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& Geoscientists of Saskatchewan*

THE PROFESSIONAL

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Allison Smith - Academic Review Committee Assistant

Taylor Weichel - Administrative Assistant

Fan Yang - Administrative Assistant



### ON THE COVER:

John Desjarlais, P.Eng.

### Editorial provided by:

MartinCharlton Communications and APEGS staff  
#300 - 1914 Hamilton Street, Regina, Saskatchewan S4P 3N6  
T: (306) 584-1000, E: karen@martincharlton.ca

### Design and Layout:

J. Lauder Publishing & Design, T: (306) 522-8461, E: joanne.lauder@sasktel.net

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300 - 4581 Parliament Avenue, Regina SK S4W 0G3  
T: (306) 525-9547 F: (306) 525-0851 Toll Free: 1- (800) 500-9547  
E: apeg@apegs.ca

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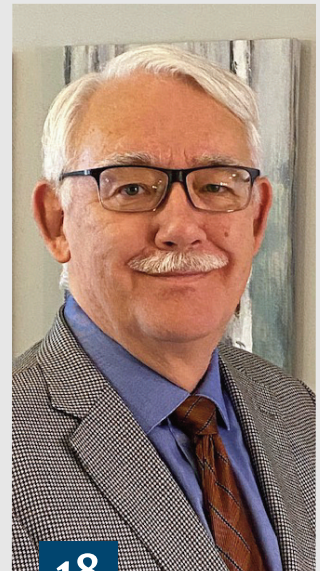
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# President's Message



Kristen Darr, P. Geo.

## Reconciliation is an important matter for all Canadians.

It is important to be listening and learning about the experiences and systems that impact Indigenous Canadians and to work on the relationship between Indigenous and non-Indigenous Canadians. I encourage you to read page 35 explaining the Truth and Reconciliation Commission and the 94 Calls to Action that came from that process. Those calls to action help guide all Canadians in understanding how to acknowledge the past and advance today's relationship.

I would also encourage members to continue to read that article to learn about APEGS' actions in relation to the 94 calls to action. Our Equity & Diversity Committee has reached out to secure some expertise and guidance. Our volunteers, members and staff have the opportunity to take part in relevant training. We are learning from other regulatory bodies and professional associations related to engineering and geoscience in Canada. More can be done, but I am proud we aren't sitting idle. We are taking steps to learn and taking action.

That is very much what we see in the article featuring APEGS president-elect, John Desjarlais, who will become president in May 2022. I greatly appreciate John's ability to explain the concept of equity and respect his ability to take on leadership roles that he is well suited to execute.

John has taken on a leadership role with a new group in the province that brings together the voices of Indigenous construction companies known as the Indigenous Peoples-Owned Construction Company Group (IOCCG).

Together, they are drawing attention to Indigenous businesses and the socio-economic impact they are seeking to make in our province and country, which is a factor in reconciliation that all Canadians should learn.

I always take great interest in learning more about the work of members such as Dr. Terry Fonstad, P.Eng., (APEGS Past President), Dr. Kerry McPhedran, P.Eng., and Rob Martell, P.Eng., to better the world through engineering and geoscience. The impact they are having through their work is improving the province and the world in ways that go beyond the technical aspects of engineering to the broader community to improve relationships and quality of life. They are driven to understand and perform to the best of their abilities to benefit others.

That same drive can be seen in someone special to me who will be retiring as APEGS' Executive Director and Registrar in mid-January. I have known Bob McDonald since before I settled on becoming a geoscientist. My father introduced me to him, knowing Bob from his childhood, growing up in Swift Current.

Since that first introduction, Bob has been a mentor to me, not just helping me identify a career path, but suggesting I consider becoming active in APEGS, an association that is better for having someone like Bob at the helm.

He shares his wealth of knowledge through his genuine and caring nature with all he encounters and I know many engineers and geoscientists feel fortunate to have had the opportunity to meet and learn from him. He has given so much to the province through his work for the association and I know Bob is grateful for the long, lasting relationships he has made. I don't think Bob ever forgets a name.

I want to thank Bob on behalf of all of APEGS members for his contributions over the last 20-plus years and wish him all the best the coming years, which I expect will be filled with more learning, mentoring and, of course, golf.

It is also my great pleasure to welcome Stormy Holmes, P.Eng., FEC, FGC (Hon.) as APEGS' new Executive Director and Registrar effective Jan. 4, 2022. Stormy is a great leader and passionate about engineering, geoscience and APEGS. She is an excellent fit for this role who is well-qualified at an opportune time to take responsibility for leading the association in its next steps. I'm sure when you read page 23 with the full announcement detailing Stormy's work experience and dedication as a volunteer, you, like me, will take comfort knowing that APEGS is in great hands going forward.

# Applying Equity to Procurement

BY MARTIN CHARLTON COMMUNICATIONS



Photo supplied by John Desjarlais

John Desjarlais, P.Eng., on a work-site.

## In a zero-sum game, there is a winner and a loser.

**T**he winner benefits at the direct expense of the loser. As the competition continues, over and over again, one takes from the other and there is zero overall gain.

John Desjarlais, P.Eng., recognizes that some non-Indigenous Canadians consider engaging Indigenous people and organizations to be a zero-sum game. There are those who think they are expected to make a sacrifice in order for Indigenous people to advance.

