

SOUNDS LIKE A (STRATEGIC) PLAN FOR PEO

By Michael Mastromatteo



Less than a year into his position as registrar, Gerard McDonald, P.Eng., is well along in leading the development of a new strategic plan for Ontario's engineering regulator.

It's PEO's first attempt at drafting a full strategic plan in nearly 10 years. PEO's most recent strategic plan, covering the years 2005 to 2009, was approved in 2005, but implementation was stopped by a council decision the following year.

Since then, PEO has been without a fully articulated strategic plan, although it made some moves in a strategic direction in 2009 when then-president Catherine Karakatsanis, P.Eng., FEC, won approval of a "big audacious goal," and a number of vivid descriptions and strategic intents.

PEO council authorized work to begin on a strategic plan to focus the organization's activities from 2015 to 2017 at its March meeting. Over the next several months, senior management, staff, volunteers and council members considered PEO's strengths and weaknesses and

the opportunities and threats it would be facing over the plan period. New vision and mission statements were solicited and refined at the Penta Forum, Committee Chairs and Council workshops, and several staff sessions. Goal areas were selected that relate to elements PEO must concentrate attention on during the course of the plan to move closer to its vision. PEO's core values of accountability, respect, integrity, professionalism and teamwork were reconfirmed as part of the strategic planning process.

Now underway is articulation of strategic objectives for the plan period for each of the goal areas, strategies for reaching the objectives, and key performance indicators for council to use to measure progress.

Council is expected to approve PEO's 2015-2017 Strategic Plan and the associated budget elements for the 2015 calendar year at its November meeting.

BUILDING CODE ACT amendment raises red flag for PEO

By Michael Mastromatteo

PEO HAS ONCE again expressed concern to the Ontario government about a potential incursion on its jurisdiction under the *Professional Engineers Act*.

The concern relates to an amendment to subsection 8(2) of the *Building Code Act, 1992* that was introduced in May as part of the provincial budget and subsequently reintroduced in July, following the election, as part of Bill 14, the *Building Opportunity and Securing our Future Act (Budget Measures), 2014*, which was passed by the legislature on July 24.

The amendment adds a clause (b.1) to the subsection of the *Building Code Act* that lists the conditions under which chief building officials

(CBOs) may refuse to issue building permits. With the amendment, CBOs may refuse to issue permits where "the *Architects Act* or the *Professional Engineers Act* requires that the proposed construction of the building be designed by an architect or a professional engineer or a combination of both and the proposed construction is not so designed."

In a July 9 letter to housing minister Ted McMeekin, PEO President David Adams, P.Eng., FEC, describes the amendment as "an unnecessary encroachment" on PEO's exclusive jurisdiction under its legislation. "As we interpret it," he writes, "this clause would authorize chief building officials to enforce the *Professional Engineers Act* and the *Architects Act*, as it would appear to place them in the role of determining when a design submission for a permit would require an architect or engineer, or both."

Adams also reminds the minister that the 2007 Divisional Court decision on PEO's challenge to 2006 amendments to the Ontario Building Code "confirmed the exclusive jurisdiction of the professional acts." He

then reiterates PEO's position that the building code legislation should "play no part in allocating design activities between PEO licensees and architects" because the practices of the professions are defined in their acts and the policing of the acts "should be left to the regulatory bodies established by the acts for that purpose." He closes by noting the provision in both the architects' and engineers' acts for a referral to a Joint Practice Board to allocate design activities between PEO licensees and architects.

In his July 17 reply, Minister McMeekin confirms that the (then-proposed) amendments to the *Building Code Act* "are not intended to allocate design activities between PEO licensees and architects," but are instead intended to "refer specifically to the allocation of design activities as set out in the *Professional Engineers Act* and *Architects Act*." He continues by stating: "Our intent is that any question that a chief building official has regarding whether a particular building is required to be designed by a PEO licensee or architect... would be referred to PEO and/or OAA [Ontario Architects Association]."

However, in an article in the July 31 issue of its *Ontario CodeNews*, the housing ministry appears to confuse the issue again when it says: "The amendment adds a requirement that, where the *Architects Act* or the *Professional Engineers Act* requires that an architect or an engineer design a building, the Chief Building Official can refuse to issue a permit if the building has not been designed by the required professional."

To help ensure the amendment's interpretation is understood to be as described by the housing minister, on August 6 PEO Registrar Gerard McDonald, P.Eng., sent a clarification of the *CodeNews* article to the CBOs in each Ontario municipality via the Ontario Building Officials Association (OBOA) and the Large Municipal Chief Building Officials, as well as to the housing minister and the OAA. In the clarification, McDonald quotes Minister McMeekin's July letter to PEO and cites the statutorily constituted Joint Practice Board as the body to "deal with the division of scope of practice for professional engineering and architecture." The recent amendments to the building code legislation, he continues, "simply allow chief building officials to refuse to issue a permit if the design documents for a building described in section 12(6) of the *Professional Engineers Act* were not prepared by a professional designer. The amendments do not allow chief building officials to rule on whether a project needs to be designed by a PEO licensee, an architect, or both."

