



## Systems “worked as designed,” IEEE forum told

by Dwight Hamilton

The largest electrical blackout ever in North America was the topic of the Institute of Electrical and Electronics Engineers (IEEE) Toronto Chapter's centennial forum, held on October 3. Presentations covered the events leading to the blackout and the challenges of keeping the power grid up and running.

Dan Rochester, P.Eng., of the Independent Electricity Market Operator (IMO), said the blackout affected “a very significant chunk of the continent,” representing about 10 per cent of North American demand.

The first signs of trouble on August 14 could be traced to the central Ohio area in the United States, when at about noon three generators “tripped,” meaning that they separated from the electrical grid and stopped producing electricity. This caused the electric flow pattern to change over the area's transmission system, which was followed by a series of transmission lines disconnecting and generators tripping over the next three hours.

At about 4:10 p.m., power began flowing in a giant loop from Pennsylvania to New York State to Ontario and into Michigan. Four transmission lines then disconnected between Pennsylvania and New York and more lines disconnected and generators tripped in Ohio. Transmission paths then disconnected in northern Ontario and New Jersey, which isolated the northeast portion of the eastern interconnection. New York then split from east to west, leaving most of the New England area and the Canadian Maritimes intact. Ontario then separated from New York twice in a matter of seconds, blacking out most of the province. By about 4:13 p.m., what the experts call a “cascading sequence” was basically complete.

Rochester explained that for its own protection, the complex electrical infrastructure involved shuts down automatically. “There was very little we could do on a human level,” he said. Jim Lee, P.Eng., supervisor in the transmission system development department, Hydro One Networks Inc., also said “all the systems worked as designed.”

Throughout the blackout, however, scattered pockets of power remained, which were key in restoration efforts. Of particular importance was one in western New York, which was maintained by generating stations in Ontario. Rochester said a priority was restoring a class AC4 level of operation to the nuclear generating stations, and establishing working paths toward Toronto and telecommunications centres.

At present, the causes and significance of the massive power failure are not fully known and present a formidable technical challenge, including the analysis of thousands of records

of data, the experts said. However, a 14-page summary of the sequence of events that led to the disaster, compiled by the U.S./Canada Power Outage Task Force, is available at [http://toronto.ieee.ca/chapters/power/nerc\\_blackout](http://toronto.ieee.ca/chapters/power/nerc_blackout).

Rochester also touched on the future of the province's power, based on his experience with the IMO, where he manages the section of its long-term forecasts and assessments department that produces short-term (18-month) and long-term (10-year) generation and transmission reliability outlooks. These outlooks provide electricity market participants signals for investment and operational behaviour.

Of significance, he said, is that in the next decade about 20 per cent of the electrical generating facilities in Ontario will need replacement because of age, with an additional 20 per cent needing replacement in the following decade.

## End of an era



PEO's Advisory Committee on Salaries had its final meeting at the PEO offices on October 28. The committee, responsible for the Survey of Employers that appeared in the September/October issue, will be dissolved as of December 31. The Ontario Society of Professional Engineers has proposed continuing the survey under its auspices. In attendance, standing, are: Anita Direnfeld, PEO staff advisor, Chair Mike Ford, P.Eng., Paul Farkas, John Turner, P.Eng., and Jim Seckington. Seated are: Catherine Karakatsanis, P.Eng., Janet Dalton, survey consultant, Hanan Jibry, P.Eng., and Stephen Jack, P.Eng.

# PEO represented on new group to integrate foreign-trained professionals

by David Smith

PEO Registrar/CEO Kim Allen, P.Eng., has been appointed a member of the new Toronto Region Immigrant Employment Council (TRIEC), designed to improve the integration of immigrants into the Greater Toronto Area economy.

Launched in September, TRIEC comprises representatives from various stakeholders, including assessment service

laboratively as partners and stakeholders that we are going to make a change.”

TRIEC was formed as a result of a recommendation from the June 2002 Toronto City Summit Alliance (TCSA), which comprised leaders of various sectors and communities with a desire to improve the city. Immigration was an issue deemed critical by TCSA. In 2002, the Toronto region received over 111,000 immigrants, 60 per cent of them skilled workers, and almost half of the country's total.

As part of the TRIEC initiative, the City of Toronto announced plans to create Profession to Profession—the Mentoring Immigrants Pilot Project, which will match members of the

Toronto Public Service who are professional engineers, accountants or information technology specialists with immigrants who have similar international training and are seeking employment.

