

LEADING BY EXAMPLE

Engineers at work in public policy

For the past three years, PEO has been encouraging P.Engs to become more engaged in public policy through its Government Liaison Program. But long before this program launched, many engineers had been proving that, whether starting out in engineering or finishing up a career, there's a place for all engineers in public policy.

Meet some of the engineers in the trenches—advising, influencing and making positive change in how the profession is perceived.

O MAR ALGHABRA



“To be or not to be is not a question of compromise. Either you be or you don't be.”

This straightforward statement by Golda Meir, fourth prime minister of Israel, comes to mind when one speaks with Omar Alghabra, P.Eng., Liberal MP for Mississauga-Erindale.

The 38-year-old has always been less of a talker and more of a doer. So when in 2005 he grew tired of complaining to his peers about how society should change, he took the bold step of running for public office.

“Many people complain about the way things are, but how can we expect things to change if we are unwilling to put effort into making things better?” says the Mississauga resident, who was elected in 2006. “It's very difficult to expect of others what you yourself are not willing to do.”

There were always clues Alghabra was serious about making a difference. Inspired by his architect father, the Saudi Arabian native finished his degree in mechanical engineering at Ryerson University in 1994, then completed an MBA at York University in 2000. As he built his career, which included running his own business and working at GE Canada in such roles as project management and quality assurance, Alghabra also served his community in many ways.

From the late 1990s until the middle of this decade, he was a member of the Multicultural Inter-Agency Group of Peel, which promotes the delivery of culturally sensitive services in Peel region. He was also part of GE Canada's diversity council, and served on the community editorial board of the *Toronto Star*. From 2004 to 2005, he was president of the Canadian Arab Federation, a group representing Canada's Arabs on a range of foreign and domestic issues.

Today, Alghabra has his hands full as the official opposition critic for natural resources, which involves, among other things, pushing for energy policies that are more reliable, eco-friendly and economically sound.

“We need a national energy strategy, and I'd like to see the federal government one day, hopefully soon, define and construct a vision for meeting our energy needs,” Alghabra says. “We need to become less dependent on fossil fuels, not just for environmental reasons but also for economic reasons, because as oil prices continue to rise, our dependence on fossil fuel becomes unsustainable. Renewable energy should be a big component of our energy strategy.”

His engineering experience has given him an edge as a public servant in many different ways, he says, including helping him understand the science associated with natural

resource issues and trends. As well, he says, he's better able to analyze issues in a methodical, step-by-step fashion.

"My engineering background has helped me and continues to help me tremendously, because I have that engineer mindset that taught me to follow logical thought processes," Alhabra says.

His professional background also made him well suited, as the former official opposition critic for immigration and citizenship, to raise the profile of international engineering graduates and their employment challenges in House of Commons debates, at Liberal party events, and at meetings of the Standing Com-

mittee on Immigration and Citizenship, of which he was a member.

"It's a matter of fairness, and of importance to our economy, that we work with the foreign-trained to help them integrate more quickly and efficiently into industry," he says.

As much as Alhabra has worked to include the engineering perspective in federal government, he says more engineers need to do their part: "By joining the Canadian public policy conversation, engineers enhance their value, enjoy more opportunities to participate in economic, social and political decision making, and increase public awareness of the value the profession brings to society."

C

LEM BOWMAN

Canada has the potential to become a global sustainable energy superpower—and Clem Bowman, PhD, P.Eng., is doing everything he can to make that happen.

"This is an area where Canada could really lead the world," says Bowman, a 40-year veteran of the petrochemical industry. "There's no question about how to proceed. The question is whether Canada will be a leader or a follower."

How to achieve complete energy independence and even worldwide authority is a subject to which Bowman has dedicated much of his time, passion and considerable knowledge and expertise.

In 2005, Bowman's colleague, Len Bolger, P.Eng., received support from the Canadian Academy of Engineering (CAE), of which they're both fellows, to study best practices in Canada's approach to energy.

What followed was a comprehensive two-year review and evaluation of 27 "energy pathways"—the routes from Canada's energy sources to their ultimate end use.

Sponsored by stakeholders, including Natural Resources Canada, the Alberta Research Council, and Petro-Canada, the project involved more than 100 energy experts, including several engineers, who conducted research and evaluated data on the country's uses of energy.

Their findings and recommendations were released in an August 2007 report called *Powerful Connections: Priorities and Directions in Energy Science and Technology in Canada*, which emphasizes that Canada should undertake three core national energy projects: gasification of fossil fuels and biomass; greenhouse gas emission reduction through carbon dioxide capture, storage and use; and upgrades to electrical infrastructure, with improved access by wind and solar sources, and capacity for energy storage.

"Canada has almost every energy source that humanity has or will use in the future," says Bowman of the study, which indicates it will take an investment of about \$28 billion over 30 years to implement the projects. "This is a unique opportunity for Canada to excel and to be in a position to perhaps export ideas and expertise to other countries as they grapple with these same issues."

Throughout his professional life, Bowman, 78, has been an innovator, consensus builder and big-picture thinker. The University of Toronto PhD graduate built his career first at DuPont and then at Imperial Oil, but he has been at the helm of a number of government-led industrial initiatives.