PEO Councillor Chris Roney, P.Eng., BDS, FEC, who is scheduled to present PEO's position to the Land of Lakes Chapter of the OBOA on August 26, says PEO must not allow building officials to believe they are authorized to decide what is engineering and what isn't: "We already have our established joint OAA-PEO committee to deal with any gray areas and so we can remind the building officials of its existence and how to refer matters to that committee if they have concerns."

11 RECIPIENTS HONOURED with Ontario Professional Engineers Awards

By Nicole Axworthy



This year marks the 67th anniversary of the Ontario Professional Engineers Awards, a program founded by PEO to recognize engineers for their professional achievements in such categories as entrepreneurship, engineering excellence, management, and research and development, and for their community service.

Since 2005, the awards have been presented jointly by PEO and the Ontario Society of Professional Engineers. This year, 11 awardees will be honoured at a gala on Saturday, November 22 in Toronto. For ticket information, visit www.peo.on.ca.

ENGINEERING MEDAL—ENGINEERING EXCELLENCE

Brian L. Garrod, P.Eng., executive vice president, Hatch Mott MacDonald (HMM) Ltd., has led some of the most challenging and innovative tunnelling projects in the world and is widely considered to be the foremost expert in his field. Since joining Hatch in 1974, he has worked on many of Hatch's industrial and tunnel engineering projects, and has devoted the last 34 years of his 43-year engineering career to tunnelling projects and promoting best practices and innovations in the underground industry. Garrod has played a prominent role in many of the world's most complex infrastructure projects. One of his most significant contributions is in developing HMM's in-house estimating system for tunnels, which has been used to provide hundreds of estimates for complex and high-risk projects with an unprecedented level of accuracy.

Sigmund Soudack, P.Eng., president, Sigmund Soudack and Associates Inc., has overseen the structural design of more than 400 high-rise buildings in Ontario since 1968. Among his creative successes is the curvaceous Absolute Towers development in Mississauga, which has won numerous awards. For this project, Soudack developed a new method for installing a thermal break, and also helped develop flying forms, a system for high-rise construction that uses large, truss-mounted assemblies that a crane hoists upward from floor to floor. Soudack's other landmark projects include the New York Towers, ARC Condominiums and Kilgour Estate in Toronto, as well as office buildings, shopping centres, industrial buildings and long-term care residences throughout the province.

Bin Wu, PhD, P.Eng., senior NSERC/Rockwell industrial research chair and professor, electrical and computer engineering, Ryerson University, is a leading electric drive and renewable energy researcher whose work has significantly

benefitted Canadian industry and academe. His research and new product development collaborations with industry have resulted in technical and commercial successes for several Canadian companies. For example, many of his designs and innovations have been implemented over the last 20 years in Rockwell Automation's megawatt medium voltage drive products. In 2001, Wu also established Ryerson's Laboratory for Electric Drive Applications and Research, one of the top research facilities in Canada.

ENGINEERING MEDAL—ENTREPRENEURSHIP

Over his 45-year career, David Hunter Purvis, P.Eng., consultant, WorleyParsons Canada, has developed and commercialized Canadian and other technologies around the world. He has held senior management and executive positions in the process and technology divisions of many significant engineering organizations. A holder of several patents in the area of ethylene and polymer production, Purvis was integral in the licensing of the SCLAIRTECH polyethylene process. It was under Purvis' leadership in the 1980s and '90s that this technology was successfully licensed globally. Purvis has also had a hand in the design, construction and operation of many Ontario projects, including the Bruce Heavy Water plant and the DuPont Canada nylon plants in Kingston.

ENGINEERING MEDAL—MANAGEMENT

Gerald Chaput, P.Eng., assistant deputy minister (ADM), provincial highways management division, Ministry of Transportation Ontario (MTO), has inspired innovation and supported MTO staff in delivering the largest capital construction projects in MTO's history. He is responsible for managing an asset comprising 16,500 kilometres of highways, more than 2800 bridges and various other works with a combined replacement value of \$80 billion. Chaput shares Ontario's expertise with other Canadian and US jurisdictions through his involvement with the Transportation Association of Canada and the American Association of State Highway Transportation Officials. Prior to becoming ADM, Chaput worked in various positions and locations within the province, including as chief engineer, director of the highway standards branch and manager of the traffic office.

Todd Arthur J. Young, P.Eng., vice president, customer services and support, Bombardier Commercial Aircraft, is responsible for the worldwide fleet performance of Bombardier's 2700 commercial aircraft, and oversees more than 640 employees who track and manage every aspect of aircraft performance while delivering on the company's financial objectives. To improve the company's customer service, Young envisioned, designed and implemented a worldwide service expansion strategy that now provides regional support

services to international customers. Recognized as an innovative leader, Young introduced a new work culture at the Toronto site, dubbed "Achieving Manufacturing Excellence," the success of which resulted in its adoption across all Bombardier facilities worldwide.

