BC regulator prepares new experience bylaw

By Michael Mastromatteo

British Columbia engineers have overwhelmingly supported a new registration bylaw which, if approved by the province's Lieutenant Governor in Council, will allow the engineering regulator to resume granting new licences and registrations by February 2008.

In a December 20 membership vote, engineers with the Association of Professional Engineers and Geoscientists of BC (APEGBC) voted nearly 96 per cent in favour of a new bylaw.

The vote came in response to an October 10 court decision that forced APEGBC to suspend new licence and registration activity pending a bylaw change.

APEGBC chose to suspend all registrations following Justice R.T. Johnson's decision that its experience requirements for licensure are not adequately defined by the BC engineering act.

The ruling came in response to an application by an international engineering graduate who had been refused registration with APEGBC on Canadian experience grounds.

Officials with APEGBC met with Judge Johnson November 6 to request that he dispense with the invalidation order until February, by which time a new bylaw clearly outlining experience requirements would take effect if approved by members. Judge Johnson had not responded to the APEGBC request as of December 6.

In the meantime, APEGBC sent out wording of the proposed new bylaw to its membership for approval, as required.

According to Gillian Pichler, P.Eng., director of registration and licensing for the BC regulator, APEGBC council has approved granting broad-scope limited licences to applicants who have qualified for registration, to allow them to practise in their discipline. It's expected the limited licences will be converted into official registrations once a new experience requirements bylaw is in place.

"It should be noted that we haven't changed our criteria for registration with one exception–we have raised the academic threshold to make an application for registered membership to four years of post-secondary education leading to a degree," Pichler said. "Previously, it was two years of relevant post-secondary education with a requirement that the applicant be employed in engineering or geoscience at a subprofessional level."

"It should be noted that we haven't changed our criteria for registration with one exception–we have raised the academic threshold to make an application for registered membership to four years of post-secondary education leading to a degree."

Gillian Pichler, P.Eng., director of registration and licensing, APEGBC

In a message to BC engineer members accompanying the wording of the proposed new bylaw, APEGBC said the bylaw "is based on the Association's existing registration policies and sets out the general nature of the experience required, both in quantity and quality, and the necessary supporting evidence. The bylaw also sets out in greater detail than before the examination requirements, which the Act also requires to be in the bylaws. The only change in the requirements set out in the new bylaw that is not in previous registration policies is that all applicants for registered membership must now possess a four-year degree. This reflects a new policy recently approved by Council as recommended by the Registration Committee."

Canada-Australia agreement to benefit professional engineers

By Nicole Axworthy

Engineers Canada has signed an agreement with Engineers Australia to enable Canada's P.Engs to be seen in Australia as equivalent to Australia's chartered designation, the CPEng., and CPEngs to be recognized in Canadian jurisdictions.

The aim of the agreement is to streamline the qualification and licensing procedures to work on projects in both countries, so that engineers can take advantage of a wider range of work opportunities without being constrained by national boundaries.

Marie Lemay, P.Eng., ing., Engineers Canada CEO when the agreement was negotiated, believes it will advance mobility opportunities for Canadian and Australian engineers, assist in overcoming skills shortages, and facilitate the increased sharing of knowledge and ideas between the countries. The partnership is the first of its kind for both national engineering associations and may stand as a benchmark for similar arrangements with other countries.

The Canada-Australia agreement was developed with funding from Canada's Export Market Development Program through the Department of Foreign Affairs and International Trade. It becomes effective once ratified by each of Engineers Canada's constituent members, Canada's 12 provincial and territorial engineering licensing bodies.

Sixtieth OPEA celebrates best of the profession

By Jennifer Coombes

Nine shining examples of the engineering profession were feted November 10 at the 60th annual Ontario Professional Engineers Awards, held for the second year at The Carlu in Toronto. Hosted by the Ontario Society of Professional Engineers and PEO, the awards showcase and honour the often unsung accomplishments of engineers.

Special guest David Zimmer, LLB, MPP Willowdale and parliamentary assistant to the attorney general, echoed that sentiment. He said engineers were barely on the road map a few years ago when he arrived at the attorney general's office and were often taken for granted. Since then, he said, engineers have come a long way to becoming trusted advisors to government in a short period of time, and he looks forward to working with the profession over the next four years.

