The official publication of Engineers Geoscientists Manitoba

THE KEYSTONE PROFESSIONAL

SPRING 2017

INSIDE THIS ISSUE

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ENGINEERS GEOSCIENTISTS MANITOBA

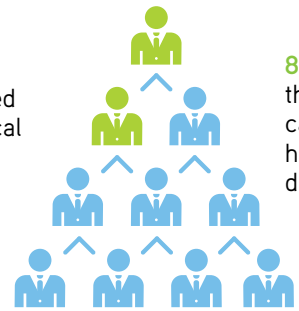
what's ailing the self-employed?

How health and disability insurance can help

The Self-Employment Challenge

Being your own boss has its perks. But without an employer's group benefits, self-employment also means fending for yourself in case of illness or disability.

Over two-thirds of surveyed self-employed individuals are concerned about their lack of access to medical coverage and insurance.[1]



8 in 10 Canadians are concerned about the government's ability to fund health care, the cost of longterm care, and having enough money if they become disabled or seriously ill.[2]

The Role of Insurance

Supplementary health and disability income insurance plans help protect against financial loss due to illnesses or accidents.

Why health insurance?

Canadian families are spending an **increasing share of their household income** on health care.[3]

Households in the 3 top income quintiles had an average:[4]

- **39% increase** in dental spending
- **24% increase** in prescription drug spending

Why disability insurance?

- **1 in 3** people will be disabled for 90 days or more at least once before they reach age 65.[5]
- **49%** of bankruptcies and mortgage foreclosures are due to disability.[6]
- **A disability of over 90 days** is likely to last three years or more for a 35-year-old man or woman, and four years or more for a 45-year-old man or woman.[7]

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1 Human Resources and Skills Development Canada: 2006 Survey of Self-Employed Individuals: Perceptions of Benefit Coverage, May 2006.
2 Canadians at Financial Risk: 2013 Canadian Life Insurance Ownership Study Highlights, LIMRA, 2013.
3 Chaplin R, Earl L. Household spending on health care. Health Reports 2000; 12(1): 57-65.
4 Statistics Canada: Trends in out-of-pocket health care expenditures in Canada, by household income, 1997 to 2009 (April 2014).
5 Canada Life and Health Insurance Association, A guide to disability insurance, November 2012.
6 Get Sick, Get Out: The Medical Causes of Home Mortgage Foreclosures. Health Matrix: Journal of Law-Medicine, Vol. 18, No. 65, 2008.
7 Disability Insurance: Where Will the Money Come From If You're Disabled? Canadian Life and Health Insurance Association, January 2004.

The Manufacturers Life Insurance Company

FRONT AND CENTRE

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The Keystone Professional Committee would like to hear from you. Please email your comments to: *amoore@apegm.mb.ca.* Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.

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ENGINEERS GEOSCIENTISTS MANITOBA

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Lindsay Melvin, M.Sc., MBA, P.Eng., FEC, President 2016-2017

Member **Engagement**

In my last message, I spoke about grand aspirations for the profession, in general. I would now like to pose the question, what are your grand aspirations for member engagement? The answer to this question differs from person to person and may also change throughout one's career. Some of us have desires to be heavily involved by going outside of our regular duties, to mentor and volunteer. At some points in our career we are receiving mentorship, and at other points, we are giving it. It is even possible that we could be receiving in the process of giving.

One of the privileges I have had recently, as President, was attending our Filipino, India, and Chinese Members Manitoba Chapter events. At the January 2017 Council Meeting, Council approved the adoption of the constitution and By-laws of the Arab Members Chapter, thereby establishing an additional chapter. Member Chapters are an excellent example of community. Community is critical to success in the engineering and geoscience professions. Community is where we come to give and receive support, mentorship, networking, and professional development.

So why volunteer and be active in the community? Volunteering provides opportunities to develop and practice skills outside of our jobs. These skills may reflect those of the position we are aspiring to, or strengths that are not fulfilled at work. For me, volunteering has not only assisted in my professional development, but also played a significant role in broadening my understanding of the professions. By volunteering for Engineers Geoscientists Manitoba and Engineers Canada, I have learned about the professions outside of my workplace, and outside of Manitoba. Understanding the challenges and the evolution *of* the professions has influenced my grand aspirations *for* the professions.

> Community is critical to success in the engineering and geoscience professions. Community is where we come to give and receive support, mentorship, networking, and professional development.

Member engagement is important to Council. As such, Council is ensuring there are opportunities for members to engage with Council prior to our Annual General Business Meeting in October 2017. We have solicited input for proposals for changes that you would like to see in the By-laws and potentially voted on by members in 2017. We will be sharing with members a draft of the revised Ends, which are the objectives that Council gives our CEO, and we are planning a Special Meeting of Members in April.

In closing, I ask, what does being engaged in the professions, look like for you? Perhaps you are a supervisor or mentor in the workplace, an active volunteer on a workplace committee, a technical society member, or a volunteer for the Association. If you are at all curious about broadening your engagement in the professions, you are on the right track by reading *The Keystone Professional*. Member engagement is an important part of self-regulation. I thank those who volunteer, and I look forward to meeting more of our volunteers in the future.

As always, I welcome your questions and discussion about the professions. You can contact me at *president@apegm.mb.ca*.

VOLUNTEER


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G. Koropatnick, P.Eng., FEC, CEO & Registrar

I Was **Born Here**

I was born here. I had no choice in the matter. It could have been anywhere in the world, but it was Canada. I'm glad it was Winnipeg. Does that give me the right to tell newcomers what they can or can't do? No. Who's a newcomer anyway? I was born in Canada. My Dad was born here. My grandfather wasn't. He was a newcomer. About 100 years ago, my grandparents were immigrants. That is the history of many Canadians. Most of us are immigrants at one time in our family histories.

Indigenous Members

One could argue that the only 'true Canadians' are those who were present from the beginning. Those who were 'original.' Do you know any families who have always lived here? Who didn't come from a far-away land? There are some Indigenous families represented in the Association membership. Too few. That's why Council has set a new End: Increasing Indigenous membership. They want to see more Indigenous professionals joining Engineers Geoscientists Manitoba each year. Over time, the Association will begin to reflect the 16.7% of Manitoba's population who are considered Aboriginal.

Arab Members Chapter

By the time you read this magazine, Engineers Geoscientists Manitoba will have a new chapter. The Arab Members Chapter was constituted by Council at the January meeting. Their objectives include: (1) encouraging and facilitating the study, discussion, and exchange of ideas and information amongst members on all questions of interest; (2) promote, undertake, and/or engage in such programs, functions and activities that will contribute to the professional growth and career development of its members, and (3) establish a registry of Arab Professional Engineers, Professional Geoscientists, and Interns. The Chapter welcomes any Manitoba resident, Arab citizen, or Arab-Canadian, who has completed at a minimum, a four-year bachelor's degree in engineering or geoscience, interns and engineering or geoscience students. "Arab" refers to persons whose origins are from or who carry the citizenship of at least one of the following countries: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen.

Note: Ethnicity is not a requirement to join a chapter. Anyone with a different background is welcomed to join any chapter of their choosing. However, only one chapter may be declared by a member. Membership in multiple chapters are not permitted.