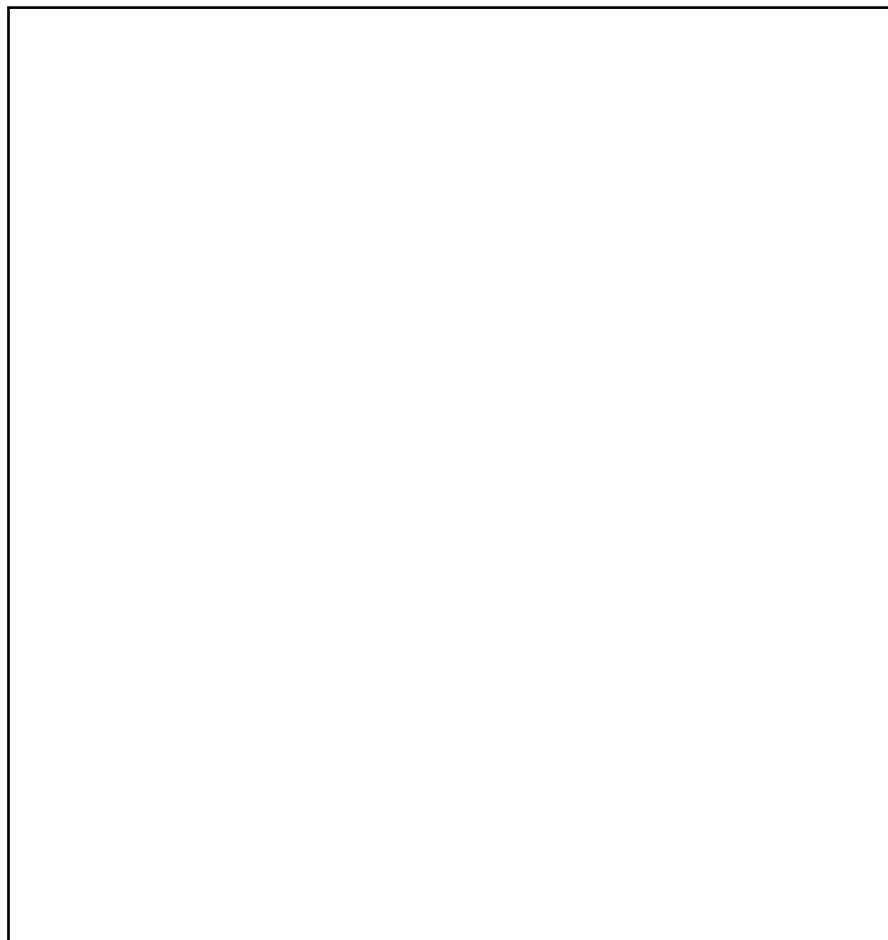
“Immigrants are the talent pool for building a skilled and diverse work force,” said David Miller, then Toronto city councillor and chair, City of Toronto Working Group on Immigration and Refugee Issues. “We want to make Toronto the beacon for immigrants to Canada.”

A consortium of community agencies and colleges, including Access, Costi, JobStart, JVS, Skills for Change, and Humber and Seneca colleges, will refer individuals interested in being mentored. Mentors will volunteer four to six hours

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providers, community organizations, employers, foundations, labour, occupational regulatory bodies, post-secondary institutions, and all three levels of government.

“We have brought together an impressive array of local leaders who are committed to finding solutions,” said Dominic D’Alessandro, TRIEC chair, and president and CEO of Manulife Financial, “and it will be by working col-



a month over a six-month period. Mentoring will be available through face-to-face meetings at a city work location or on-line through a secure site. The pilot project is anticipated to become fully functional in November.

Allen's involvement with TRIEC continues PEO's efforts to improve the licensing process for internationally-trained engineers, which comprise about one third of the 65,000 professional engineers licensed by PEO.

Since January 2002, for example, prospective immigrants have been able to begin the application process with PEO from outside Canada, before they finalize their immigration plans, so they

***“In recent years, PEO has almost doubled the number of P.Eng. licences granted to internationally-trained applicants”***

will have definitive information about any experience, examination or educational requirements they would need to fulfil to obtain their Ontario P.Eng. licences. More recently, under changes to the *Professional Engineers Act* effective February 2003, PEO began issuing provisional licences to applicants who qualify for licensing as professional engineers with the exception of completing the required 12 months Canadian work experience under a Canadian professional engineer. In recent years, PEO has almost doubled the number of P.Eng. licences granted to internationally-trained applicants, more than 60 per cent of whom meet the academic requirements for licensure without writing technical exams.