Congratulations, once again, to the 2007 honourees:

Gold Medal

Anna (Anne) Maria Sado, P.Eng., MBA, president, George Brown College

Engineering Medal–Engineering Excellence

George Liebermann, PhD, P.Eng., FCAE, senior engineering fellow, Xerox Research Centre of Canada

Engineering Medal–Entrepreneurship

Howard D. Goodfellow, PhD, P.Eng., president, Tenova Goodfellow

Engineering Medal–Management

Jan Carr, PhD, P.Eng., chief executive officer, Ontario Power Authority

Lennox John Leggat, PhD, P.Eng., FCAE, associate consultant, CFN Consultants

Engineering Medal–Research and Development

Peter R. Frise, PhD, P.Eng., FCAE, scientific director and chief executive officer, AUTO21, Network of Centres of Excellence; executive director of automotive research and studies, University of Windsor

Citizenship Award

Kwok-Wai (Michael) Chan, P.Eng., manager, chapters, Professional Engineers Ontario (retired)

Harvey V. Pellegrini, P.Eng., FASM, manager, business development and consultant, Centre for Materials and Manufacturing, Ontario Centres of Excellence (retired)

Wayne Douglas Wood, P.Eng., senior engineer, Urban & Environmental Management Inc.

Many thanks to the 2007 awards gala corporate partners and table hosts.

Atomic Energy of Canada Ltd.
AUTO21
Bell Canada
Carleton University
George Brown College
Jordan Engineering Inc.
Manulife Financial
Meloche Monnex
Ontario Power Authority
The Personal
Sinclair-Cockburn Financial Group
University of Toronto
University of Waterloo
University of Windsor
XL Insurance

Recipients of the 2007 Ontario Professional Engineers Awards are, left to right: Howard D. Goodfellow, PhD, P.Eng.; George Liebermann, PhD, P.Eng., FCAE; Kwok-Wai (Michael) Chan, P.Eng.; Harvey V. Pellegrini, P.Eng., FASM; Anna (Anne) Maria Sado, P.Eng., MBA; Peter R. Frise, PhD, P.Eng., FCAE; Jan Carr, PhD, P.Eng.; Lennox John Leggat, PhD, P.Eng., FCAE; and Wayne Douglas Wood, P.Eng.

Lemay steps down as CEO of Engineers Canada

By Michael Mastromatteo

The outgoing head of Engineers Canada believes the engineering profession continues to raise its profile as a source of sound technical and practical advice in the development of more effective public policy.

Marie Lemay, P.Eng., ing., CEO of Engineers Canada since 2000, left the organization in early January to take on the role of chief executive officer of the National Capital Commission (NCC).

The NCC is a crown corporation responsible for federally owned land and property in the Ottawa-Hull region.

Lemay says she has noted significant progress by the engineering profession in working with government and other stakeholders to address issues of concern to both practitioners and policy makers during her eight years at Engineers Canada.

Lemay said she believes a key to ongoing success for organizations like Engineers Canada is to focus on wider issues and to remain mindful of the concerns of all constituent members.

"I think we've positioned the engineering profession as a credible and important player in the eyes of the federal government," Lemay said in an interview with *Engineering Dimensions*. "And in addition to building trust from all our constituent members, this positioning of Engineers Canada and the profession is one of the things that I'm most proud of in my time as CEO."

Lemay suggested the increased visibility of engineering could not have come about without the active cooperation of Engineers Canada's constituent members–the 12 provincial and territorial engineering regulatory bodies.

In addition to the visibility factor, Lemay said highlights of the past eight years include the successful From Consideration to Integration (FC2I) project, a multi-party effort to integrate international engineering graduates into the Canadian labour force.

As well, Lemay cited Engineers Canada's involvement in the National Roundtable on Sustainable Infrastructure as a key achievement during her time there. She said Engineers Canada's involvement in creating databases of all engineering practitioners licensed in Canada should prove a boon for mobility agreements between provinces and territories.

She noted Engineers Canada's new role as chair of the World Federation of Engineering Organisations (WFEO) Committee on Engineering and the Environment (see p. 21) as evidence of the organization's commitment to extend the influence of the profession for the greater public good. The WFEO engineering and environment committee helps develop activities and education aimed at a better understanding of sustainable development.

Lemay said she believes a key to ongoing success for organizations like Engineers Canada is to focus on wider issues and to remain mindful of the concerns of all constituent members.

"The one thing I think we've done in the past and we hope not to do in the future is do too much internal looking or navel gazing," Lemay said. "Yes, there can be internal issues, but you can spend so much time and so much energy trying to address things that in the big picture are not really important. There are so many important things to do out there, and this profession is so badly needed in many areas for the good of this country, that the last thing we've got time to do is to focus internally."

Lemay said, above all, Engineers Canada must maintain a healthy relationship with its provincial/territorial constituent members. "It doesn't matter how strong we are on the [Parliament] Hill and how good an idea you've got. Engineers Canada can't do it alone. It's not about 30 people sitting here in Ottawa. It's about the profession. And I've seen it really loud and clear with the immigration issue and even with the roundtable on sustainability."

Engineers Canada has begun the search for a new CEO, who is expected to be announced and appointment approved at the February 2008 board meeting.