Winnipeg 50th Canada Summer Games 2017

The Canada Summer Games is coming to Winnipeg in July 2017. Engineers Geoscientists Manitoba is proud to be a community supporter. The organizing committee is recruiting a team of 6,000 volunteers. Will you be one of them? All engineers and geoscientists are encouraged to sign-up to help host more than 20,000 visitors, celebrate the Canada Summer Games' 50th anniversary, and Canada's 150th birthday.

For more information visit their web site *http://www.2017canadagames.ca*

Remember our slogan and tell others *"My life's work, makes life work better."* Your feedback is important. If you have any thoughts on anything you see in *The Keystone Professional* magazine, please email me at *gkoropatnick@apegm.mb.ca*

Engineering PHILOSOPHY 101

Using history to understand the origins of an engineering education conundrum

Dr. M.G. Britton, P.Eng. FEC

Robert Friedel's book, *A Culture of Improvement – Technology and the Western Millennium*, provides an interesting account of the evolution of what we consider to be engineering. The focus of his research was on the 'hows' and 'whys' of technological change over ". . . a thousand years of Western experience . . .". Friedel, from his perspective as an historian, notes that "Most of the time technologies are clearly represented by artifacts.", and uses that perspective to explore 'improvements' (changes) from the High Middle Ages onward. He credits ". . . anonymous workers and tinkerers" with most of the changes prior to the mid-18th century and suggests that technology, up until then, was dominated by the 'nonliterate'. Knowledge was passed through experience, not through education. That may explain the attitudes some engineers encounter, even today.

As problems in search of solutions became more complex, the need to analyze requirements and predict performance came to the forefront. In 1747, in order to provide the education required to address this need, the French established their first engineering school, École des Ponts et Chaussées. The school focused on mathematics and engineering theory. In Britain, however, the artisan based tradition continued. This marked the beginning of the theory vs. experience debate that remains a point of contention in the engineering education community. Not everyone is, or was, prepared to accept the wisdom in Yogi Berra's observation that, "In theory there is no difference between theory and practice. In practice there is.".

> "Engineering is about causing something practical to come into existence, and that requires more than theory. In engineering there are no 'correct' answers."

No one argues with the need for licensed engineers to possess both theoretical and practical knowledge. As early as 1818, in his inaugural address to the Institution of Civil Engineers, Henry Palmer noted "The Engineer is a Mediator between the Philosopher and the Working Mechanic, and like an interpreter between two foreigners, must understand the language of both, hence the absolute necessity of possessing both practical and theoretical knowledge." In the early part of the 21st century, this is still a reasonably good description of the role of an engineer. However, the problem is, how can both practical and theoretical knowledge be delivered to the students who will become the engineers of tomorrow?

The theoretical base of our profession has grown at an accelerating rate. Undergraduate programs must provide students with a theoretical foundation. Professors who have built their careers around the development of this growing bank of theories make up the majority of academic staff. Given their experience, they tend to focus their courses on theoretical questions. Unfortunately, theoretical questions require 'correct' answers, and students become skilled at providing those 'correct' answers.

Upon graduation, the world that new graduates enter is 'different'. As Sam Florman has observed, "Engineers do not expect to find perfect solutions, because in their work there usually are none; they seek optimum solutions, given constraints of time, materials, and money". Henry Petroski noted, they will discover that "Engineering is the rearrangement of what is." In other words, engineering is about causing something practical to come into existence, and that requires more than theory. In engineering there are no 'correct' answers.

But there is a solution to the process of delivering theoretical and experiential learning simultaneously. Most engineering programs have 'Co-op Education' programs as a part of undergraduate degree programs. Specifics vary among institutions, but companies' work with co-op program supervisors to develop industry-based opportunities that provide on-the-job experience for undergraduate students. These programs are the personification of William Butler Yeats' 1893 observation that "Education is not the filling of a pail, but the lighting a fire.". Lighting of these fires will benefit the students, the companies, and the profession.

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Learning from Experience in Manitoba
A Different Program

By C. Geddert, P.Eng.

Learning from experience is an important part of engineering and it is an important part of becoming an engineer. Guru Madhauan in his book "*Applied Minds*" reminds us "Learning from others experiences shouldn't be an accessory to engineering design; it should be a core technical necessity."

It is common to think that engineering graduates lack practical experience and have not learned from experience. There are programs in place to ensure students have learning experiences before graduation. In Manitoba, a portion (up to 12 months) of an Engineering Member Intern's required 48 months of experience can be documented before graduation from an accredited institution. The relatively new University of Manitoba Faculty of Engineering Co-operative Education and Industrial Internships Program (Co-op/IIP) provides a supervised and supported way to obtain this experience.

The idea of "co-op" has both positive and negative connotations. "Co-op" students are often thought of as students who show up at the work place and four months later, return to a faraway school never to be seen again. Locally, there have been co-operative education programs at the University of Manitoba, Faculty of Engineering for more than 25 years, but the programs were distributed throughout the faculty, and based in individual departments. These programs had both positive and negative results. However, it eventually became clear that, in order to provide more of the positive and less of the negative for both students and their employers, the program had to provide support in a new way.

In order to provide a more effective administrative process the smaller departmental programs joined together to form a central program, Co-op/IIP, with common policies and procedures that incorporate the individual department programs, and expand the offerings to students and employers within each department. For example;

previously, students in electrical and computer engineering were only offered opportunities to consider 12 or 16-month internships as options if they wished to participate in the departmental program.

Now, in Co-op/IIP, students from any department or program in the faculty have a wide range of options that they can choose from to complete their co-op experience.

Both students, and employers, can take advantage of 4, 8, 12, or 16-month opportunities, as they are available, and there is no set schedule they must follow. In the past, the number of students included in the faculty's smaller co-operative education programs was limited based on grade point average. This requirement has changed. All students who meet the academic requirements of the faculty can apply to participate in Co-op/IIP. They apply to the program as one would apply for a job. After successfully completing the application and interview process, they are able to participate.

The first step in participation in Co-op/IIP is to apply for student membership in Engineers Geoscientists Manitoba. An increased number of students are connecting with the Association through this program. This is the first connection with the Association for many students. As students progress through Co-op/IIP they document their work experiences in a work term report. This report mirrors the requirements for a Member Intern and is eventually submitted to Engineers Geoscientists Manitoba for consideration of pre-graduation experience. It is the contents of this report and the reflection that it requires that begins the process of 'learning from experience' for students in Manitoba.

Learning from experience is central to excellence in engineering and is required by the governing body, Engineers Geoscientists Manitoba. There are now many ways to approach this within the university context. Accredited university programs are typically focused on the academic details of the profession and operate under the scheduling constraints of large institutions. Co-operative education provides an environment for an introduction to the skill of learning from experience. It also allows students to gain expertise in this type of learning and the documenting of this learning as a requirement to enter the profession. In order to support students and employers in Manitoba we realized we had to do things differently.

"Co-operative education provides an environment for an introduction to the skill of learning from experience. It also allows students to gain expertise in this type of learning and the documenting of this learning as a requirement to enter the profession."

We invite you to contact the new Co-op office at *CoopIIP@umanitoba.ca* or call Lynda Peto at 204-474-6586. You may want to relate your experiences or help students create new ones. Your input is welcome.