## Environmental certification ups the ante for engineers

by Fawzia Sheikh

Environmental auditing certification across numerous fields has become centralized, with the Canadian Environmental Certification Approvals Board (CECAB) overseeing the process.

In October, the Canadian Environmental Auditing Association transferred control of environmental auditing certification to CECAB, the certification arm of the Canadian Council for Human Resources in the Environment Industry (CCHREI). CECAB awards a Canadian Certified Environmental Practitioner designation (CCEP) to those with at least five years of relevant career experience and competencies that meet or exceed Canada's National Occupational Standards for environmental employment.

CCHREI says its online certification system has a private, member-service directory that enables members to register and complete their auditing certification more efficiently.

CECAB is attempting to create a one-stop shop in an environment industry comprising practitioners from such diverse professions as engineering and biology. “By trying to bring some of those applications—the environmental-specific ones, the cross-disciplinary ones—together, it makes it a lot easier for people who may be both an auditor and [who] deal with other environmental issues,” says Keith Driver, CECAB registrar in Calgary. “So they'd be able to go through the process once, submit their transcripts once. That's sort of the benefit.”

“Certainly, an engineer who is certified in some way that adds something to his or her skill set will [acquire] a marketing advantage” that's similar to someone adding an MBA after his or her name, says Bernard Ennis, P.Eng., PEO's manager, standards and practice. It's a decision that will no doubt open doors of opportunity, he says.

“But certification is not a substitute for a P.Eng. licence,” says Ennis. It will not allow non-engineers to practise in an area that falls within the definition of professional engineering. However, clients and employers may find it a useful addition.

There seems to be a growing trend in which professionals in several industries seek additional expertise particularly related to the environment. That's because, in the case of many engineers, they have received on-the-job training in environmental auditing or have taken a course but have no designation beyond a P.Eng., which states nothing about environmental competence, Driver says.

The public, meanwhile, also stands to gain from a common standard that will spring from the two groups' coordination of efforts, Driver argues. “It means that these two certification bodies are now going to be talking to each other on a regular basis. We won't be developing designations that conflict or partially overlap.”

This market consolidation, he says, will help consumers—be they individuals or organizations—determine the qualifications they're seeking in an engineer. He adds that companies using the services of engineers may want a third party to attest to their skills and hold them responsible, as opposed to the province assuming any liability.

PEO has over the years steadily received requests from the public to identify and assure the qualifications of engineers specializing in particular fields, such as industrial health and safety, says Ennis. This demand is reflected in such legislation as Bill 124 (see *Engineering Dimensions*, September/October 2003, p. 12), which requires that many building practitioners, including professional engineers, pass exams testing their building code knowledge.

# Prospective Toronto mayors debate environment and infrastructure

by Dwight Hamilton

Three candidates hoping to be Toronto's next mayor tackled complex issues about the city's environment and infrastructure in a debate hosted by the Ontario Environment Industry Association on September 25.

Tom Jakobek, David Miller and John Tory debated conservation, waste disposal and recycling, land, air and water quality, and brownfields redevelopment before over 100 people in the environmental business.

Tory pointed out that energy conservation targets can be met if the will is there, using the recent power outage as an example. Industrial consumers cut their demand back at the province's request, and rolling

blackouts and brownouts were avoided. When it comes to conserving water, Jakobek noted that most of the city's waterworks infrastructure was built in the early 20th century and is badly in need of retrofitting. Funding for this is urgently required, he said. Tory said that although the city has set targets for such retrofitting, it is sadly behind on meeting them. It's been estimated that older and decaying watermain can leak as much as 40 per cent of their flow-through.

For his part, Miller cited the city's delicate ecosystem as of concern, and said development in the vicinity of the Oak Ridges Moraine north of Toronto should be looked at before it's too late. Miller said the city's target of 100 per cent diversion of household waste is unrealistic and impossible.



Toronto mayoral candidates tackled environmental issues at a debate held September 25.

To divert waste, Jakobek said he favours deposits on plastic beverage bottles everywhere, while Tory noted that even glass wine bottles put out for recycling pickup are not actually recycled, but put into landfill.