Best practices shared at chapter education conference

By Jennifer Coombes

The Westin Bristol Place Hotel in Toronto was the place to be on November 2 and 3 for anyone involved in promoting awareness of the engineering profession to the public and to schools. Over the two-day Presenting Our Profession conference, best practices were shared for bringing the engineering message to young people and the public.

Following opening remarks on Friday evening by Geoff Clarkson, P.Eng., chair of the Education Committee; George Comrie, P.Eng., a past PEO President; and Lindsay Banks, P.Eng., chair of the Chapter Liaison Subcommittee, Jeff Crelinsten of the Impact Group gave an overview of the Engineer-in-Residence (EIR) program. More than just a guest lecture once or twice per year, the EIR program matches volunteer engineers with elementary or high school teachers to bring ongoing real-world experience to the classroom. The relationship built between P.Engs and the class over the long term is intended to motivate students to pursue education and careers in science, technology and mathematics, and perhaps one day contribute to the Ontario economy through research and innovation.

Says Crelinsten, "On the human resources and skills development front, all government policy makers, across the board and around the world, know that the future is highly qualified people for a knowledge economy." He added, "From the beginning, the goal [of EIR] wasn't only to replicate the species [create engineers] although that's part of it. We want to encourage more people to study these subjects in higher education. Many will become engineers, some may become venture capitalists, some may become teachers, and we need all of these."

Two long-time teacher/engineer pairs in the EIR program, Gordon Griffith, P.Eng., of Engineers Canada, and Susan Dubois, a teacher at First Avenue Public School in Ottawa, and Phil Livingston, P.Eng., of Bombardier Aerospace, and Roman Chamale, a teacher at Forest Hill Jr. and Sr. Public School, described their experiences in the program. Griffith feels that engineers should be partners in education and have a lot to teach kids who, he says, have no idea what engineering is all about. Feeling likewise is Livingston, who uses Lego Mindstorms kits at Forest Hill School to teach students design, programming, presentation skills and conflict resolution. He says his employer sees EIR as a way of giving back to the community.

Saturday morning's activities kicked off with a presentation by Ministry of Education representative Steve Tangney, who explained the ministry's curriculum review process, a rigorous multiple-year process to review the content of the kindergarten to Grade 12 curriculum to ensure it remains current and relevant. Tangney also provided a snapshot of technical education in Ontario, presenting the structure of grades 11 and 12 streams that lead to higher education. One new secondary school option is the Specialist High Skills Major, a specialized career-focused program that allows students to acquire knowledge and skills in specific economic sectors, such as construction, transportation, environment, and primary industries like agriculture, mining, forestry and landscaping.

Following Tangney, Vernon Kee, an engineering graduate turned teacher at Danforth Collegiate and Technical Institute in Toronto, explained why he personally decided to become a teacher and why engineers make good teachers, in general. Among his observations on the latter, he cites engineers' understanding of technology and the value of it, and strong math skills in helping to translate science into the real world for kids. Despite those who questioned the sanity of his decision, Kee said he made the switch to teaching to change children's lives and to gain more meaning from his job, among other reasons.

Quirks & Quarks radio personality Bob McDonald, keynote speaker at the Presenting our Profession conference, spoke about some well-known and little-known Canadian and international research he has seen first-hand.

Just before the lunch break on Saturday, attendees were treated to Bob McDonald of CBC Radio's *Quirks & Quarks* fame who, as keynote speaker, shared his infectious enthusiasm for all things scientific. His presentation, called Canadian Science as I've Seen It, was aptly named because his travels as a radio and television personality have allowed him rare access to the leading edge of science and technology research and also allowed him to rub shoulders with such heroes of science as Apollo 11 astronaut Buzz Aldrin. As he says, it's given him "the privilege to write himself into adventures." To demonstrate the range of his experiences, McDonald explained what it's like to ride in G-Force One

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(a.k.a. the vomit comet), the airplane that allows passengers to experience zero gravity, and then to travel 6800 feet underground to the Sudbury Neutrino Observatory, a scientific facility based in INCO's Creighton Mine that measures the number of solar neutrinos reaching the Earth.

According to McDonald, Canada is quietly doing elegant scientific work–fundamental science, he terms it. In fact, McDonald noted that Canada is second in the world for the number of scientific papers cited in other research.

In the afternoon, chapters shared their strategies for educational outreach. Raju Chander, P.Eng., and Denis Carlos, P.Eng., of the Scarborough Chapter, discussed Mathletics, a mathematics competition geared to elementary school students that promotes awareness of engineering to both children and their parents. While currently a regional event, the Scarborough Chapter would like to scale it up to a provincial level with participation from all PEO chapters.

In their program, the Halton Engineering Challenge, students work with engineers to solve real-world problems like designing and constructing robotic arms that can transport miniaturized automotive coils.