Doug Bell, P.Geo., FGC

Environmental Enthusiast, Avid Cyclist, Mentor, Coach

"I want to be working IN the profession and working ON the profession," says Doug Bell on his recent appointment as a Councillor with Engineers Geoscientists Manitoba. He sees his involvement with the Association as a means to give back to the community which he's been a part of for the past 28 years, "which means I've been working since I was three," he laughs.

All jokes aside, it was during his childhood years that the first signs of his interest in the realm of geoscience were evident. "My family had a cabin and every summer I'd collect rocks, so I'd continually have buckets of rocks in my room," Doug laughs adding, "I didn't know it, but my mom would spread the rocks out on the beach at the end of every summer – and I'd have to start collecting again the next year.".

That interest carried on through high school and in 1986 he received his undergraduate degree, a B.Sc. Honors in Geology. He then went on to complete a Masters of Geology from the University of Alberta. It was here that he received some important words of encouragement from a very high profile emeritus professor while completing his master's thesis defence. The professor told Doug that he had a natural ability to communicate detailed technical information in a very straightforward understandable manner. His parting words were "not to lose sight of that gift and to use it towards a career to promote geosciences".

In fact, the majority of Doug's geoscience career has been spent explaining an industry misconception that originates as far back as the 1950's. The misconception is if there was a chemical release in one location then the contaminants are going to migrate 'miles' through the subsurface and create a huge environmental disaster.

But, that is typically not the case. Geoscientists discovered in the early 2000s that in most instances "mother nature" has the capacity to attenuate the impacts – which slow down and limit the spread of contaminants. In addition, over the course of Doug's career he has seen a shift to better environmental management and controls, which have greatly reduced the occurrence of leaks and spills and resulted in much less impact to the environment. In fact Doug reflected, "A large portion of work has been dealing with historic sites".

In terms of emerging issues, finding ways to mitigate the effects of climate change, of which Doug says is "occurring at a greater pace then we have seen in the past". A change to how we manage our infrastructure, along with reducing our dependency on fossil fuels and increasing solar and wind-powered energy are part of the solution. Fortunately, Doug believes we're currently on the "cusp of a significant increasing trend" in regards to implementation of solar energy – and he foresees it will "really take off" in the near future.

Outside of his work life as an environmental consultant for Dillon Consulting, Doug can be found enjoying one of his many outdoor pursuits. In 2000 he built his own sailboat, "I even sewed the sails myself and everything!" and he's an avid year-round cyclist. He commutes to work in his recently purchased "fat bike," enjoys hitting the cross country ski trails at either Birds Hill Park or Windsor Park Nordic Centre, and he's recently taken up stand-up paddle boarding which he says is, "a great core workout".

Doug has a special place in his heart for his "Cockapoo" rescue dog, Chewy, whom he taught to play Frisbee and says it's "quite literally one of the high points of my life when I throw a Frisbee and he runs and grabs it out of the air". As a result, Doug is a loyal supporter of, and donor to, the Winnipeg Humane Society. He also donates to CancerCare, "I'm impressed by what we've built here, its absolutely world class."

Doug believes we're currently on the "cusp of a significant increasing trend" in regards to implementation of solar energy – and he foresees it will "really take off" in the near future.

In his new role as Councillor for 2016-2018 with Engineers Geoscientists Manitoba, Doug is choosing to donate his expertise as a Fellow of Geoscience, a designation he received in 2014, and to help alleviate two major issues he currently sees in the engineering and geoscience here in Manitoba.

Firstly, Doug firmly believes that to have a competitive workforce the industry needs to embrace diversity. To address this, Engineers Geoscientists Manitoba has teamed up with the University of Manitoba to help facilitate professional registration for newcomers through the Internationally Educated Engineers Qualification (IEEQ) program. This foreign credentials recognition program helps streamline the process of achieving a Professional Engineer registration in Manitoba, and also gives newcomers an opportunity to complete a four-month work placement alongside an experienced engineer or geoscientist.

Secondly, he cites the industry suffers from "resource constraints" and needs more trained professionals, but in many cases they "simply aren't available". As a professional in the latter years of his career he finds the role of mentor and coach to be very important, and he believes it is something that should be more recognized in the engineering and geoscience professional community. Doug challenges other professionals to actively get engaged in mentoring and coaching and to increase efforts in succession planning to accelerate the progression of new and mid-career professionals.

James Blatz, Ph.D., P.Eng., FEC

Passionate Professor, Third Times a Charm, Focused Council Goals

"I fundamentally enjoy what I'm doing, it's a personal hobby as well as a career. I'm extremely lucky," says James Blatz of his career as an engineer that consists of a 'rewarding' position as a Professor of Civil Engineering at the University of Manitoba, as well as being President and CEO of his own consulting company, TREK Geotechnical, through which he provided consulting services in the riverbank stabilization works for the recent Disraeli Bridge Project.

James, who is now on his third run as a Councillor with Engineers Geoscientists Manitoba, chose to take on the role with a specific goal in mind. With the first change in government in Manitoba in 17 years, he stresses the importance of the need for the Association to establish a stronger relationship to ensure that government properly value the support that engineers and geoscientists can provide in the development and facilitation of policy. "I think it's important as engineers and geoscientists with a certain perspective based on our education and experience to be able to provide a unique perspective on important issues.".

James received his Bachelor of Science in Civil Engineering in 1996, and went on to complete a Doctor of Philosophy in Civil Engineering (Geotechnical) in 2000. With the majority of his career efforts focused on academia, James believes that teaching is the number one reward for any professor or academic. He has also held positions as the Associate Dean in the Faculty of Engineering and Associate Vice-President, (Partnerships) at the University of Manitoba.

When asked of any annoyances or 'pet peeves' as a professor, James says he always gives students the benefit of the doubt if extensions are requested, or they doze off in his class. "The chances are that they were working until 3 a.m., and my role as a professor is to help them better manage and organize their time for when they enter practice and there are no extensions on deadlines. I'm not going to give them a hard time about it just for the sake of giving them a hard time.". James finds it a privilege to influence young students, to encourage them to be excited about their future career paths and to see them gain confidence.

In 2012, James saw his dedication to the field of engineering acknowledged on a national scale and was the recipient of the Queen Elizabeth II Diamond Jubilee Medal for Public Service – the award was a tangible way for Canada to honour Her Majesty for her service to our country, while also honouring significant contributions and achievements by Canadians. During the year of celebrations, 60,000 deserving Canadians were recognized.

In his spare time, James enjoys spending time with his two daughters, and can be found working in his garage on his classic sports car, a Dodge Shelby Charger. He has also served on the Board of Directors for the Winnipeg Humane Society for the past four years, "I grew up on a farm, so animal welfare is important to me." James himself is a cat owner, and a big supporter of the innovative developments that are taking place at the Humane Society, such as the Joyce Gauthier Behavioural Development Centre.

When looking to the future of his profession, James predicts that consultants in the engineering and geoscience sector will be increasingly relied upon to help balance competing interests that are currently considered in decision making with city planning and infrastructure. In the end, the hope is that all roads lead to the one main thing that makes James excited to be an engineer, "The ability to design infrastructure and see that infrastructure actually built.".