Bowman was president of the Alberta Research Council, a government-owned applied research corporation that develops and commercializes technology to grow innovative enterprises, and also chaired the Alberta government's technology and research advisory committee, where he coordinated the technology efforts of 14 government departments and agencies.

Bowman was also founding chair of the Alberta Oil Sands Technology and Research Authority, a Crown corporation of the Alberta government which, under his leadership, established joint projects with major international petroleum companies to recover bitumen from the tar sand deposits in western Canada.



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With his latest endeavour, Bowman is working to raise awareness in Canadian government about the CAE study's findings, and will soon work with energy executives in Alberta to begin coal gasification in that province.

Bowman's career accomplishments and history of promoting industry-university-government co-operation in research and development, earned him the Order of Canada in 1994. Most recently, his progressive work earned him a 2008 Global

Energy International Prize, which is awarded to those making significant achievements in solving power generation problems.

For Bowman, however, the best reward is being able to use everything he's learned as an engineer to improve the way we live.

"At the end of your career, you start giving thoughtful analysis to your impact on society," he says. "For me, it's now about looking at what I have contributed, and how I can make things better."

C

HERYL DE BOER

Whenever she can, Cheryl de Boer rides a bike to get around; when the weather makes that hard, she takes public transit.

The 30-year-old is also a dedicated vegetarian because she sees eating meat as being environmentally unsustainable.

Like a growing number of people, de Boer, a new engineering graduate, is trying to do her part to live a greener, cleaner lifestyle—and she thinks society needs to do some serious catching up to develop infrastructure that supports eco-friendly ways of life. It's this gap between our reality and our environmental ideals that's driving de Boer to pursue a career that impacts public policy.

"People are starting to make better choices for the environment, but we don't make it easy enough for them. Many of our systems need improvement, but there are big policy changes that first need to happen," says de Boer, who, after working for three years as an engineer-in-training at Siemens, completed her master's degree at McMaster University's Dofasco Centre for Engineering and Public Policy in 2006.

One area de Boer particularly sees as needing a lot of work is the way Canada manages its potable water supply. Factors ranging from Canadians taking water for granted, to insufficient or ineffective governance mechanisms, to threats posed by climate change to our freshwater supply, combine to create a water-management system that's unsustainable, she says.

"We don't really concern ourselves with taking care of our water, because we traditionally haven't had to. We only act when a problem arises," de Boer says. "We can't be reactionary in a situation like this. We have to be much more proactive or else, one day, we won't have enough domestic drinking water, the fish will be gone, and we'll have eroded our beaches to the point where we can no longer use them."

How the Canadian government can manage water resources in a more sustainable way is a subject de Boer will explore in September when she begins PhD studies at the University of Twente in the Netherlands, which promotes the role of science in public policy development.

During the research and field-related work de Boer will conduct at Twente, she plans to learn more about how the European Union (EU) is dealing with its water issues, and bring some of its best ideas back home.

"The EU is more proactive and more flexible in the way it deals with new and intricate water issues. Hopefully I can get some lessons on bureaucratic infrastructure and be able to work with our government on these issues," she says.

Working as an intern over the last year with the City of Hamilton has also afforded de Boer the opportunity to work on water issues. Her role there focuses on the city's storm water master plan, and organizing working groups comprising public servants, business people and NGO members to provide insights on how to improve it. A second project she's working on is helping to implement the city's Commuter Challenge Week, a national program recognizing Canadians who walk, cycle, take transit, carpool or telework.

"I thought it would be good to get an understanding of how policy is implemented at the municipal level in Canada," de Boer says. "I'm really starting to get a taste

of the issues faced by people who implement policies.”

That experience will serve de Boer well when she returns to Canada upon completing her PhD. She plans to pursue a university teaching career and perform research with a public policy focus. Farther down the road, she says, she might consider running for public office.

“I’m interested in any role where I have an opportunity to make some real change,” she says. “If we had more engineers in government, we might have more science-based policy being implemented. We need to be at the table when these decisions are being made.”

GUY FÉLIO

Guy Félio, P.Eng., says that sometimes he has a hard time relating to other engineers.

“In some cases, my counterparts don’t understand my language, because I’m usually talking policy,” says the Ottawa-based engineer.

However, this mild disconnect from his peers has hardly affected the career momentum of Félio, who has perhaps done more than any other Canadian engineer to advance big-picture thinking and decision making about managing our infrastructure.

“Over the course of my career, I’ve learned a lot about what municipalities across Canada need to maintain their infrastructure, and I want to be part of the public policy discussion and to engage the technical perspective into

policy-making,” says Félio, 50, whose most significant and enduring public policy accomplishments manifested during his 15-year career at National Research Council Canada (NRC), the federal government’s research and development organization, where he worked in various leadership positions until 2007.

Central among them was InfraGuide, a national guide to sustainable infrastructure that operated from 2001 to 2007 as a partnership between the Federation of Canadian Municipalities, Infrastructure Canada and the NRC.