Hamilton Chapter's Mary Loree and Bob Loree, P.Eng., explained that, in a twist from taking engineers to students, they take students to engineers. In their program, the Halton Engineering Challenge, students work with engineers to solve real-world problems like designing and constructing robotic arms that can transport miniaturized automotive coils.

John Ireland, P.Eng., of the Thousand Islands Chapter, and Lance Goodick, P.Eng., of the Algonquin Chapter, demonstrated the respective bridge busters they use in their chapters' popsicle stick bridge-building competitions.

Subhi Alsayed, P.Eng., of the Etobicoke Chapter, presented a new event scheduled to debut on March 1 during National Engineering Week 2008. Called Engineering Idol, the event will pit teams of high school students against each other to come up with a solution to a renewable energy-themed engineering problem. The event is intended to demonstrate that the engineering profession is more than science and calculations, and that solutions to complex problems require teamwork.

Lolita Chakravarti, P.Eng., spoke about York Chapter's Engineer in the Classroom program for elementary schools. Unlike EIR, which involves engineers teaming up with teachers for a long-term relationship, this program offers individual classroom visits that provide support for teachers on a specific topic.

It was appropriate that Holly Anderson, P.Eng., finish up the presentations with an overview of National Engineering Week, which in 2008 will run from February 23 to March 2. For 16 years, National Engineering Week has been raising public awareness of the importance of engineering and technology to encourage students to consider careers in these professions.

Project ideas flow at Chapter Leaders Conference

By Nicole Axworthy

The 2007 Chapter Leaders Conference, held November 9 and 10 at Sutton Place Hotel in Toronto, was a busy two days for attendees, who were given a chance to learn more about chapter growth and to share ideas on how they can promote chapter participation and enhance their local presence through community initiatives and activities.

The theme was Planting the Seed for a Bountiful Harvest. This intriguing concept involved thinking of chapters as a garden, and encouraged everyone to envision the garden's soil as the basis of growth for chapter membership, the nutrients as ongoing chapter activities, and the weeding, pruning and pollination as going beyond the confines of chapters and involving the outside community.

Following opening remarks by Eastern Region Councillor Cliff Knox, P.Eng., chair of the conference organizing committee, and President Walter Bilanski, PhD, P.Eng., the conference began with a chapter information forum, the pilot of a framework for information exchange to help keep chapter leaders up to date on what is happening at PEO and to answer their questions. Knox started off with a presentation about recent proposals to revamp PEO governance, citing the results of a recent membership survey showing licensees see a need to improve the current governance structure, and asked for comments from the floor. Kim Allen, P.Eng., PEO CEO/Registrar, followed with a primer on the budget process and presented a summary of PEO's 2008 draft budget. The topics of chapter business plans and reporting processes were covered by Eastern Region Councillor Nick Colucci, P.Eng., who asked chapter leaders such questions as: Are you satisfied with how the chapter budget money is allotted? Are you satisfied with current budget guidelines? Should allotments be based on or limited by chapter bank balances? Following this presentation, Knox reminded the chapter leaders that nominations were still open for PEO's 2008 Council elections and for the 2008 Ontario Professional Engineers Awards.

After a morning break, the forum continued with PEO Chapter Manager Matthew Ng, P.Eng., discussing the concept of a PEO volunteer fair to draw more people to chapters and committees and enrich PEO's volunteer pool. Proactive enforcement of the licensing and title pro-

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PricewaterhouseCoopers LLP's David Jacobson, PhD, speaks during Friday's lunchtime break at the November Chapter Leaders Conference.

Engineers Canada tackles climate change as chair of WFEO environment committee

By Jennifer Coombes

On November 14, Engineers Canada became chair of the Committee of Engineering and the Environment, one of six standing committees of the World Federation of Engineering Organisations (WFEO), a non-governmental international organization committed to advancing the engineering profession. WFEO brings together national engineering organizations from over 90 nations and represents 15 million engineers worldwide.

In its four-year role, Engineers Canada will be furthering the goal of the Committee of Engineering and the Environment, which is to develop a worldwide understanding and commitment to sustainable development. Specifically, working with international teams, Engineers Canada will identify the causes of climate change and look at adaptation measures to ensure the proper operation of vital infrastructure. It will also address air pollution and sustainable water and wastewater infrastructure in the developing world.

According to Engineers Canada President Tony Dawe, P.Eng., "Climate change is a global issue, and chairing the committee puts Engineers Canada in a strong position to provide its constituent members with information on how environmental issues are being addressed in countries around the world. This will help our members in their ongoing discussions with provincial and territorial legislators."

Attendees enjoyed the entertaining "Are You Smarter than an Engineering Student?" game show as part of the 2007 Chapter Leaders Conference.

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visions of the *Professional Engineers Act*, and how chapters can help, was presented by PEO Enforcement Representative Steven Haddock.