Jay Doering, Ph.D., P.Eng., FCSCE, FEC

Builder, United Way Supporter, Passionate Problem Solver

"From a very early age, certainly as a child, my mother would tell you that I would get out a screwdriver and take things apart just to see what makes them work.". This is how Dr. John (Jay) Doering explains the humble beginnings of his lengthy career in the field of engineering. As Associate Vice-President of Partnerships Research and International at The University of Manitoba, Jay has come a long way from a boy with his screwdriver.

With a broad portfolio, Jay has many duties and responsibilities to fulfill in a typical workday, ranging from research partnership development, to international partnerships and liaising with government, business, non-profit, and community organizations, to intellectual property management – all promoting the strengths and achievements of The University of Manitoba.

He partly attributes his administrative experience with The University of Manitoba, which includes previous roles as Head of the Department of Civil Engineering and Dean of the Faculty of Graduate Studies, as the preparation for his second round on Council with Engineers Geoscientists Manitoba (his first Council appointment was from 2002–2004). It is a responsibility to which he is "more than happy to serve," with the appointment deriving from a *strong* suggestion from the nominations committee. At the culmination of his two-year term in 2018, Jay would like to "see the organization in a better place than when I started".

Engineers Geoscientists Manitoba will no doubt benefit from his knowledge and expertise. In 1983, he obtained a Bachelor of Science in Civil Engineering from Queen's University and then in 1988, he completed a doctoral degree in Physical Oceanography from Dalhousie University. Jay commenced his career as an Assistant Professor in Civil Engineering at McMaster University, making the move to teach at The University of Manitoba in 1993. He enjoys the engineering industry because he loves solving problems, and applying science to engineering to solve the problem. "It's all about looking at things analytically, so I love the logic of it."

His love for engineering and willingness to "solve problems" has lead Jay to participate in more than 30 research grants and projects spanning his nearly 30 years in the industry. Most notable of which was a physical hydraulic model study of the new Manitoba floodway outlet drop structure, which was done in collaboration with a local consultant. It was during this time that he also ran his own consulting firm, "a small side project I did once a week," called Doering Engineering Consulting from 1990–2006.

In 1999, Engineers Geoscientists Manitoba took notice of Jay's accomplishments in the field of engineering and presented him with a prestigious Early Achievement Award. Most recently, Jay was the recipient of the Queen Elizabeth II Diamond Jubilee Medal for Public Service.

In his limited spare time, Jay hopes he can "hang onto all his fingers" as he enjoys woodworking, and has a full wood shop in his basement, he is currently installing a new staircase in his home – and from time to time he also builds small pieces of furniture. When not building things, he can be found volunteering with The United Way, where he serves as a member of cabinet in the position of Co-chair of Universities and Colleges for the province of Manitoba, and of course he is "absolutely a donor."

Jay's advice to students considering engineering is this: "Engineers require a broad set of skills, they need to know how to communicate and how to present, but also how to be clear so it's not just a focus on science and technology but also on language and communication skills that will make you successful in the industry.". Not only that, he adds that "technology is constantly changing" and as a result, the industry that Jay has dedicated his life's work to, changes with it.

Janet Gauthier, P.Eng.

Dedicated Mentor, GoodLife Fitness Guru, Energy Creator

"I look at the executive within our corporation and they have all achieved so much during their careers, and that is a path I want to work towards." As the Commissioning Lead on the Keewatinohk Bipole III project in Gillam, Manitoba for her employer Manitoba Hydro, and being only 11 years into her career and achieving one of her goals of being commissioning lead, she is well on her way to achieve great things in her career.

As one of the 20 largest renewable energy projects in North America, the purpose of the project is to strengthen the reliability and security of Manitoba's electricity supply by nearly 70%, while also reducing dependency on high voltage direct current lines and the existing Dorsey Converter Station. Janet is responsible for all commissioning activities and personnel, including factory acceptance testing and placement of equipment and systems into service at the Northern Station.

With her strength in "solving problems, and being able to do it quickly" Janet knew early on that engineering was the right choice for her while solving a specific problem in a calculus exam. "It was extremely difficult, requiring multiple transformations and substitutions. But I was able to see all the puzzle pieces come together, and I think I was even smiling at the end." But what originally lead Janet to engineering wasn't just a calculus exam, but the encouragement of her parents, namely her mom who Janet says is "one incredible woman," with a successful career as a dentist and an unrelated interest in how the mind of an engineer works. With the support of her parents and a love for mathematics, Janet obtained a Bachelor of Science in Computer Engineering from The University of Manitoba in 2003. She has since gone on to complete continuing education courses in Electrical Engineering from 2010-2013.

Her involvement with the University of Manitoba doesn't end there. Janet currently volunteers with a mentorship program for female engineering students, a program that was put in place in response to the lack of female engineers in the field upon completion of a degree. Which Janet believes is the direct result of a lack of knowledge of what kinds of jobs are actually out there for engineers. The program addresses this issue by giving students the opportunity to spend a workday with Janet to "see what my job consists of" Not only that, but she also has two full-time paid student interns from The University of Manitoba working with her on the Bipole III Project on two of the major contracts.

With a strong emphasis on "mentorship and the transfer of knowledge" to future generations of engineers and geoscientists, since 2009, Janet has been involved with the Member in Training or MIT (formerly Engineer in Training) program offered through Manitoba Hydro. Through the MIT program novice engineers can choose three to five different areas in which they'd like to develop skills

As a group, Engineers Geoscientists Manitoba can provide support and guidance to the next generation of engineers from the Indigenous community, while putting specific support systems in place for Indigenous students currently studying engineering.

and gain knowledge, they are then assigned on rotating six-month terms. As a program mentor, Janet meets with her MITs on a regular basis, shares industry knowledge, and networks and answers many questions along the way. As a member of the MIT committee she's also responsible for the recruitment, decision-making on admission, and part of the interview process for possible program candidates.

At the end of her terms as a Councillor for Engineers Geoscientists Manitoba Janet says she'd like to have "moved something forward" – going on to explain how the Council functions, "as a team we establish 'Ends' we call them, overall goals for the Association," and one in particular that she would like to see through is how as a group, Engineers Geoscientists Manitoba can provide support and guidance to the next generation of engineers from the Indigenous community, while putting specific support systems in place for Indigenous students currently studying engineering.

With the majority of her time being spent up north in Gillam, Manitoba it's surprising she can still make time for a non-engineering related "passion" as a group exercise instructor with GoodLife Fitness. She is drawn to the sense of community and energy the class gives off – "I literally get goose bumps from the energy we are all projecting!" Next on her "high priority" to-do list is to participate in an Indigenous sweat ceremony, an activity that is encouraged and administered by Manitoba Hydro in partnership with northern community elders.

In the next few months, Janet will be in Germany, participating in functional and dynamic performance testing for a high voltage direct current (HVDC) commissioning in preparation for on-site commissioning at Bipole III that will begin in the fall. Safe travels Janet!

ENGINEERING EDUCATION in the Province of Manitoba

By S. L. Baragar

As the population of Manitoba increases, are we educating and licensing a proportionate number of engineers? Is the diversity of Manitoba's engineering graduate population sufficiently reflective of the diversity in Manitoba's total population? If not, where and why are we lacking? In September of 2015, Engineers Geoscientists Manitoba put out a call to members to join an Engineering Education Task Group (EETG) to address some of these questions. The mandate of the EETG was to look at Manitoba's access to engineering education, the future market-place demand, and possible initiatives for the future.