When it comes to developing brownfields sites around the city's waterfront, the biggest impediment according to Jakobek is a wall of confusing bureaucracy. Nine different jurisdictions and agencies are involved with this narrow strip of land along the shore of Lake Ontario, he said, calling it "absurd." Tory then pointed out that the Metropolitan Toronto Board of Trade had studied the issue of the city's contaminated lands and calculated that there would be an additional \$50 million in tax available if these brownfields were rehabilitated.

The candidates also discussed alternatives to the use of fossil fuels, with Tory emphasizing that he would try to see innovative environmental technology commercialized as fast as possible.

A topic all the speakers seemed keen to talk about was the new windmill on the grounds of the Canadian National Exhibition. The wind turbine is the first to be built in a downtown urban setting in North America. Miller stressed how many political hurdles it had taken even to get construction approved and the irony in it having now become a source of public fascination. "It's become an icon," Tory added.

# Geoscientists to take “gentle stick” to unlicensed practitioners

by Fawzia Sheikh

The Association of Professional Geoscientists of Ontario (APGO) has attracted 1040 members in less than two years and aims to license remaining geoscience practitioners in the province through a comprehensive campaign.

Geoscientists are required to apply for licensing by the association under the *Professional Geoscientists Act*, which defines the practice of geoscience for which licensing is required except under certain exceptions. Yet more than 1500 geoscientists, who provide services ranging from geophysical surveys of earthquake zones to reports on the location of mineral reserves beneath the earth, have not done so.

According to Greg Finn, P.Geo., associate professor of earth sciences and associate dean, faculty of math and science, Brock University, there are two primary reasons for non-compliance with the act. First, despite years of discussion on the topic, some are simply unaware of the law. In other cases, geoscientists “know [the licensing requirement] is there, but they’re still delaying putting in their application,” he says. An APGO councillor and chair of its registration committee, he notes that similar licensing requirements either already exist in other provinces, or are about to be introduced.

Bill Stiebel, P.Geo., APGO president, hopes to convince membership stragglers of the benefits of becoming licensed. “It indicates you’ve been measured, reviewed, examined by a peer group of practising professionals in the disciplines in which you operate,” he explains. A geoscientist will be recognized as “a professional, qualified by education and experience, to do professional geoscience work.”

Moreover, becoming an APGO member, Stiebel says, conveys that geoscientists are committed to public safety and protection of the natural environment—a fact that impacts the engineering community. Engineers and geoscientists work closely together as one moves away from classical geology, such as exploration geology, towards environmental areas of practice, he says.

Geoscientists who are licensed by APGO indicate they are “subject to the same accountability, in terms of complaints and discipline, ethics and professional standards as professional engineers.”

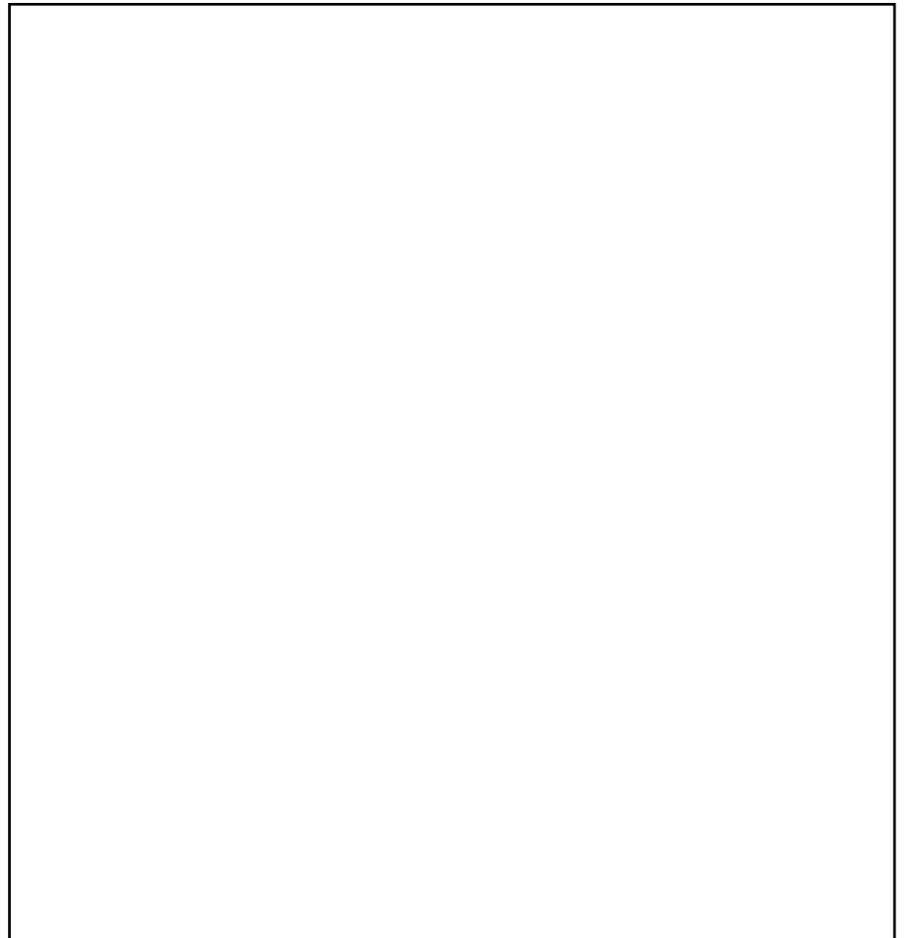
APGO’s campaign, which has many levels, will rely on a “gentle stick of enforcement,” Stiebel says. So far, he has written to members updating them on the activities and issues of the association, encouraging them to talk to others about the work that geoscientists do, and urging them to sit on committees that will involve everything from communication activities to training programs.