At lunch, keynote speaker David H. Jacobson, PhD, director of technology advisory services at Pricewaterhouse-Coopers LLP, highlighted some emerging technologies and their implications and prospects in the marketplace.

During the afternoon and the following day, chapters made activity presentations, in which they summarized in two minutes what they are doing to fill at least one of the essential purposes of PEO's chapters–which include promoting public awareness of the engineering profession, serving as an information resource to P.Engs and the public, and promoting participation of licence holders in chapter activities and PEO committees.

Ideas presented ranged from member-focused activities, such as lunchtime talks (Algonquin Chapter) and pub nights (Kingston); outreach events for local high school students, such as a photo essay contest (North Toronto), provincial Mathletics (Scarborough) and Engineering Idol (Etobicoke) competitions; family-oriented events, such as a fishing derby (Lake of the Woods), a tree-planting day (Peterborough) or a bottle-rocket design contest (Kingsway); and community-based events, such as an extreme virtual reality science fair during National Engineering Week (NEW) (Kapuskasing), local job fairs (Mississauga) and mentoring programs (Grand River).

Other presenters known as "sixth region" affiliates–who are involved with chapters from outside the chapter realm–added their input to the ways in which chapters could grow and improve. Brian Jackson, P.Eng., engineering manager at Bantrel, an engineering, procurement and construction company, spoke about Bantrel's willingness to provide speakers for chapter events, and participate in licensing ceremonies and NEW events. Dave Freeman from Project Management Institute also identified and discussed areas of cooperation with PEO.

Engineer-in-training Bazlur Khan gave an emotional talk about the plight of engineering immigrants and suggested ways PEO could help international engineering graduates' (IEGs) transition into licensing and working in Canada. He emphasized the need for mentors and suggested a special member designation be given to IEGs.

Tom Chessell, PEO's volunteer manager, represented the Advisory Committee on Volunteers, and spoke about PEO's volunteering process and how chapter leaders could get involved in PEO committees, emphasizing that volunteering is the backbone of PEO. Following Chessell was Geoff Clarkson, P.Eng., from PEO's Education Committee, who discussed the committee's role in PEO and the financial support available for chapters' education outreach activities. To apply for the funding, he said, interested chapters must provide the committee a project scope, plan and budget for consideration.

Engineering Students Societies' Council of Ontario (ESSCO) executives and university undergraduate student delegates were also in attendance to inform chapter leaders of engineering student initiatives. ESSCO President Ruth-Anne Vanderwater outlined the council's outreach activity ideas and highlighted how it is incorporating PEO awareness into its student campaigns.

At the conclusion of the conference, a Chapter Ideas Book, detailing each chapter's activity ideas, their essential purpose, scope, and capital, people and time requirements, was distributed to the delegates. Chapters were then asked to finalize their event ideas into projects that could be presented to PEO Regional Congresses in February for funding consideration.

Energy needs spur new debate on engineering and public policy

By Michael Mastromatteo

The link between engineering and public policy is gaining momentum in Ontario, especially as the province strives for new strategies to deal with energy supply, conservation and environmental sustainability.

The latest foray into the engineering-public policy debate took place October 17 at the University of Toronto (U of T) during a panel discussion dedicated to energy policy and the challenge it holds for engineering education and the profession at large.

The forum was sponsored jointly by the U of T faculty of applied science and engineering, and the new School of Public Policy and Governance (SPPG).

The SPPG, which opened in September 2007, offers a master's level degree in public policy studies. The school has 24 students enrolled, including at least one with an engineering degree.

In outlining some of the forum's objectives, Doug Reeve, PhD, P.Eng., chair of U of T's chemical engineering and applied chemistry department, cited the need for today's engineers to understand the interdependence of technology and public policy.

"Engineering professionals are being encouraged to have an increased capacity to communicate the often difficult-to-communicate characteristics of technologies," Reeve said. He also referred to U of T engineering's vision for a public policy initiative, which foresees a profession "that contributes significantly to public policy debate and formation, and that, in all its works, considers the broadest public interest."

The October 17 forum began with a presentation by David Keith, P.Eng., Canada research chair in energy and the environment at the University of Calgary.

Keith's address, called Engineering the Climate, emphasized the long-term challenges in forming an effective response to climate change.

Prior to coming to the University of Calgary, Keith spent time at Carnegie Mellon University's Engineering and Public Policy School in Pittsburgh. He said finding a workable solution to carbon dioxide buildup in the atmosphere is especially urgent given that there are sufficient fossil fuel reserves to power industry, transportation and home heating for at least 200 more years. As the demand for carbon-based energy is expected to grow significantly over the next several decades, the challenge for engineers and others involved in environmental policy making will be, in effect, "to find another atmosphere" for greenhouse gas emissions.

Keith also said Canada lags behind the United States in establishing learned societies and other advisory groups that have meaningful links with government and policy makers.