Over the course of a year and a half, the EETG worked on preparing a report based on research gathered from numerous sources and on information provided by guest speakers. The research that was collected identified an increasing need for engineers in Manitoba, and identified several barriers that may prevent enrollment in, completion of, or professional retention within engineering. Barriers discussed in the report include; perception of engineers, lack of social support for under-represented groups, lack of financial

> The research that was collected identified an increasing need for engineers in Manitoba.

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support, required relocation to attend university, educational inequalities, competitive entrance requirements, lack of diversity in prominent and influential roles, and understanding of applicability of with professional registration.

The report, titled "Access to Engineering Education in the Province of Manitoba", EETG presents 10 main recommendations, with additional sub-recommendations, for breaking down the identified barriers. Examples of the main recommendations presented include; supporting outreach groups and mentorship programs such as the University of Manitoba's Engineering Access Program (ENGAP) and Women in Science and Engineering (WISE), reforming scholarship and bursary programs, creating bridge or transfer programs to the University of Manitoba Faculty of Engineering from various other programs, and supporting changes made to university to promote inclusivity.

To date, the EETG report has garnered attention from provincial government officials, such as the Minister responsible for the Status of Women, and policy influencers such as leaders in the Department of Education and Training. As a consistently relevant topic relating to increasing diversity in science, technology, engineering, and mathematics, and addressing demands of both an increasingly diverse growing and ageing population, improving accessibility to engineering education in Manitoba should continue to be at the forefront of policy and positive change conversations. As recommended in the report, identifying whether we harbour any implicit bias is one step that can be taken on an individual level towards becoming more aware of barriers we may be unconsciously propagating ourselves (see Project Implicit by Harvard University for free online tests for implicit association biases at *https://implicit.harvard.edu/implicit/canada/takeatest.html*). These barriers can indirectly affect all of us after all, and we can all affect them.

For more information on the EETG, or the EETG report, please contact Soffia Baragar at *sbaragar@apegm.mb.ca*, or at 204-474-2736, ext. 232.

Barriers discussed in the report include;

- perception of engineers
- lack of social support for under-represented groups
- lack of financial support
- required relocation to attend university
- educational inequalities
- competitive entrance requirements
- lack of diversity in prominent and influential roles
- difficulties with professional registration.

Devil's Lake, North Dakota
A Lake in Retreat?

By A. Kempan, P.Eng., FEC

Manitoba and North Dakota share some important characteristics... both have large areas of relatively flat land and, at times, an overabundance of water. Whereas the floods in Manitoba tend to be in the spring and they tend to come and go quickly, much of North Dakota's flooding tends to be slow and inexorable. At times the flooding in North Dakota has had a political spillover into Manitoba.

People living around the body of water called Devils Lake, and the city of Devils Lake, North Dakota, have experienced a decades-long relentless rise in water levels. The city is now protected by flood control structures, but the thousands of acres of surrounding farmland have suffered immensely. The lake is a closed system with no natural exit other than through catastrophic spills which occur every few thousands of years.

The Devils Lake basin was carved out by glaciers 10,000 years ago and has never had a stable existence. It is believed to have been completely dry 6,500 years ago and since then, water levels have fluctuated by 20 to 40 feet every hundred years or so. In 1940, the above mean sea level (AMSL) of the lake stood at 1,401 feet and covered 10 square miles. From that time on, lake levels began to rise, and experienced

an accelerated climb in the early 1990's. The rise was mainly due to increased precipitation. Devils Lake reached a peak on June 27, 2011 of 1,454.40 feet, a rise of 53 feet over the decades. Agriculture and infrastructure suffered severe damage during the rapid rise of the 1990's.

One of the measures undertaken by the state to control water levels was to build a west-side (West Bay) outlet. Water would be pumped from the lake into the Sheyenne River and would eventually enter the Red River of the North and flow into Canada. The Manitoba government of the day was quite militant in opposition, as was the State of Minnesota and nine other states bordering the Great Lakes. The fear was that foreign biota and pollutants would cross into the Red River water system.

In spite of the opposition the State of North Dakota proceeded to build the outlet. Canada agreed to pay $25 million for a sand filter to minimize the possibility of pollution, but the state installed a $50,000 rock filter instead. The West Bay outlet began pumping water in August of 2005 and immediately ran into problems with high sulphate concentrations which exceeded state regulations. The problem was solved by raising the permissible sulphate levels.

The West Bay outlet from Devils Lake operated in 2007 and 2008 at a maximum capacity of 250 cubic feet per second (CFS). However, the lake continued to rise, edging ever closer to reaching the level of a catastrophic overflow which would be disastrous for both North Dakota and Manitoba. So, in 2012, an additional outlet was built at the east side of Devils Lake. The new outlet would add another 350 CFS to the drainage plan, making the total outflow 600 CFS.

Finally, by July of 2016 Devils Lake had receded by 4.5 feet, probably due to a combination of factors, but there is little doubt that the two lake outlets played a role in the drop. Ranchers and farmers have been able to recover some flooded land and return it to production, but it is a slow process. Debris must be cleared away first and it takes time for microorganisms to return to the soil. In spite of this improvement, the lake is still considered to be at flood level and the state has to bear the significant costs of operating and maintaining the system. Of course, present success doesn't necessarily predict future conditions.

While the flooding has been a major disaster for the State of North Dakota, there have been benefits from having all that water... mainly in the form of water recreation. Many boat ramps, lodges, bait shops, fish cleaning stations, cabins, resorts, and campgrounds opened to service tourists and locals. The ideal future would be to find a way to stabilize the lake and to create a balance of sustainable enterprises. History shows that this will be a challenge.

Celebrating Diversity
A NEW AWARD

N. Chandler, P.Eng.

In engineering and geoscience professions in Manitoba, we recognize that women, Indigenous peoples and visible minorities are under-represented. A topical issue in Manitoba, as in Canada as a whole, is the recognition of the internationally-educated professionals, many of whom come here with experience as engineers or geoscientists in their home country. *University Affairs*, an on-line magazine, published an article on the accreditation of these professionals (October 5, 2016). In it they note that, in 2006, only 19% of immigrants who graduated in engineering were, in fact, working as engineers.

In the spring of 2016, Grant Koropatnick, Engineers Geoscientists Manitoba CEO and Registrar, suggested that the Awards Committee consider a new award recognizing employers for innovative recruitment and retention policies and for programs resulting in a diverse and inclusive workforce. As a committee task group, Ganpat Lodha, Ernie Armitt and myself, conducted research into similar awards elsewhere, diversity accomplishments of Canadian companies, and the definition of a diverse workforce, and surveyed Manitoba-based engineering and geoscience employers to understand current practices and policies.

Our findings are encapsulated in the following:

The American Society for Engineering Education (ASEE) believes that for the discipline of engineering to reach its full potential we must do a better job of including all segments of our society. In particular, they say, we must engage those individuals who have been under-represented as professionals. The ASEE goes so far as to suggest that "diversity, both intellectually and socially, fuels innovation and the development of imaginative and enduring solutions to global problems".