APGO also aims to send a message to user communities. “I am a firm believer that the marketplace in many respects will govern and will drive the way things evolve,” Stiebel says. As part of an out-

reach program, council members will remind users of geoscience services, including municipalities and private-sector firms, of the importance of working with qualified and licensed geoscientists.

Although Stiebel believes it will be a year before all of Ontario’s geoscientists are on board, he already has a plan for APGO no-shows: Rather than immediately alerting the “geoscience police” when he becomes aware of non-licensed geoscience practice, Stiebel plans to advise those in non-compliance with the act, in writing, that they should be licensed, send a more rigorous letter if they fail to respond, and finally urge the association’s registrar to inform the Attorney General’s office, which is responsible for enforcing the Professional Geoscientists Act.

**Fawzia Sheikh is a freelance writer based in Toronto.**



# New Foundation for Education president to focus on fundraising

by Stephanie Wei

The Ontario Professional Engineers Foundation for Education elected a new president and officers at its September meeting, with a renewed emphasis on increasing contributions from professional engineers.

Derek L. Wilson, P.Eng., the incoming president and chair, has served the engineering community as both president and past president of the American Public Works Association, Ontario Chapter, and as a current Professional Engineers Ontario (PEO) Councillor.

Elected to the board of the foundation for the first time at its annual general meeting in June are Catherine Karakatsanis, P.Eng., past president and chair, Ontario Society of Professional Engineers, and Catherine Redden, PEO Councillor and a former mayor of Campbellford (seeking election again at press time).

A recipient of the Queen's Jubilee Medal for his community service, Wilson became involved with the foundation because of his interest in education and his desire to give back to the profession. He believes it is important for profes-

sional engineers to contribute to the foundation to "assist the profession and those who want to become engineers." The foundation is a non-profit, charitable organization that provides scholarships to engineering students to encourage them to pursue careers in engineering. The scholarships are funded through donations from professional engineers.

"I think the scholarships make a difference," says Wilson. "We're partially funding their education, and we hope to do more for the students, but we can't give away what we don't have."

To make the scholarships more meaningful, the board would like to increase both their number and their value. The foundation is partnering with PEO's chapters to help spread the foundation's message through fundraising events, presentations and the local communications networks. Wilson hopes to see donations rise from about \$70,000 to \$350,000 annually, which is achievable if only 16 per cent of PEO members were to donate at least \$35 a year.

To make a donation to the foundation, professional engineers can indicate the amount of the donation on their annual licence fee invoices and add it to their licence fee payment. Donations can also be made directly at any time through the Professional Engineers Foundation for Education, 25 Sheppard Ave. W., Suite 1000, Toronto ON M2N 6S9.

Professional Engineers Foundation for Education Board Members for 2003-2004 are: Derek L. Wilson, P.Eng., president/chair, George R. Comrie, P.Eng., past president, Nick Monsour, P.Eng., vice president/vice chair, Ron Sparrow, CGA, treasurer, Stephen Jack, P.Eng., secretary, Colin Cantlie, P.Eng., Brenda Caplan, Catherine Karakatsanis, P.Eng., Kenneth G. Lopez, P.Eng., and Catherine Redden.