ENGINEERING MEDAL—RESEARCH AND DEVELOPMENT

Raafat R. Mansour, PhD, P.Eng., professor, electrical and computer engineering, University of Waterloo, is considered Canada's foremost researcher in the field of microwave engineering. Among other accomplishments, Mansour developed a superconductive multiplexer that is 50 per cent smaller in size and mass compared to conventional multiplexer technologies. In making the transition to academe, he established the only cleanroom facility in Canada, at the University of Waterloo, that is dedicated to RF micro-electro-mechanical-systems (MEMS) research, providing critical MEMS fabrication support to researchers across the country.

David Naylor, PhD, P.Eng., professor, department of mechanical and industrial engineering, Ryerson University, has become internationally recognized for his work on the thermal performance of windows for energy-efficient buildings. His research group has made tremendous strides in understanding the effects of shading devices on the thermal performance of windows. As a result, several industrial software packages have incorporated his findings. Naylor was also the lead thermal designer for the development of a proprietary, anti-icing system for gas turbines, now installed in almost 100 power plants across North America. He has written more than 150 papers in refereed journals and conferences and more than 20 industry technical reports, and is also the associate editor of the *International Journal of Transport Phenomena*.

Frank J. Vecchio, PhD, P.Eng., professor, civil engineering, University of Toronto, is an internationally respected researcher and renowned authority on the behaviour of concrete structures. His research has focused primarily on developing theories, models and procedures to analyze and better predict the response of concrete structures to various loading conditions, including earthquakes, blasts, impact and high temperatures. His work led to the development of the Modified Compression Field Theory, upon which shear design is based in Canada, the US and Europe. Vecchio also applied his research to develop a suite of software called VecTor for predicting the response of concrete structures to practically any action, which has been widely adopted by the engineering profession.

ENGINEERING MEDAL—YOUNG ENGINEER

Natalie Enright Jerger, PhD, P.Eng., associate professor, electrical and computer engineering, University of Toronto, has emerged as one of the top computer architecture researchers

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of her generation. Her research contributions have demonstrated an innovative approach to challenging problems in the design of future microprocessor chips with a specific focus on interconnecting multiple cores on a single processor die. This work has attracted funding from various granting agencies and, more importantly, from relevant partners in industry. Jerger has been active in the greater research community. As program chair for the 20th International Symposium on High-Performance Computer Architecture in February 2014, she was the first woman and youngest chair in the history of the program, which is one of the premier venues for publishing computer architecture research.

CITIZENSHIP AWARD

Márta Ecsedi, P.Eng., FEC, retired principal, AURA Management Consultants, has been a leading influence in the

engineering profession's transformation into a more inclusive, diverse and equitable community. When she began a 23-year career with Bell Canada in 1976, Ecsedi became a passionate advocate for the advancement of women in the profession. She developed Bell Canada's P.R.I.D.E. (Professional, Recognition, Incentive, Development, Education) Human Resource program and also led the Bell Advisory Council for the Recognition and Advancement of Women in Technology. A steadfast volunteer with PEO, Ecsedi was founding chair of its Women in Engineering Advisory Committee and later founded the Equity and Diversity Committee. She also chaired the steering committee of the Ontario Network of Women in Engineering that developed the Go ENG Girl outreach program, which provides opportunities for young women to experience what it means to be an engineer.

HUMAN RIGHTS GROUP outlines experience requirement concerns

By Michael Mastromatteo



Canadian experience as a condition of licensing for self-regulating professions continues to draw scrutiny from human rights organizations.

At a July 4 presentation at PEO's Toronto headquarters, members of PEO's Registration Committee gained insight into the Ontario Human Rights Commission's (OHRC) Removing the Canadian Experience Barrier campaign, which since 2013 has called on regulators to rethink this key element of their registration practices.

The presentation was led by Rita Samson, a public education and outreach officer with the OHRC.

In July 2013, the OHRC released its policy on the Canadian experience requirement for self-regulated professions. The policy holds that a strict requirement for Canadian experience is discriminatory on its face and should be used only in limited circumstances.

Samson, who was invited to address the committee by PEO's tribunals department, said Canadian experience requirements appear neutral "on paper" but tend to have "adverse effects" on internationally educated or newly arrived immigrant applicants.

She said there is growing onus on regulators to justify Canadian experience as a valid, bias-free tool in assessing an

applicant's suitability for professional licensing. Samson also said Canadian experience requirements will contravene the human rights code if a regulatory body fails to show they are bona fide in accordance with an established legal test.

The OHRC is monitoring a recent decision by Alberta's human rights body, which ordered the province's engineering regulator to reassess an internationally educated applicant's application. The Alberta commission ruled the Association of Professional Engineers and Geoscientists of Alberta (APEGA) discriminated against the applicant based on his place of origin.

APEGA has appealed the decision, with a ruling on the appeal expected before the end of the year.

A spokesperson for the OHRC said the group's Human Rights Legal Support Centre has received some

complaints on the Canadian experience issue, but none has come to a hearing.

PEO and other Canadian engineering regulators require applicants for the P.Eng. to obtain one year of work experience under a Canadian-licensed supervisor before granting the engineering licence. For many internationally educated applicants and recently arrived immigrants, Canadian experience can be hard to come by.