The most prominent diversity award given in Canada is recognition as one of *Canada's Best Diversity Employers*. A number of companies in Manitoba have achieved this designation, some of which employ registered members of our Association. It was interesting to us that the designation was awarded to companies that went well beyond simply having policies in place that ensured equity in hiring practices. The winning companies invariably had activities aimed at making all employees feel included, educated employees with respect to ethnic or cultural issues in the workplace, and/or had practices that embraced the diversity of the population in the community in which they worked.

We also researched the definition of a diverse employee group. The American Society for Engineering Education has a vision for the profession where all are respected and no individual feels marginalized. As a goal, they say, we should try "to reach a state where engineering is fully empowered by all segments of our society". In the responses to our survey of local companies, there was an emphasis on the role of internationally-educated professionals, while others shared hiring policies with respect to women, Indigenous peoples and visible minorities. We felt, however, that our definition of diverse employees should go beyond these under-represented groups and include all the people within our society that are often marginalised or excluded.

Definitions of diverse people are plentiful. In our research we drew upon definitions from Canada's Best Diversity Employers, the American Society for Engineering Education and the University of Oregon Multicultural Advocate. These resources challenged us to expand our definition to include people from different ethnicities, people with physical disabilities, people with mental disabilities, and people having varied sexual/gender orientations, in order for us to be fully inclusive. Kristina Leung, Senior Editor of Canada's Top 100 Employers says Canadian employers continue to expand the definition of diverse groups beyond that captured in the Canada's Best Diversity Employer competition, to include those with mental health issues, cognitive and learning disabilities, and persons who have lived with addiction. Expanding the definition allows us to recognize the creativity of employers

in developing company practices with a goal of improving inclusion and respect for all.

The definition of a diverse employee group that we ultimately settled upon included internationally-educated professionals, women, visible minorities, people from different ethnic groups, Indigenous peoples, those identifying as LGBTTQ*, and people with physical and/or mental disabilities.

The significance of the Diversity Employer Award was apparent to us from the outset. We heard anecdotal stories of inclusivity efforts of people within our professions and of how opportunities are afforded to recent immigrants having limited options for employment. We shared our own experiences within our small research group and read survey responses from Manitoba companies, large and small, who were proud of their efforts towards celebrating a diverse working environment. My own experience teaching a cohort of internationally trained professionals was extremely rewarding, as these were the most receptive and appreciative students I have taught. This year, and in the years to come, I look forward to the incoming award nominations with anticipation, and to reading what the employers in our Association are doing to make their workplaces welcoming and respectful for all.

Geology and Society: Critical Minerals – IRON

R. Reichelt, P.Geo., FGC

One of the materials we use every day is iron. Alloyed with carbon (and other elements) to make steel, it is used throughout our society for everything from building frames to motor vehicles to tin cans. We find it everywhere. Indeed, one of the distinguishing features of modern industrial society is the manufacture and use of large quantities of iron and steel.

How much? The United States Geological Survey estimated that worldwide production in 2015 was 1,180 million metric tons of pig iron and 1,640 million metric tons of raw steel[1]. Approximately, 3,320 million metric tons of iron ore were mined worldwide in 2015[2]. If you do a mass balance (try it), the amount of iron and steel manufactured is greater than the amount of iron recovered from iron ore (predominately hematite, Fe_2O_3). The difference is made up by the recycling of scrap iron and steel.

Iron is fairly abundant on earth, being the fourth most abundant element in the earth's crust and making up approximately five percent of the crust by weight[3]. You can refine iron from a variety of sources. The Vikings, and other people, used iron concretions found in bogs, so called bog iron[4] to make swords, axes and other iron implements. However, to produce iron in industrial quantities, it is necessary to exploit banded iron formations which supply 95% of the world's iron ore[5].

Banded iron formations mark an important part of the earth's history: the arrival of abundant free oxygen as the result of the evolution of cyanobacteria during the Proterozoic Eon, 2500 to 540 million years ago. Banded iron formations are primarily chemical precipitates of iron oxides (mostly hematite) and chert (amorphous silica, SiO_2)[6]. The evolution of cyanobacteria during the Proterozoic resulted in an increase in free oxygen in the atmosphere and oceans. When the concentration of oxygen in the oceans reached a critical point, the silica and iron oxide precipitated out[7].

The geology of banded iron formations is too complex to present here in anything other than a brief summary. Banded iron formations were deposited in places, such as in the vicinity of hydrothermal vents, where the conditions for the precipitation of iron and silica were favourable[8]. In some places, weathering of banded iron formations resulted in the silica being leached out and very high quality "supergene" iron ore deposits were formed[9].

In Canada, large banded iron formations are found in the Labrador Trough[10] of Northeastern Quebec and Labrador. Banded iron formations are also common in the Proterozoic deposits near Lake Superior[11]. In Manitoba, banded iron formations are found near Bird Lake[12].

An interesting note on iron is its place in human history. The earliest uses for iron were almost always for weapons. One of the earliest examples was a knife made out of meteoric iron that was found in King Tutankhamen's tomb[13]. Going on in history, the transition from the Bronze Age to the Iron Age was marked by violence and the overthrow of established polities; one author places the year 1177 B.C. as a critical year for the destruction of the Bronze Age civilizations in the Eastern Mediterranean[14]. The tribes and nations who arose out of the collapse of the Late Bronze Age civilizations were the ones armed with iron weapons[15].

In more modern times, the Industrial Age allowed us to mass produce weapons such as rifles, machine guns, cannons, armoured fighting vehicles and warships; all of which use iron and steel. Although we have plenty of peaceful uses for iron, the development of iron metallurgy is closely connected to the requirements of armed conflict.

This is just a brief discussion and I hope that I have piqued your curiosity. Iron is a subject that could form the basis for any of a number of lines of inquiry. The geology of iron deposits, the mining and manufacture of iron and steel, the place of iron in human history, all these are covered by many articles and books. Feel free to pursue the fascinating story of iron.

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Manitoba Joins New West Trade Partnership Agreement

By C. Cousin, P.Eng.

The New West Partnership Trade Agreement (NWPTA) was developed by the governments of British Columbia, Alberta, and Saskatchewan with the intention of creating Canada's largest barrier-free interprovincial market and effectively creating a single economic region encompassing the three provinces. The NWPTA provides for the free movement of goods, capital, and workers between the signatory provinces by removing impediments to trade and differences in business standards and regulations deemed to be unnecessary.

The agreement came into effect on July 1, 2010, with British Columbia and Alberta subject to the full terms of the agreement at that time. Saskatchewan's participation in the NWPTA was phased in with staggered sector participation and transitional measures, with full participation as of July 1, 2013. The Province of Manitoba has now formally joined the NWPTA effective January 1, 2017, although transitional measures and dates have been granted which require compliance with procurement obligations by January 1, 2019.