Following Keith's presentation, Reeve and Mark Stabile, director of the university's SPPG, convened a panel discussion devoted to engineering's contributions to an effective energy policy.

In addition to Keith, panelists included Engineers Canada outgoing Chief Executive Officer Marie Lemay, P.Eng., ing.; Oskar Sigvaldason, P.Eng., of the Hatch Group; and Sean Conway, visiting fellow at Queen's University's School of Policy Studies. Conway was an influential member of former Ontario Premier David Peterson's government, and he served as an MPP in the Ontario Legislature from 1975 until his retirement from politics in 2003.

In an interview with *Engineering Dimensions*, Conway said engineers concerned about policy making should attempt to discuss technical solutions in clear language that appeals to the widest of stakeholders.

"It's really important for people like engineers to make sure that they pay attention to translating what they have to say into concepts and language that are understandable in the town square," Conway said.

> "It's really important for people like engineers to make sure that they pay attention to translating what they have to say into concepts and language that are understandable in the town square."
>
> Sean Conway, visiting fellow, Queen's University's School of Policy Studies

He also said that while electing more engineers to political office would have some impact in the policy making area, it might be more effective to stress communication and public education. "I think where engineers can be really helpful is in informing the current debate about energy and the environment with a better understanding of opportunities and constraints," Conway said. "Engineers should not be afraid to enter the town square in these important public debates [and] to use

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their professional knowledge and training to public advantage by pointing out some of the opportunities in certain areas of public policy, and to indicate to the community that there are certain realities and certain constraints that are going to have to be acknowledged."

Lemay told the panel that, as a profession, engineering has "no choice" but to help shape policy making towards the greater public good. Lemay outlined ongoing efforts by Engineers Canada to build stronger relationships with federal MPs, and said engineers as a profession have an obligation to help direct energy and environmental policy in the right direction.

Heather MacLean, a professor of civil engineering at U of T and a member of the faculty's engineering and public policy task force, said public policy awareness is becoming a norm in engineering education.

"I believe that it is critical that all engineers have an awareness of public policy issues and how they, as engineers, can impact public policy but also how public policy impacts them," she said.

Kaleb Ruch, a 2007 mechanical engineering graduate from U of T, is the only engineering student now enrolled in the public policy program.

Ruch, who attended the October 17 forum, said a key factor in linking engineering and public policy is to apply the skill set developed through engineering to solving social, as opposed to mechanical, problems.

"Undoubtedly, the engineer has a role to play in policy creation and social development like any other profession does," Ruch said. "The expertise and philosophy of the profession as a whole represents a huge resource of practical knowledge that I think is under-represented in social decision making. It is the reason why I've become involved with the engineering-public policy task force at U of T. As a profession, I feel we must be careful in our approach, given that some of our inventions–notably the car and other polluting technologies–while contributing to an increased quality of life for the past century or so, have had serious negative social consequences. Still, I feel engineers have much to contribute to the policy process and would be an asset to it."

Quality of life factor enlivens students' P.Eng. pursuit

By Michael Mastromatteo

Today's engineering undergraduates appear well disposed to learning more about the regulatory aspects of the profession, if the latest PEO student engineering conference is any indication.

Held November 2 to 4 in Toronto, this third annual conference attracted more than 60 engineering undergraduate students from universities across Ontario.

Organized by PEO's prelicensing programs unit, in cooperation with the Engineering Student Societies' Council of Ontario (ESSCO), the conference adopted the theme How Engineers Improve the Quality of Life.

The conference featured speakers from academe, industry, private consulting and PEO. In keeping with the quality of life theme, most of the presentations focused on engineering contributions to such issues as biomedical rehabilitation, care for the environment, sustainable cities and architecture, volunteer work for engineering graduates, and advances in robotics and human factors work.

Manoj Choudhary, P.Eng., PEO student liaison coordinator, told students at the outset that efforts to understand the significance of the engineering profession should include appreciation of licensing and regulation.

It was an issue also emphasized by Grant Allen, PhD, P.Eng., vice dean of undergraduate studies at the University of Toronto, who encouraged students to "add value" to the profession by looking for novel ways to engage society and to bring forth solutions.

Prior to the formal part of the program, former PEO President George Comrie, P.Eng., offered insights into the value of professional licensure for engineers. Comrie described the relationship between the province and PEO in regulating the profession in the public interest. He said that while a rewarding job and career will always be a part of any professional's aspirations, engineering students in particular should consider the value of work that allows the practitioner to use judgment and take responsibility for decisions that impact a wider public interest.

Keynote speaker Tom Chau, PhD, P.Eng., head of pediatric rehabilitation at Bloorview Kids Rehab in Toronto, outlined engineering-inspired applications that allow severely disabled children the opportunity to increase mobility, communication and overall interaction with their families and caregivers. Chau said that while engineering expertise alone can't provide all the solutions and therapies in pediatric rehabilitation work, it's important for practitioners to involve other parties in the delivery of more effective, patient-centred care.