PEO currently assists internationally educated applicants to acquire relevant experience through its provisional licence, which is issued to an applicant who has satisfied all of PEO's licensing requirements except the minimum 12 months of acceptable engineering experience in a Canadian jurisdiction.

Applicants denied a P.Eng. licence may request that PEO's Registration Committee review the registrar's decision to deny the licence.

Among the 15 committee members attending the presentation were Registration Committee Chair Kathryn Sutherland, P.Eng., Corneliu Chisu, P.Eng., FEC, MP, Scarborough-East, and Bill Kossta, a lieutenant-governor appointee to PEO council.

Gillian Pichler, P.Eng., director of registration for the Association of Professional Engineers and Geoscientists of British Columbia, and Christine Comeau, of Engineers Canada, also attended the presentation by teleconference.

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ENGINEERS FOUNDATION

strives to do more in its 55th year and beyond

By Nicole Axworthy



Ontario Professional Engineers Foundation for Education President Marisa Sterling, P.Eng., and Clive Waugh, executive director, advancement, University of Ontario Institute of Technology (UOIT), show off the UOIT donor wall that now features the foundation's name.

Associates, Lafarge Canada Inc., Morrison Hershfield Limited, Brown & Cohen Communications and Public Affairs, The Personal Insurance Co., Robinson Consultants Inc., Spriet Associates, and Ontario Power Generation Inc. Employees & Pensioners Charity Trust.

In 2012, it surveyed universities and learned the average tuition for engineering students has risen 65 per cent. Enrolment in engineering schools has also grown—with enrolment at the University of Guelph, for example, going up 90 per cent—although the growth varies by school.

Yet despite this increased need, Sterling says the foundation's student awards have increased by only 25 per cent in the last 10 years. "We're not keeping pace with the schools but we want to continue to maintain significance," she says.

In the first few months of the 2013 academic year, the foundation distributed \$104,000 in award monies to 104 student recipients. The foundation grants entrance scholarships, valued at \$1,000, to one male and one female student at each of Ontario's 15 institutions having accredited engineering programs; scholarships valued at \$1,250 are available to students in subsequent years of their undergraduate programs. The foundation also awards a gold medal to the top engineering graduate at each institution and a Leaders for the Future scholarship, worth \$2,000, to one engineering student completing a volunteer placement with Engineers Without Borders, one of FFE's partners.

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THIS YEAR marks the 55th anniversary of the Ontario Professional Engineers Foundation for Education (FFE) and its president, Marisa Sterling, P.Eng., says the engineers foundation is working harder than ever to become top-of-mind within Ontario's engineering community and the charity of choice for Ontario engineers.

An independent, not-for-profit charitable organization managed by a board of volunteers active within PEO and the Ontario Society of Professional Engineers, the foundation has provided scholarships since 1959 to engineering students pursuing a degree at one of Ontario's now-15 institutions having Canadian Engineering Accreditation Board (CCAB)-accredited engineering programs, to encourage them to strive for academic excellence, develop their leadership qualities and pursue careers in the profession. The foundation also administers the Benevolent Fund to assist professional engineers who are experiencing financial hardship.

Sterling says there are significant challenges ahead for the foundation.

Most concerning is the drop in donations—10 per cent in the last three years—at a time when student need is growing. "In the last few years, we've learned that we really need to step up our activity because we're facing a bit of a tipping point," she explains.

The foundation believes the drop in donations is due to its aging donor base, cultivated from the early years of the foundation's inception, and limited corporate donors. To date, the foundation has been supported almost exclusively by PEO member donations, which account for about 95 per cent of its funding, with 3 per cent coming from corporate donors and 2 per cent from PEO chapters. PEO continues to route donations from its members to the foundation through the annual PEO fee renewal form. The foundation also offers an online donation option through its website, engineersfoundation.ca. Donations are tax deductible.

In the last year, the FFE received corporate donations from: Schnieder Electric, Sigmund Soudack & Associates, Carson Dunlop Weldon &

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To recognize the FFE for its work, three universities recently named it as a major donor for its cumulative awards of over \$100,000. Carleton University welcomed the foundation to The Task Eternal Society and presented an engraved glass plaque to President Sterling. Ryerson University added the foundation to the Ryerson Circle on its donor wall in the atrium of George Vari Engineering and Computing Centre. And the University of Ontario Institute of Technology added the foundation to its Challenger Society on its interactive donor wall.

The foundation is now focusing on three goals: building awareness, investing in fundraising development, and building stronger relationships with its partners, donors and students. “We want to better understand how we can continue to support the next generation of engineers. The [FFE] board is very open-minded on how we can do that,” says Sterling. “Do we put ourselves in a financial position to increase the dollar amount of the awards? Or do we try to provide more awards because there are more students in need now? Or do we find additional ways to support them, such as linking them with professional engineers for guidance... So, we’re looking at ways to continue to be relevant.”

P.Engs make presence felt ON NEW PREVENTION COUNCIL

By Michael Mastromatteo



PROFESSIONAL ENGINEERS are making their presence felt on the Ontario labour ministry’s Prevention Council, a body created to advise the ministry on occupational health and safety issues.