Engineers and geoscientists within Manitoba should be aware of the basic intentions and relevant legal requirements of the trade agreement to understand the ways in which it may affect us personally and professionally. For individuals and employers, an important aspect of the agreement is the intent to improve labour mobility within the four signatory provinces. Engineers Geoscientists Manitoba has always worked with its counterpart associations in other provinces and territories to ensure that standards for registration and professional development are consistent with those in other jurisdictions. The requirement of the NWPTA which is likely to have an impact on our professions is the requirement for public entity procurements to be fair, open, and transparent. Open, non-discriminatory procurement is required for goods, services, and construction contracts, applied based on anticipated costs above set thresholds applicable to owners/buyers as follows:

1. Applicable to Provincial government procurement, at thresholds above:
   a. $10,000 or greater for goods
   b. $75,000 or greater for services
   c. $100,000 or greater for construction
2. Applicable to Crown corporations, government-owned commercial enterprises and other entities owned or controlled by an NWPTA provincial government, at thresholds above:
   a. $25,000 or greater for goods
   b. $100,000 or greater for services
   c. $100,000 or greater for construction
3. Applicable to procurement by municipalities, school boards, health regions and publicly funded post-secondary institutions, and entities owned by the preceding, at thresholds above:
   a. $75,000 or greater for goods
   b. $75,000 or greater for services
   c. $200,000 or greater for construction

Engineers and geoscientists employed by the entities required to follow these guidelines will need to ensure that their procurement contracts are compliant with the intentions of the NWPTA and are advertised in a manner that is considered open. Direct procurement or single-source awarding of contracts will still be accepted for contract values below these threshold values, and owners will need to base their procurement decisions on realistic budget estimates. Private-sector engineering consulting firms engaging in work with public sector clients will need to be aware of these guidelines as they may affect service contracts and tender preparation for construction contracts. The acceptability of giving preference to local content must be reviewed, as this practice may be considered discriminatory. While there are exceptions within the agreement, the overall intention is to ensure open and non-discriminatory economic opportunities.

The agreement contains provisions for two types of dispute mechanisms. The formal Dispute Resolution Mechanism provides a formal review of complaints where it is alleged that one of the signatory provinces is not abiding by its obligations under the agreement. For complaints in relation to a specific contract, the Bid Protest Mechanism provides for an administrative review process of a government procurement. This will be actionable within Manitoba as of January 1, 2019.

Service providers and contractors from outside of Manitoba will likely seek work in the province more actively and openly, which may impact the local market conditions. The agreement is a two-way street for Manitoba, and Manitoba's engineers and geoscientists are encouraged to seek opportunities within the other signatory provinces, which may prove more open to us with Manitoba's participation in the NWPTA.

Please visit the official website *www.newwestpartnershiptrade.ca* for full and detailed information regarding the NWPTA.

CONNECTIONS

CREATE. FOSTER. LEAD.

The Manitoba Community for Women in Engineering, Science, Trades and Technology is excited to announce our third biennial conference:

CONNECTIONS: CREATE. FOSTER. LEAD.

Join us on May 5, 2017 at the Fort Garry Hotel for MCWESTT 2017:

a local, one-day conference dedicated to connecting women in engineering, science, trades, and technology, and empowering them to Create, Foster, and Lead.

Susan Auch, three-time Olympic medalist from Winnipeg, MB

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For the first time ever, MCWESTT 2017 is offering a full day pre-conference workshop on Thursday, May 4th, 2017! The WinSETT Effective Communication workshop will be facilitated by Edna Dach with guest speakers Trish Jordan and Dawn Nedohin-Macek, P. Eng., FEC. Thanks to the generous partnership of the NSERC Chair for Women in Science and Engineering - Prairies, this workshop is available at a significantly discounted rate of only $75, exclusively for our conference participants. Be sure to register early as the workshop is limited to only 30 participants.

MCWESTT 2017 is a full day conference featuring:

- Three inspiring keynote speakers
- An Armchair Chat with some of Winnipeg's leaders
- Your choice of two out of 10 breakout sessions* with topics focused on these professions such as *Leading in a Technical Environment*
- Ample networking opportunities
- Breakfast, lunch, and snacks (featuring the Fort Garry's famous chocolate fountain!)

***We've been listening to your feedback! We've extended the length of the breakout sessions and increased the networking time throughout the day!**

Everyone is welcome at MCWESTT 2017! If you work in engineering, science, trades, or technology, or you know/work with/live with someone who does, then this conference is for you. The conference is open to participants of all ages, genders, and professions.

Conference Details:

Date & Time	Cost	Location
Friday, May 5, 2017 7:15 AM to 4:30 PM	Regular $175 Student $125 Pre-Conference Workshop (May 4) $75	The Fort Garry Hotel 222 Broadway, Winnipeg, Manitoba

Want to stay up-to-date on all MCWESTT 2017 announcements, including speaker bios, pre-conference workshop details, and all conference promotions? Connect with us! At *www.mcwestt.com* or on facebook, twitter, LinkedIn, and Instagram.

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The centennial of Engineers Geoscientists Manitoba will be in 2020. That is fast approaching. As part of the planned celebration the Heritage Committee will be assisting the CEO's Centennial Task Group in gathering engineering and/or geoscience themed photos that highlight the contribution of the professions toward "making life work better". The Heritage Committee requests that members or employers having photos of that nature to please forward them to, or contact, Dave Ennis at *Heritage@apegm.mb.ca*

While not all will be published, the Heritage Committee will preserve those judged to have historical significance in its document and photo archive. See *http://heritage.apegm.mb.ca/index.php/Main_Page* for information on the Heritage Committee's preservation work.

The prize for the contest winner is a free lunch while attending a Heritage Committee meeting.

The Heritage Committee aims to:

- Research, recover, preserve and protect the heritage of engineering and geoscience as it relates to Manitoba
- Present our heritage to Association members and to the public of Manitoba
- Work with other groups and organizations that have common objectives
- Maintain the Heritage Wiki Site

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Point-Counterpoint: By-Law Proposals

Last year, members took notice of a longer than usual list of By-Law proposals. When reading through the proposals, it became clear that there were also several pairs of proposals that addressed the same By-Laws. As expressed by several members, this led to an arduous task of filtering through a considerable amount of information. There is no doubt that an improvement to our process is required in order to avoid a repeat of last year's By-Law proposal vote.

Our current By-Laws (Part 17) allow for two paths leading to a general vote by the membership on a By-Law proposal. The first path is to have a By-Law proposal approved by Council. The second path is to have a By-Law proposal put forward by a group of six members who are willing to sign the proposal form.

Last year, a very small group of members decided to use the second path for suggesting a dozen By-Law proposals. In doing so, there was no review by Council prior to having a general vote by the membership. This was the first time members have submitted By-Law proposals directly to the membership in at least 20 years.

Following are two points of view regarding improving the system. The first is by Michael Gregoire, P.Eng., Director of Professional Standards at Engineers Geoscientists Manitoba. The second is by Dave Ennis, P.Eng., who served as Executive Director of APEGM from 1990 to 2005.

Michael Gregoire, P.Eng., Director of Professional Standards at Engineers Geoscientists Manitoba

A review of the proposals put forth by members-at-large last year made it clear that they were inconsistent with existing By-Laws, contained unclear language, and at least one of the proposals was illegal because it conflicted with the Act. The proposals were also submitted on the deadline for By-Law proposals. Although Council agreed with most of the principles suggested by these proposals, they were prevented from working with the members to achieve the desired outcomes properly.

Proposals Circumventing Council: Some members have asked why we currently have an allowance for By-Law proposals by members-at-large without review by Council. Given that the Act simply indicates that 'the Association' may make By-Laws, the current allowance for By-Law proposals by members-at-large is one that was consciously made some time ago by the Association. However, this method is not consistent with all other regulators.