**Stephanie Wei is a freelance writer based in Toronto.**

## Engineer-in-Residence program reaches out



Mars Block, science and technology coordinator at the Toronto District School Board holds up teaching materials, explaining: "How students are going to learn science and technology is in your hands." Block addressed about 45 teachers and engineers in attendance at an Engineer-in Residence (EIR) orientation session on October 7 at the PEO offices. The EIR program pairs volunteer engineers with schools to help teachers bring math and science to life for the students.

# Engineering Week 2004 celebrates innovation

by Judy Saurette

National Engineering Week (NEW) 2004 seeks engineering volunteers. Events and activities during the event, to be held February 28 to March 7, will focus on innovation under the theme "Engineering—Visions of Things to Come."

A new venue has been added to the drop-in K'NEX construction workshops, one of the highlights of the week's activities. The new Waterloo Regional Children's Museum, which opened in Kitchener this past September, will be one of five host venues: The others are the Ontario Science Centre in Toronto, Science North in Sudbury, the London Regional Children's Museum in London, and the Canada Science and Technology Museum in Ottawa. Organizers seek engineering and technology volunteers to help junior innovators build structures using the popular colour-coded building toy. Those residing in one of the five workshop cities and willing to help out can register at the "Volunteer Opportunities" section of the NEW Ontario website at [www.engineeringweek.on.ca](http://www.engineeringweek.on.ca).



**Back by popular demand:** The K'NEX construction workshops that drew large crowds in 2003 will be expanded to five Ontario cities during Engineering Week 2004.

Interested volunteers can also contact their local Professional Engineers Ontario chapter chair to help with planned activities, or take advantage of the resources offered at NEW's website to organize another activity themselves.

Watch for a newspaper supplement in the Ontario edition of *The Globe and Mail* on Thursday, February 26, reaching an estimated 285,000 subscribers (700,000 readers) in the province. The supplement will publicize Engineering Week events and explain how Ontario's engineering community is helping to boost innovation and improve Canada's competitive position on the world stage.

The National Engineering Week Ontario Steering Committee, comprising representatives of partners PEO, the Ontario Society of Professional Engineers, the Ontario Association of Certified Engineering Technicians and Technologists, Consulting Engineers of Ontario, and the Ontario Science Centre, provides resources to help interested engineering volunteers plan events or activities within their communities. The focus is on activities for children and youth that help them understand how the math and science they study at school are used in the outside world.

**Judy Saurette is National Engineering Week Ontario's marketing director.**

# Learning tool focuses on public protection

by David Smith

A new tool has been developed to introduce the topics of professionalism and ethics to university engineering students.

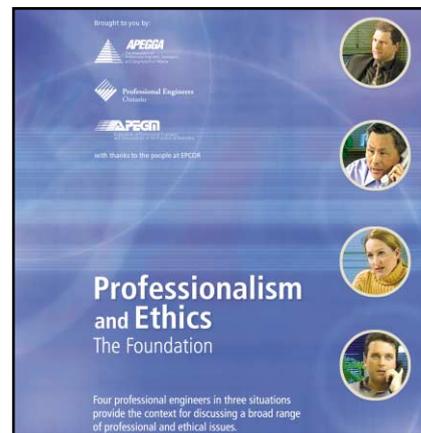
*Professionalism and Ethics: The Foundation* is the result of a two-year collaboration among PEO, the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA), and the Association of Professional Engineers and Geoscientists of Manitoba (APEGM).

The package comprises a PowerPoint presentation, facilitator's manual and student handout on CD, a video of three workplace case studies, printed samples of the CD materials, and samples of additional references. The case studies are independent but inter-related, and provide no

answers—only the context for discussion of professionalism, ethics, the code of ethics, ethics theories, and problem-solving methodologies. The cases examine such issues as protecting the public interest, acting as a faithful agent, maintaining the public trust, and conduct toward peers. Also highlighted are issues of duty to report, confidentiality, intellectual property, conflict of interest, leadership and recognizing one's limitations.

Designed to give students a better appreciation for the broader aspect of protecting the public interest, the package stresses the importance of understanding the legal and ethical obligations of professional licensing, recognizing ethical issues, and addressing ethical issues using a typical methodology.

