businesses.
- Governments, national academies and international agencies—The deployment of large-scale new technologies is enabled through reducing barriers. We welcome expert advice by national academies to shape actionable recommendations for governments and support for targeted research.

SUMMARY

The poor of the world—those who need energy most—provide a compelling rationale for developing solutions that are scalable, available at a low cost and based on a sustainable supply of clean energy resources. Σ

Jatin Nathwani, PhD, P.Eng., is a professor and Ontario research chair in public policy for sustainable energy at the University of Waterloo; executive director, Waterloo Institute for Sustainable Energy (WISE); and a visiting professor at Karlsruhe Institute of Technology. Joachim Knebel is head of mechanical and electrical engineering at Karlsruhe Institute of Technology.

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[LETTERS]

PEO STAFFER WILL BE SADLY MISSED

On a lovely sunny morning in June, about 150 family and friends gathered for a graveside service for Brenda Caplan, not far from where her mum and dad had also been laid to rest in Scarborough. It was a beautiful, simple, Jewish ceremony, evocative of Brenda's personality and pride in her background.

A large number of the participants were from, or associated with, the engineering community around PEO, including four former presidents, councillors, and all staff ranks from the top down—what Brenda often called her other family.

In her 18 years among us [as executive assistant to the president], she had a singular and very special position: a trusted sharer of our concerns and a positive carer for our hopes. I was told by an acquaintance that he was surprised at the turnout of engineers. And I told him I was not. I said that Brenda liked engineers, she was liked in return, and her magic was that you always felt that she especially liked you.

Brenda's last few years were tough. She fought an implacable disease with determination and would not give up. Thankfully, her family at PEO gathered with her in February for a retirement party, where she was told how fond we all were of her and where former president Annette Bergeron embraced her on our behalf and made her an honorary fellow of Engineers Canada. It was clear it touched Brenda deeply and was greatly appreciated.

Brenda was special, graced our lives and PEO with her optimism and joy, and will be sadly missed and remembered as a true friend of us all. She rests in peace.
Pat Quinn, P.Eng., Toronto, ON

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Address letters to jcoombes@peo.on.ca.

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