For example, the Law Society of Manitoba has a group of individuals referred to as 'the Benchers'. This is a group of elected and appointed people. It is akin to Engineers Geoscientists Manitoba' s Council. For that regulatory body, the 'rules' (equivalent to our By-Laws) are set by the Benchers.

In Saskatchewan, all APEGS By-Law proposals must be vetted and approved by the Council. There, By-Law changes must be ratified at the AGM, but they are not reviewed by the entire membership. Members may make a resolution at an AGM for Council to consider a proposed By-Law change but cannot implement a By-Law vote directly.

One remedy to the current system is to require all By-Law proposals to receive approval by Council. This would match the system used by APEGS and the Manitoba Law Society. Another alternative is to require all By-Law proposals to be submitted to Council in advance and, where Council does not support the proposal, ensure that the proposal has, at a minimum, been edited by legal counsel to ensure the proposal is consistent, clear, and legal.

AGM as a Gatekeeper: Prior to 2010, all By-Law proposals, whether approved by Council or submitted by a group of six members, needed to be approved at an AGM or Special Meeting of Engineers Geoscientists Manitoba before proceeding to a general vote. This old system ensured that the Association didn't unnecessarily spend thousands of dollars on a paper and snail mail based voting process. With the implementation of electronic voting, the cost of each vote process became essentially zero.

One issue with using the old method is that the AGM served

One remedy to the current system is to require all By-Law proposals to receive approval by Council. This would match the system used by APEGS and the Manitoba Law Society. Another alternative is to require all By-Law proposals to be submitted to Council in advance and, where Council does not support the proposal, ensure that the proposal has, at a minimum, been edited by legal counsel to ensure the proposal is consistent, clear, and legal.

as a gatekeeper for any By-Law proposal. Unfortunately, our AGM has historically been unrepresentative of the membership. A simple evaluation of demographics illustrates this clearly. In 2015, for example, 23% of members in attendance at the AGM were non-practising (Retired or Life Member category). Only 13% of the general membership is in that category.

Historically, the AGM also has a low turnout when compared to the overall number of members who are actively engaged in the Association. AGM attendance is regularly near the quorum requirement of 50 but has flirted with up to 100 members present. By contrast, members participating in the elections and By-Law proposal vote processes are an order of magnitude higher.

In essence, the old system allowed 26 disgruntled individuals to show up to an AGM and block a By-Law proposal.

Suggesting a return to By-Law wordsmithing at the AGM implies that Council will not perform its due diligence prior to approving a By-Law proposal. The reality is that By-Law proposals are developed through membership consultation prior to Council's approval. The consultation appropriately involves those with direct knowledge about the By-Law in question. A proposal regarding the investigative process, for example, is reviewed by the Investigation Committee and legal counsel prior to Council's approval. Unfortunately, the entire Investigation Committee is not present at an AGM. Therefore, changing a By-Law on-the-fly at one meeting is not appropriate.

Fundamentally, all By-Law proposals must be approved by the entire membership. The concern raised by a few is that a By-Law proposal that has been reviewed by one or more committees of Council, staff, legal counsel, and Council may still contain fundamental errors. In that unlikely event, a vote by the entire membership acts as yet another layer of review. A return to having the AGM act as a gatekeeper for By-Law proposals is not appropriate.

– Michael Gregoire, P.Eng.

Dave Ennis, P.Eng., who served as Executive Director of APEGM from 1990 to 2005

Given the recent disturbing scenario of a plethora of both Council and member-initiated By-Law proposals during the run up to the 2016 Annual General Meeting, the Council is to be commended for taking steps to bring more order into the process.

However, in my opinion, the process for submitting member-initiated By-Laws and for voting on both Council and member initiated By-Law proposals is, as currently set out in the By-laws, flawed. And, as the By-laws are the property of the members, the flaws ought to be a concern to members, and ought to be remedied.

The major flaw is that the current system does not provide for adequate pre-vote member discussion and debate on a proposal. The online process is efficient for the purposes of voting but online commenting on the proposal cannot be a substitute for face-to-face discussion and consensus building at a meeting of members. Discussion, debate, and possible amendment of a proposal affords one more check

and balance to assure the voting membership that a proposal has been properly vetted, and can head off a "why bother" reaction when members are deciding on their vote.

It is worth noting too that the current By-Law makes provision for members to receive notice of By-Law proposals by "standard mail", but does not provide an opportunity for those members to comment or engage in any discussion on the proposal.

There have been at least two occasions when discussion of By-Law proposals at an AGM have resulted in either an improving amendment or the proposal failed to obtain the approval to go to a vote of the membership. They both involved the Association's disciplinary process – which has the potential to affect any member. The amended one improved a proposed provision for mediation. The one that failed would have relaxed the process for determining the penalty on a finding of member guilt. It is to be noted that both proposals were vetted by the Investigation Committee before being submitted by the Council.

The second flaw is that in order for a proposal for a member-initiated By-Law proposal to be presented to the membership it only requires six member signatures.

> Discussion, debate, and possible amendment of a proposal affords one more check and balance to assure the voting membership that a proposal has been properly vetted, and can head off a "why bother" reaction when members are deciding on their vote.

To forestall the scenario of frivolous proposals, the number of signatures should be increased – twelve would be an improvement.

Lastly, an observation on the aspect of Council-initiated By-Law proposals. There is no question that Councillors are capable and sincere – but they are not infallible. In 20 plus years of participating in Council meetings, I know that occasionally mistakes are made. Providing for discussion and consensus building at a meeting of members before a By-Law vote would serve to enhance the effectiveness of our member-based Association.

So, watch for either a Council initiated By-Law proposal providing a remedy or a member submitted proposal which, at present, requires only six signatures. (But don't worry – it won't be frivolous).

– Dave Ennis, P.Eng.

As always, we appreciate comments and discussion about standards issues. If you'd like to talk about the above topic or any other area of concern, please do not hesitate to contact me at: *mgregoire@apegm.mb.ca.*

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As we continue to deliver valuable information through the pages of this magazine, in a printed format that is appealing, reader-friendly and not lost in the proliferation of electronic messages that are bombarding our senses, we are also well aware of the need to be respectful of our environment. That is why we are committed to publishing the magazine in the most environmentally-friendly process possible. Here is what we mean:

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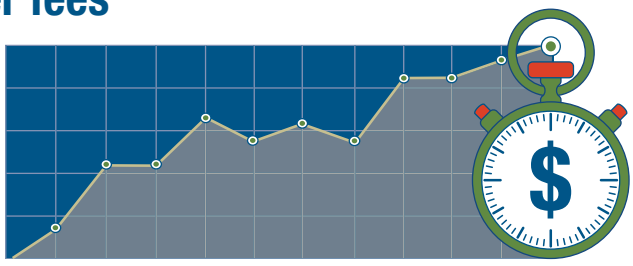

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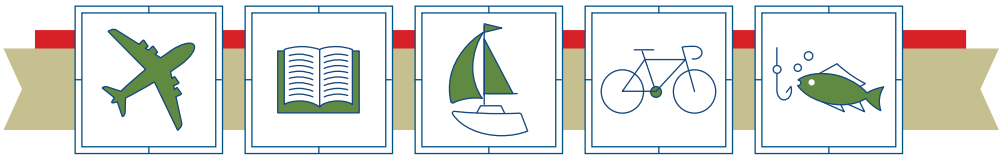

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