"This [engineering] has a special vocation to make a difference," Chau said, "and I'm especially encouraged to meet young, exploring minds who can propel the profession forward."

Other speakers to address students at the conference included Ted Kesik, P.Eng., Bryan Karney, P.Eng., Chris Kennedy, P.Eng., David Zingg, P.Eng., and Yuri Lawryshyn, PhD, P.Eng., all of the University of Toronto; Deborah Fels, PhD, P.Eng., of Ryerson University; and Andrew Goldenberg, PhD, P.Eng., president of Engineering Services Inc. and professor of mechanical engineering at the University of Toronto.

Helen Wojcinski, P.Eng., recipient of the 2006 Professional Engineers Citizenship Award, outlined opportunities for engineers to take on volunteer work as a way of broadening their overall work and life experience.

Wojcinski, who operates a change management consulting business, was instrumental in the Highway 407 West design-build project for the Ontario Transportation Capital Corporation. Although she is not currently involved in traditional engineering work, Wojcinski maintains her PEO membership and encouraged students to consider doing likewise, even if their future work doesn't require the P.Eng. licence.

Students attending the conference appeared receptive to the view of engineering as a profession that has a stake in quality of life and public protection issues.

Ruth-Anne Vanderwater, president of ESSCO and a fourth-year computer engineering student at the University of Waterloo, said the life enhancement theme seemed to register on most participants. "I hope that students were able to take home the message that no matter what type of engineering you are in, there are ways in which you can improve the quality of life of those around you through your engineering work," she said.

ESSCO vice president Justin Kaufman, a mechanical engineering student at Ryerson, who is now on a professional experience year, said a secondary message coming from the conference involved the value and importance of licensing.

"I have been involved with PEO on some level for the last four years, so I wasn't expecting to learn too much about the engineering licence, but I feel that a lot of students had that as their main goal," Kaufman said. "I think a lot of students now appreciate what a licence means and the value they will receive from it."

For Lesley Chan, a fourth-year biomedical engineering student at the University of Toronto, the conference offered important insights on life after graduation, the social benefits related to engineering, and employers' expectations of recent graduates.

Almost all of the students contacted by *Engineering Dimensions* during the conference said they plan on completing the work experience requirement and obtaining the P.Eng. licence after graduation. Although some said a licence decision would depend on career direction, the majority of students indicated that some advance knowledge of licensing requirements, coupled with a renewed appreciation for engineering's potential to provide a better quality of life, makes the licence a more desirable prize.

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Persistence pays off with York U accreditation

By Michael Mastromatteo

The recent accreditation by the Canadian Engineering Accreditation Board (CEAB) of York University's engineering programs is regarded as a triumph for a university generally regarded as a bastion of liberal arts and humanities.

"A lot of people seem surprised that York even has an engineering school, let alone that it has been accredited," says Richard Hornsey, PhD, P.Eng., associate dean of York's School of Engineering.

Hornsey was key in seeing the painstaking accreditation project through to completion. The accreditation came through in July 2007, following an intensive series of visits and evaluations by CEAB officials. Hornsey headed up a small team of academic and administrative staff at the university in its two-year-plus quest to obtain accreditation from the CEAB.

The accreditation means that engineering degrees granted by the institution meet the academic expectations of PEO and other engineering regulators across Canada. The academic qualifications of licence applicants graduating from non-accredited engineering programs are assessed against the appropriate PEO syllabus to determine whether they meet the academic requirement for licensing.

York's three engineering programs–computer engineering, geomatics and space engineering–have been accredited for three years. The space program was set up in response to Canada's often pioneering work in space, optical and robotics research, and is described as the only engineering program of its kind in Canada.

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Hornsey said York's programs faced special challenges in obtaining accreditation due to their relatively small size and their unique nature. "There was no standard curriculum, for example, in such programs as geomatics and space engineering," he said. "Because we are a new engineering school with some unusual program offerings, we were under a greater burden to prove that the programs deserve full accreditation."

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Training, knowledge sharing key to bridge safety

By Michael Mastromatteo

Stepped-up research into advanced technology that more readily identifies hidden damage to bridges and other public infrastructure should be part of any new programs dedicated to public safety, says a noted authority on bridge design.

Ghani Razaqpur, PhD, P.Eng., chair of the department of civil engineering at McMaster University in Hamilton, and immediate past president of the Canadian Society for Civil Engineering (CSCE), made the comments as a guest of PEO's Ottawa Chapter, which dedicated its November 22 meeting to an overview of the September 2006 collapse of the Concorde overpass in Laval, Quebec.