In Ontario, a complimentary copy of the package has been distributed to each dean of engineering for use in the engi-



neering faculties. The deans had expressed a strong interest in an updated ethics curriculum resource to replace PEO's almost 20-year-old *Trueteel Affair* video, and previewed and were invited to provide feedback on the PowerPoint and print portions of the new package. Although designed for use by engineering students, in testing the learning tool also generated considerable discussion among engineering interns and professional engineers, in groups as small as 20 participants and as large as 250.

"Although *The Trueteel Affair* is still used in engineering ethics courses in Canada and the United States, we had been hearing that students were finding it dated. So when APEGGA approached us about working together on new ethics case studies, we saw it as an opportunity to engage engineering students in discussing professional issues and to raise their awareness of licensing and PEO," says Connie Mucklestone, PEO director, communications, who worked on the project with an APEGGA team of volunteer professional engineers and staff. PEO customized both the PowerPoint and the print materials for consistency with its code of ethics and to make use of its guidelines on *Professional Practice*, *Human Rights in Professional Practice* and *Duty to Report*. PEO professional practice and complaints and discipline staff also provided input at an early stage to the video scenarios and scripts.

Circulation copies of the package may be borrowed by contacting Sharon Gillam at (416) 224-9528, ext. 464. Arrangements to offer the package for sale are still being finalized. For purchasing information, contact Connie Mucklestone at (416) 224-9528, ext. 448, or [cmucklestone@peo.on.ca](mailto:cmucklestone@peo.on.ca).



**Professional Engineers**  
Ontario

## 2004 Council Elections

The following are nominations received to date for the elective offices of Council. The individuals named have indicated their willingness to serve, if elected. Nominations close on December 12, 2003, at 4:00 p.m., and members may submit further nominations by following the procedure in Section 14 of *Regulation 941/90* (available from PEO's website at [www.peo.on.ca/about-peo/about2.html](http://www.peo.on.ca/about-peo/about2.html)). Statements from all candidates will appear in the January/February 2004 issue of *Engineering Dimensions*, and on PEO websites. Ballots will be mailed to members by January 30, 2004. Ballots must be received by the official agency by February 27, 2004.

### President-Elect (one-year term)

**R.A. Goodings, P.Eng.**  
Toronto (Civil)  
BSc, Queen's '51

### Vice President (one-year term)

**K.G. Lopez, P.Eng.**  
Toronto (Civil)  
BAsc, Toronto '55; MAsc, Toronto '59

**C. Mirza, P.Eng.**  
Toronto (Civil)  
BSc, McGill, '61; MSA, Toronto, '63; MS,  
Illinois '65

### Councillor-at-Large (two-year term, one available position)

**M. Frize, PhD, P.Eng., OC**  
Ottawa (Electrical)  
BAsc, Ottawa, '66; MPhil, Imperial College  
London '70; MBA, Moncton '86; PhD,  
Erasmus Universiteit '89

**B.E. Clarida, P.Eng.**  
Sault Ste. Marie (Civil)  
BEng, Lakehead '80

### Eastern Region Councillor (two-year term)

**N.P. Colucci, P.Eng.**  
Omeme (Civil)  
BAsc, Waterloo '87

**C.L. Knox, P.Eng.**  
Brockville (Electrical)  
BAsc, Waterloo '91

### East Central Region Councillor (two-year term)

**C.E.E. Chisu, P.Eng.**  
Toronto (Electrical)  
Diplng, Bucharest Pol '71; MEng, Toronto  
'88

**D.E. Iliescu, P.Eng.**  
Toronto (Electrical)  
MEng, Bucharest '60

### West Central Region Councillor (two-year term)

**C.T. Moore, P.Eng.**  
Mississauga (Mechanical)  
BSc (Eng), London '63

### Western Region Councillor (two-year term)

**M.C. Crutchley, P.Eng.**  
Charing Cross (Mechanical)  
MSc (Eng), Natal '84

**J.O.G. Vieth, P.Eng.**  
Waterloo (Electrical)  
BAsc, Waterloo '84

### Northern Region Councillor (two-year term)

**D.C. Robinson, P.Eng.**  
North Bay (Civil)  
BSc, Queen's '65

### PEO Council Elections Cast Your Vote!

Please participate in governing your profession by voting in PEO's 2004 Council elections. Look for your election package to arrive by mail in early February. Read the candidate statements in the next issue of *Engineering Dimensions*.