Established in December 2012 and reporting to the ministry’s chief prevention officer, George Gritziotis, the council now includes three engineers, Graeme Norval, PhD, P.Eng., Roy Slack, P.Eng., and Dawn Tattle, P.Eng., who constitute nearly one-third of the 11-person council.

Together with representatives from industry, labour unions, safety associations and government, the council also assists development of the provincial occupational health and safety strategy, and analyzes proposed changes to the administration of services under the *Occupational Health and Safety Act*.

Each engineer on the council comes with special expertise in safety and health in an engineering setting.

Norval is a professor of chemical engineering at the University of Toronto, where he leads such programs as fundamentals of process design, process safety management and safe design of chemical process. He is also on the board of directors of the Minerva Canada safety institute. Norval is gratified that professional engineers now have more opportunity to influence safety-directed organizations.

Norval told *Engineering Dimensions* August 1 that with their ethical commitment to safety and protection of the public, engineers are a natural fit for a body such as the Prevention Council, especially with its proactive stance on workplace safety matters.

Likewise, Slack says engineers don’t necessarily bring their industry sector expertise to the council, but instead add best practices experience to higher-level deliberations.

“I find it interesting to have the three engineers on the Prevention Council, because it certainly wasn’t planned,” Slack says. “[The organizers] were focused on people who were committed and have shown a career of commitment to health and safety, so it just makes sense for professional engineers when you look at the oath we take to protect the public to be a part of that council.”

Slack is head of North Bay’s Cementation Canada, an authority on Ontario’s mining industry, and a recipient of an Ontario Professional Engineers Engineering Medal.

Tattle, the newest member of the Prevention Council, is president of Anchor Shoring & Caissons Ltd. She is a board member of the Toronto Construction Association and a past president of the Toronto chapter of the National Association of Women in Construction. She is also an occasional lecturer to engineering students on health and safety in construction.

“The abilities to analyze data and identify trends are engineering skills I believe help lay the groundwork for development of prevention strategies in health and safety,” Tattle says. “I have found my engineering background combined with my construction experience to be important in my work as a member of the [labour ministry’s] Vulnerable Workers Task Group and, more recently, the Prevention Council.”

The Prevention Council head is now involved in a special review of safety in Ontario’s mining industry.

Safety specialist becomes OSPE CEO

By Michael Mastromatteo



Sandro Perruzza, new CEO of the Ontario Society of Professional Engineers

ONTARIO'S ENGINEERING advocacy organization has a new chief executive officer.

The Ontario Society of Professional Engineers (OSPE) announced July 14 that it has hired Sandro Perruzza, former head of client services at Workplace Safety and Prevention Services (WSPS), for the top administrative position.

Perruzza takes over from Mark Dietrich, who headed OSPE from August 2012 until this past spring.

Although not a professional engineer, Perruzza has several years' experience in executive management with Ontario safety-related organizations. Before the WSPS, he worked for 11 years as executive director of corporate development with the Ontario Service Safety Alliance.

He has also been active with the Ontario labour ministry's Preventions Forum, and with Minerva Canada, an association of engineers, educators and industry professionals working to incorporate safety instruction in university engineering education programs.

Perruzza's immediate priorities include building OSPE's membership, raising its profile and delivering greater value to Ontario's engineering community.

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ESSCO SETS AMBITIOUS AGENDA FOR 2015

By Liam Morrow

The new executive of the Engineering Student Societies' Council of Ontario (ESSCO), the PEO-supported association for Ontario's undergraduate engineering students, has a three-part slate of objectives for the coming academic year.

The group's goals this year include strengthening services, creating a long-term plan and finding new and better ways to benefit members.

The 2014-2015 term is expected to be a year of evaluating and changing how ESSCO fits in with its members. The needs of ESSCO schools are changing, and it wants to adapt to those changes.

Since ESSCO is a small organization aimed at helping facilitate communication and collecting useful data from member schools, it relies heavily on volunteers from its member schools, and hopes improving its reputation and services to members will entice more students to get involved on a provincial level.

ESSCO's major service, aside from working with PEO and other organizations, is facilitating conferences to help engineering societies develop. By targeting important groups like the current executive members or first-year students, it seeks to provide useful tools and networking opportunities that will be beneficial to students throughout their university career.

By working with the elected or appointed ESSCO representatives from each school, the group hopes to develop these learning and networking opportunities so that it can play an important part in developing student leaders in the engineering community.



The new ESSCO executive includes (clockwise from top) Ola Suchon (University of Waterloo), RJ Sivanesan (University of Windsor), Greg Burns (Conestoga College), and 2014-2015 ESSCO President Liam Morrow (McMaster University).

FEDS LOOK TO ENGINEERS for economic development planning

By Michael Mastromatteo

PEO RECENTLY hosted a trio of federal government officials seeking engineering insights to fine-tune an economic development plan for southern Ontario.