Studies of bridge collapses have become more pressing since the 2006 failure in Laval and the August 2007 plunge of the I-35W bridge in Minneapolis. Both bridges gave way suddenly, with loss of life and minimal advance indication of serious structural or maintenance deficiencies.

Razaqpur reviewed the Laval bridge collapse in relation to the recent Johnson Commission, which ascribed the failure to a combination of causes, rather than a single overriding issue. The commission recommended higher levels of funding be allocated by the province for infrastructure repair and maintenance.

It was commonly assumed immediately following the disaster that the collapse was the result of the lack of funding for proper maintenance, inspection and repairs.

In his presentation to Ottawa Chapter members, Razaqpur argued that safeguarding bridges and other public infrastructure involves more than additional funding. He said advanced technologies, better training of inspectors, and more rigorous evaluation methods should be included in any program to ensure the safety and reliability of bridges.

"My principal recommendations were that we must certify bridge inspectors," Razaqpur said. "Being an engineer is not sufficient because this is a specialized field. We must also investigate the use of more advanced methods and technologies for detecting damage in bridges. This may require more research to fully develop some of these technologies, but because research may be needed to perfect the technologies, we should not dismiss them. The R&D should be led by a national organization so that all provinces and territories can benefit from its results."

Razaqpur's recommendations support in part those of the Ordre des ingénieurs de Québec (OIQ), which in October called for the development of a "strong, centralized public agency" to oversee the maintenance, repair and overall safety of public infrastructure.

The lack of a centralized agency to oversee safety and maintenance of Ontario's aging bridges was also the focus of a November report by the Residential and Civil Construction Alliance of Ontario, which said conflicting jurisdiction between provincially and municipally owned infrastructure could lead to inadequate inspection and repair efforts.

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"As a new school, we wanted to clearly demonstrate our strengths," Hornsey said. "For example, because of the natural synergies that exist between our programs and the applied sciences, we implemented a novel model in which an engineering program and its related science program are offered by the same department. This model of integration extends to the faculty of science and engineering. Since this approach is fairly unusual, it required careful explanation to the CEAB, so our formal documentation was almost 1000 pages, with supporting materials for the site visit covering 35 feet of shelf space. For a relatively small organization such as ourselves, this was quite a challenge, and occupied the office staff and academic administrators almost full time for a year. We had lots of support from students, staff and faculty across the university to assist us. We were impressed by the thoroughness and professionalism of the CEAB visiting team, which included two members of PEO."

York's engineering school comprises about 180 undergraduate students and 27 faculty members, 25 of whom are licensed by PEO. Hornsey said the school is now focusing on the continued enhancement of its undergraduate programs and research activities for the next two years, before starting the accreditation process all over again.

Engineering as a teaching discipline was only established at York in 2001, with the first class graduating in 2005. CEAB accreditation of its engineering program is welcomed by university President Mamdouh Shoukri, P.Eng. In a message published in the October issue of *YorkU* magazine, Shoukri alluded to the school's tradition of humanities and liberal arts education, but said science, engineering and technology studies are set for expansion.

"York remains historically strong in the social sciences and humanities and is relatively under-represented in science, the life sciences and engineering," Shoukri said. "We need to grow in those areas if we are to become full participants in society and in the academic debate."

Nick Cercone, PhD, dean of York's faculty of science and engineering, suggested the school's niche offerings were an important consideration in gaining accreditation.

"In the heart of engineering country [southern Ontario], York decided to pursue a non-traditional approach rather than duplicate existing programs," Cercone said in a statement. "The unique at-York solution means our space engineering is one of the strongest in the country; geomatics is offered only by a handful of universities in Canada; and computer engineering, which suffered from the dot-com bubble, is poised to grow as the industry recovers."

Now that the programs are accredited, the university is reaching out to PEO and other engineering organizations. The faculty is actively engaged in support of PEO's York Chapter, and is taking on a greater role in mentoring and student support initiatives.

York University engineering students contacted by *Engineering Dimensions* welcome news of the accreditation.

"Graduating from an accredited engineering school permits you to bypass all of the P.Eng. exams, except, of course, the ethics exam," said Michael Liscombe, a graduate of the school's computer engineering program. "At the time of enrolment, I was aware that York's engineering programs were not accredited, but I didn't take this as a setback. I saw it as a chance to get involved."

Space engineering graduate Matthew Cannata suggested that future employers of engineers pay close attention to accreditation matters. "I hoped that York would obtain accreditation status by the time I graduated, " he said, "and I was relieved when I found out that it did, because I could then inform any potential employer who wasn't aware that York had an engineering program that it has a CEAB-recognized one."

For master's degree student Noushin Khosrodad, the nature of York's space engineering program was more important than accreditation concerns. Nonetheless, she believes the program's new status will have career implications. "It has been my goal since the start to eventually obtain my P.Eng., and graduating from an accredited program is an important step in this process," she said.

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