Félio’s role in InfraGuide was to lead more than 350 experts nationwide, including representatives from municipal governments, associations and the private sector, to study infrastructure issues related to water, transportation, investment planning and environmental impact. Together, they

produced a collection of case studies, best practice reports and e-learning tools for sustainable municipal infrastructure.

“The type of collaboration on this project was unique in the field of infrastructure, and our best practices were recognized nationally, even internationally,” Félio says.

The next step was to create concrete, long-term plans for municipalities to repair and replace their deteriorating civil infrastructure systems (CIS), such as their highways, bridges and water treatment plants, and to build new structures as required.

Félio was a key player on this project, collaborating with members of the Canadian Society for Civil Engineering, the Canadian Council of Professional Engineers (now Engineers Canada) and the Canadian Public Works Association to create a Technology Road Map, a blueprint for the renewal and enhancement of Canada’s CIS.

“The roadmap provides a vision for 10 to 15 years down the road for what municipalities need, what industry needs—including public and private groups—what we want to see in infrastructure and what tools we want to have,” Félio says.

Félio is now involved in an ongoing initiative led by Engineers Canada, called the National Round Table on Sustainable Infrastructure, that is bringing together diverse infrastructure stakeholders—including municipal and provincial governments, federal government departments, industry groups and professional associations—to address core infrastructure issues collectively.

“We have brought together all these actors in a dialogue to solve infrastructure problems in a more holistic way, as opposed to each group doing things their own way,” he says.

Félio’s holistic approach to infrastructure problem solving also applies to his own career. Currently, he is a freelance engineering consultant specializing in infrastructure strategies and renewal, and he teaches a graduate course on infrastructure asset management at Carleton University. Félio also presents on managing aging infrastructure

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to municipalities, and writes opinion pieces for *Policy Options*, Canada's leading public policy magazine, and one to which very few engineers contribute.

But contributing his ideas and insights in a more direct, hands-on way to public policy-making continues to be Félío's main interest. And it's one that he feels more engineers should explore.

"I want to be among the politicians and economists who are making these decisions, and if engineers really want to progress as a profession, we have to be present in all stages of engineering," he says. "Engineering is the application of pure science to solve problems, so why not use these principles at the policy as well as the technical level?"

PAT QUINN



"Getting involved at all levels of public policy determination is a no-brainer for doctors, teachers or lawyers. Do we want to leave the future of a great contributing profession to the whims of politics?"

That's what Pat Quinn, P.Eng., a structural engineer, two-time president of Professional Engineers Ontario, and self-described "activist advocate of the profession" has to say about the role of engineering in public life.

Quinn has been practising engineering for 40 years, and while he's mainly retired from his practice, the prominent Toronto-based Quinn Dressel Associates, he continues to be active in advocating for the profession.

"Engineering should have been the profession of the 20th century. We've built cities, explored space, seen the nuclear industry come to fruition, and that has all been because of engineering. If we don't change things, engineering is going to eventually be a second-rate profession," Quinn says.

Quinn would like to help put engineering on the public policy map and, in his two terms as PEO president, from 1999 to 2000 and from 2006 to 2007, he worked to build stronger relationships between the association and elected officials.

"Essentially, while I was at PEO, I tried to emphasize that change needs to come, to convince engineers that we could do this, and to get council to stand behind us," he says.

Quinn was also a vocal supporter of PEO's Government Liaison Program, begun in 2005, which aims to enhance the association's public profile among legislators and increase its participation in engineering-related policy discussions.

Engineers need to be involved in policy-making, Quinn says, so that they can more effectively protect the interests and health of the profession, better serve the public, and restore the profession's prominent status in society.

However, before engineers can get to the decision-making table, he says, they need to generate greater awareness of their contributions to society.

"If I ask you who the public leaders are among doctors or lawyers, people can pick them out, but if I ask you the same question about engineers, people don't know. That's got to change," he says. "We're known to a certain degree, but we haven't yet developed the type of trust that is essential to being involved in the public policy arena."

The next step, he says, is for engineers to see where they can make a difference in public life, and to support colleagues who choose to pursue careers in politics.

"There needs to be a willingness to promote and support leadership and to allow public personalities to arise," he says.

An increase in engineers' participation in official decision making starts with engineers in training, Quinn says, and he'd like to see PEO push for public policy-related curriculum and government internships to be introduced into university engineering programs.

He'd also like to see PEO collaborate more with the Ontario Society of Professional Engineers to advocate for engineers.

"Many engineers are leery about unions, but when I see how much they've done for teachers or government employees, I think, what the heck did we miss? Why didn't we set up a similar structure for our own members?" he says.

One developing PEO initiative in which he sees much potential is the Ontario Centre for Engineering and Public Policy, which will develop public policy responses on issues in which engineers can make a difference.

Ultimately, Quinn says, the future of the profession depends on these actions, which is what he said last November in a presentation to the Dublin Institute of Technology in his native Dublin, Ireland, after being bestowed with an honorary PhD: "We need to take every opportunity to tell our story and to promote ourselves and our profession," he said. "A strong, credible, participating engineering profession is not only in our best interests, it is essential, in a technological world, to the well-being and safety of the public." Σ