Gary Goodyear, federal minister of state, Economic Development Agency for Southern Ontario (FedDev Ontario), Willowdale MP Chungsen Leung and Don Valley East MP Joe Daniel visited PEO Registrar Gerard McDonald, P.Eng., and other PEO officials July 10 to give details of the government's economic development and manufacturing fund initiatives for the greater Toronto area and the southern Ontario region.

Both Leung and Daniel have undergraduate degrees in engineering, while Goodyear, a former minister of state for science and technology, is described as a "science person."

Paul Acchione, P.Eng., then acting CEO of the Ontario Society of Professional Engineers, and Barry Steinberg, P.Eng., CEO of Consulting Engineers of Ontario, also attended the briefing.

While Goodyear and his MP colleagues outlined some of the highlights of the federal government's economic stimulus and infrastructure renewal plan, they also asked engineering stakeholders for recommendations to improve the economic development package.

Goodyear suggested that all the "macroeconomic metrics" are now in place for a transformation of the Ontario and Canadian economies.

Through its FedDev Ontario and similar agencies, the federal government is attempting to tailor stimulus spending programs to the particular needs of local communities.

FedDev Ontario was set up in 2009 as part of the government's Economic Action Plan. It's designed to work with regional communities, businesses and other organizations to form partnerships and other arrangements dedicated to long-term economic revival.

Natasha Brenders, director general of FedDev Ontario, later outlined elements of the government's Southern Ontario Prosperity Initiatives (SOPI), and its Advanced Manufacturing Fund (AMF), both of which she said could benefit from input from engineering associations.

The AMF supports large-scale, "transformative" manufacturing activity, while the southern Ontario prosperity initiative promotes entrepreneurs, innovation and "globally oriented" businesses and organizations.

The idea is that these firms create spillover benefits for the entire manufacturing sector and, in turn, promote productivity, regional diversification and commercialization potential.

According to Brenders, the FedDev Ontario agency has invested nearly \$1.2 billion in local businesses, entrepreneurs, postsecondary institutions and not-for-profit organizations.



Minister of State Gary Goodyear speaks with PEO officials July 10. Also pictured are Natasha Brenders and MP Joe Daniels.

Engineers attending the session questioned Goodyear about possible disconnects between the federal and provincial governments that could weaken the effectiveness of economic development investments. In particular, they cited rising electricity prices as a result of green energy gambits and disparities in transit policy as impediments to the optimal use of federal stimulus spending.



Conference looks into HOW ENGINEERING STUDENTS LEARN

By Michael Mastromatteo

Engineering educators continue to examine new teaching concepts for Canada's undergraduate engineering students.

As evidenced by the fifth annual Canadian Engineering Education Association (CEEA) conference, June 8 to 11 in Canmore, Alberta, formation is not a static undertaking but should remain open to new approaches to education.

CEEA was founded in 2010 with the goals of developing best practices among Canadian engineering educators, liaising with the deans of engineering and the Canadian Engineering Accreditation Board (CEAB) to align objectives, and examining all aspects of engineering education.

The conference featured science broadcaster and author Jay Ingram as opening speaker, while Twyla Hutchinson, P.Eng., a water resource engineer with the City of Calgary, offered the keynote address. She outlined the city's response to the devastating 2013 floods

of the Bow and Elbow river watersheds, which have been described as among the worst natural disasters in Canadian history.

But it was the preparation of the next generation of engineers that dominated discussion at the CEEA conference. Workshop topics included curriculum quality assurance, accreditation of new programs, new approaches to the teaching of engineering design, and outreach to primary and secondary school students.

David Strong, P.Eng., professor and NSERC chair in design engineering at Queen's University, is past president of CEEA and was chief organizer for the 2014 conference. He was among a small group of engineering educators who saw a need for an education-based organiza-

tion and set about drumming up interest among colleagues.

"From the very beginning, our goal was to ensure CEEA represented all realms of Canadian engineering education," Strong says, "and we worked very hard to be inclusive of those not only within the engineering faculties, but also others such as librarians, educational specialists, and members of the arts and science faculties who contribute to the teaching of engineering students."

CEEA's new president is Susan McCahan, PhD, P.Eng., a professor of mechanical engineering and vice dean (undergraduate) at the University of Toronto. She says educators are adjusting to new needs and expectations on the part of graduates.

"While we are still educating students into a profession—a profession which itself is changing rapidly—we are also educating people who will take many different career pathways," McCahan says. "Having people educated in engineering [who] move into medicine, business, law, government and so on is very exciting. Engineers know how to apply science to solve problems and this is desperately needed in many professions, and the leadership in our society. But educating people who will pursue all of these different career paths is more complex than teaching people who will only go into traditional engineering industries."

McCahan says that as engineering students now come from more diverse backgrounds and, upon graduation, will have more choice beyond the traditional engineering career, it's important for engineering educators to consider new approaches to teaching and learning.

In addition to its annual conference, CEEA publishes and archives education-related papers on its website (ceea.ca). Topics range from design learning, retention of students, connecting the classroom with industry practice, and research into new aspects of engineering education.

The next CEEA conference is scheduled for May 31 to June 3, 2015, at McMaster University in Hamilton.



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CIVIL COURSES	LOCATION	DATE 2014
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2) Shallow and Deep Foundations Design (New)	Toronto	Nov 10-12
3) Soil Dynamics and Earthquake Engineering (New)	Toronto	Dec 1-2
4) Durability of Concrete Infrastructure	Toronto	Oct 30-31
5) Flexible Pavement Design & Rehabilitation	Toronto	Nov 13-14
6) Design of Precast and Prestressed Concrete Structures	Toronto	Dec 8-10
7) Design of Machine Foundations (New)	Toronto	Dec 1-2
CONSTRUCTION COURSES	LOCATION	DATE 2014
1) Construction Planning and Scheduling	Toronto	Oct 27-28
2) Risk Analysis and Management in the Construction Engineering Industry	Toronto	Oct 15-17
3) Concrete Formwork Design (New)	Toronto	Nov 13-14
4) Construction Projects Contracts, Bidding Logistics Administration Logistics & Claims Avoidance (New)	Toronto	Nov 17-19
5) Business Management Sustainability Challenges and Possibilities (New)	Toronto	Dec 8-9

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IIT GRADUATES LOOK TO PROFESSION'S international focus

By Michael Mastromatteo

Partnering with university alumni associations could pay dividends for PEO and other regulators as the engineering profession looks to become more globally focused.

At the PanIIT 2014 International Conference June 6 to 8 in Toronto, sponsored by the Indian Institutes of Technology (IIT) Alumni, more than 1000 engineering graduates and their guests celebrated the engineering profession and its potential for innovation and for securing a more stable future.

The conference theme was “Innovate, integrate and transform—Let’s co-create our future.”

The IIT comprises 16 postsecondary institutions throughout India, whose engineering graduates have risen to prominent positions in Canada, the US, Australia, Europe and Asia.

Members of the IIT, which rivals the Massachusetts Institute of Technology in reputation for quality of education, are schools of national importance in India and known for their high-level admission standards. Only 2 per cent of applicants are admitted to IIT schools each year.

The IIT has active alumni organizations in the US and Canada, which look to support the profession and the community through philanthropy and assistance to recent graduates.

Several PEO members belong to IIT Alumni Canada.

This was the second time the PanIIT conference has been held in Toronto. The first time was in 2006. Conferences are most often held in India or the US, where the majority of IIT alumni reside.

Among the conference speakers were David Johnston, governor general of Canada, Jason Kenney, federal minister of employment and social development and minister for multiculturalism, Nirmal Kumar Verna, high commissioner of India to Canada, and Prem Watsa, CEO of Fairfax Financial Holdings.

Watsa, also chancellor of the University of Waterloo, is sometimes referred to as the Warren Buffett of Canada. He graduated in chemical engineering from the IIT’s Madras campus.

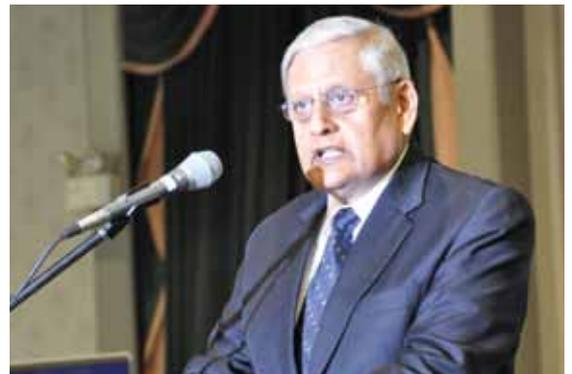
PEO President David Adams, P.Eng., FEC, spoke at a June 8 panel discussing the essential qualities of the engineer of the future (see President’s Message, p. 3).

In his June 7 remarks, Governor General Johnston emphasized how educators and innovators from Canada, India and the US can work together to achieve excellence and equality of opportunity.

“You can influence your institution to build capacity at home. Firstly, by replicating the excellence of the original IITs and building other Indian institutions of excellence; secondly, by graduating legions



Governor General David Johnston addressed delegates June 7 at the PanIIT conference in Toronto.



High Commissioner of India to Canada Nirmal Kumar Verna urged expatriate Indian engineers to support engineering education and research in their native country.

of teachers, researchers and academic leaders who will staff these institutions; and, thirdly, by engaging them in collaborative teaching, research and technology transfer interactions so that all gain,” Johnston said. He later urged engineering graduates to look for partnerships between IITs and Canadian and US schools. “Capacity building, research collaboration, and technology transfer ecosystems are examples of how we can help each other,” he said.

The conference was divided into segments on academic partnerships, energy and the environment,

philanthropy and entrepreneurship, the formation of future engineers, and new trends in engineering regulation.

PEO President Adams, in his observations about the future qualities of engineering practitioners, concentrated on integrating new technologies into Canada's economy (see also President's Message, *Engineering Dimensions*, July/August 2014, p. 3).

A secondary theme to emerge throughout the conference was the potential for engineering graduates to support the education and formation of new practitioners by philanthropic works. On that note, Mohnish Pabrai, of the Irving, California-based Pabrai Investment Funds, argued that successful engineers and entrepreneurs consider giving a portion of their corporate earnings back into the formation of the next generation of innovative practitioners.

Pabrai is founder of the Dakshana Foundation, which allows underprivileged students in India to enroll at IIT schools. Over the last seven years, the foundation has assisted more than 500 Dakshana scholars. Graduates of the Dakshana program are encouraged to support adolescents in situations similar to those they experienced in earlier years.

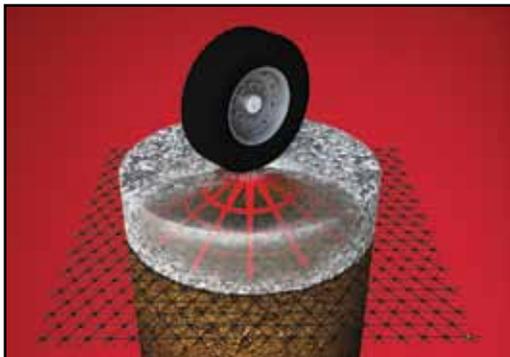
Other speakers to address the PanIIT delegates included Sandra Papatello, chair of the board of directors, Hydro One, and a former Ontario cabinet minister, who discussed changing expectations in ratepayers' energy use, Pearl Sullivan,



Sandra Papatello, chair of the board of directors of Hydro One, was part of a panel discussion on energy and the environment. Other panelists included Pradipta Banerji, PhD, director of the Indian Institute of Technology in Roorkee (left), and David Stewart-Patterson, vice president, public policy, Conference Board of Canada.

PhD, P.Eng., dean of engineering, University of Waterloo, and Ontario Fairness Commissioner Jean Augustine.

Augustine emphasized access to professions, and urged engineers and IIT graduates to support academic research into how the idea of access has changed over time. She also called on engineers to contribute to developing an evidence-based understanding of the promise and challenges of diversity for all self-regulated professions.



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NEW PROGRAM PROVIDES BOOST for engineering education research

By Michael Mastromatteo

THIS SEPTEMBER, University of Toronto (U of T) engineering, in collaboration with the Ontario Institute for Studies in Education (OISE), is launching what the university describes as Canada's first master's and PhD-level program in engineering education.

Officially called the Collaborative Program in Engineering Education (EngEd), the initiative gives students and faculty the opportunity to explore learning concepts at the meeting point of engineering and education, from an engineer's perspective. Research will focus on many of the distinct aspects of training engineers, such as the inherent emphasis on design, quantification, application, systems, constraints and problem solving.

Greg Evans, PhD, P.Eng., a professor of chemical engineering at U of T, chaired the task force that proposed the initiative.

"The EngEd will extend and support our ongoing effort to innovate the instruction of engineering," Evans told *Engineering Dimensions*. "It will foster a vibrant research community that will enrich the education of our graduate students. Structuring the program as a partnership with colleagues in OISE will both strengthen this learning experience, and promote new research collaborations and directions."

Approved by U of T's engineering faculty council in December 2013, and by the university's committee on academic policy and programs in February, the master's and PhD in EngEd will be offered through the department of mechanical and industrial engineering, the department of chemical engineering and applied chemistry, and the department of civil engineering.

Students will complete a graduate degree from a traditional field of education or engineering, enriched through course work and a thesis relating to engineering education. Research is supervised by graduate faculty members in the home departments.

Evans says the initiative involves more than a study of how engineering students learn.

"The EngEd will draw students interested in exploring learning at the nexus of education and engineering," he says. "Topics addressed will span the knowledge base, learning processes, people in engineering programs, surrounding socio-cultural context, and the outcomes that result. Another key element is that the EngEd will help promote research on engineering education, generating knowledge that can help guide how we teach in the classroom or what we teach in terms of course or curriculum design."

Two new graduate courses have been created to support U of T's EngEd. Instructional design in engineering education will be taught by Susan McCahan, PhD, P.Eng., professor of mechanical engineering and

vice dean (undergraduate), while Evans will teach engineering education research seminars.

Although this will be the first cross-disciplinary effort, U of T is not the only Ontario university doing research into engineering education.

David Strong, P.Eng., a professor and NSERC chair in design engineering at Queen's University, says the Kingston-based institution has also long been involved in engineering education research.

As far back as the early 1990s, Queen's research work in engineering education led to its integrated learning approach and to the foundation in 2004 of Beamish-Munro Hall's Integrated Learning Centre, an instrumented working lab for engineering students.

"It was determined that this new approach to engineering education required new and very different facilities from traditional lecture halls and undergraduate labs," Strong says, adding that the centre has since been used as a model for many new facilities.

The growing field of engineering education research comes at a time the profession is seeking to develop more diverse, team-oriented, Renaissance-type practitioners.

Susan McCahan of U of T, who recently became president of the Canadian Engineering Education Association (see "Conference looks into how engineering students learn," p. 19), says there is a continual onus on educators to evaluate engineering formation and to remain open to new approaches. "This kind of research helps us better understand our students—how they learn, how they develop a professional identity, what motivates them, how they make choices, how they problem solve, and so on," she says. "All of these insights assist our understanding of students so we can better support their learning and development."