His perspective focuses on gains to be made and equity to achieve equality. He explained this perspective as the chair of a new association formed within Saskatchewan's construction industry this year.

The Indigenous Peoples-Owned Construction Company Group (IOCCG) went public in September after months of planning and process to formalize the group. Ten different construction companies that are at least 51 per cent Indigenous-owned and operated have come together to “form a unified voice on best practices regarding Indigenous engagement, capacity development, and procurement in the construction industry.”

The process that resulted in this group was started when Joel Morin, an Indigenous person who is the sole proprietor of a construction business, began a conversation with the Saskatchewan Construction Association (SCA). That connection led to the idea of





organizing a wider discussion with other Indigenous-owned construction companies. Desjarlais, the general manager of Great Plains Contracting, was contacted by the SCA about participating.

Procurement in construction is often based on cost competitiveness, but the group realized maintaining that focus allows inequality to continue. Cost competitiveness can inhibit businesses from contributing to a broader socio-economic impact.

“We start talking and realized right away that we were often pit against each other and we were not particularly fond of that type of activity,” said Desjarlais.

“Clients usually lump us in the same box and treated us as competitors against each other whereas we should be incentivized and encouraged to work with each other, we felt.”

During that initial conversation, Desjarlais said it was determined they should work on a structure to formalize the group, an effort he could contribute to given his background in governance. The new group would focus on Indigenous interests in the industry while the SCA continues its advocacy for a broad membership.

The group spent about a year establishing its purpose, which is “to represent Indigenous-owned construction companies that seek to increase the socio-economic impact of construction activities for Indigenous peoples.” It also developed its structure before holding an election to select a chair for the board, a role held by Desjarlais, and going through a ratification process.

In its discussions, those participating in developing the IOCCG recognized that ownership of Indigenous-owned

construction businesses varies. Some are owned by sole proprietors. Others are limited partnerships. Some are corporations with thousands of shareholders.

For example, Great Plains Contracting, the company that employs Desjarlais as its general manager is a First Nations partnership between File Hills Qu’Appelle (FHQ) Tribal Council Developments LP, Points Athabasca Construction LP and Graham Construction.

FHQ, which makes up 50 per cent of the partnership, is made up of 11 First Nations communities in southern Saskatchewan: Carry the Kettle, Little Black Bear’s Band, Nekaneet, Okanese, Pasqua, Peepeekisis, Piapot, Standing Buffalo, Star Blanket, Wood Mountain, and Muscowpetung. This translates to around 28,000 First Nations shareholders in the company, Desjarlais explains.

“One of our challenges as an association is how do you advocate for business like ours and advocate for a sole proprietor? Our economic impact is very different and far too often, a client would ignore a sole proprietor,” said Desjarlais.

“So how do we be inclusive? How do we not exclude? How do we not think about competition? How does someone like me not simply crush the opportunity of a small Indigenous entrepreneur for the sake of advancing our own business?”

Economic reconciliation, as a concept, helped them bridge the differences.

“Something that’s building incredible momentum is understanding Indigenous economic impact and starting to understand socio-economic impact,” said Desjarlais.

Indigenous-owned construction companies have been procured as Indigenous businesses, but that came with an expectation that these businesses would need to assimilate to enjoy continued success.

“Historically, the market tried to push us to say a successful Indigenous business is one that no longer has to identify (as Indigenous). They can compete,” said Desjarlais.

However, that “systemic racism” then requires the business to change, Desjarlais explains, because the message received is “we don’t want to see any of your values as a business. We don’t care what they are. We just care that you’re cost competitive.”

Allowing that attitude to go unchallenged would mean that the reasons those businesses were established could be dismantled.





“What we saw is the impact that (these) businesses need to make (by providing) training and development, community donations, sponsorships (and) leadership development,” said Desjarlais.

“So, all of those type of activities cost money. We thought, ‘We need to do this. This is why our business exists.’ But then, that places us in a different position in terms of value.”

This activity of developing people and supporting communities increases a company’s overhead costs. There are companies that don’t have those same overhead costs plus they have access to equipment, capital and other assets and can rely on decades of experience and connections when competing.

“What the market and what clients are telling us is that maybe we don’t know how to compete. Maybe we don’t know business, when that’s not the case,” said Desjarlais.

“Some clients, I think, want to have their cake and eat it, too. They want to be able to buy us at the cheapest possible price, but yet want us to make that impact because we were bought as Indigenous businesses. But that’s not possible.”

A competitive system that doesn’t address this inequity – and tries to treat all business as equals – loses out on the opportunity to develop an enhanced understanding of the value a business can offer the society in which it operates. Essentially, a business can give as much or more to the community as it receives.

“We are very good for the economy, potentially better than those who bid five per cent less than us,” said Desjarlais.

**“Our businesses are very capable of delivering excellent, safe, quality services. But at the same time, we’re positioned to do it much better than the general market in terms of how we develop inclusive capacity and how we build Indigenous leaders.”**

The IOCCG wants to see best practices developed regarding Indigenous engagement, capacity development and procurement in the construction industry and is working on strengthening its relationships with other construction associations in Saskatchewan. The IOCCG may start conversations from a space of Indigenous interests, but Desjarlais said the outcomes it is pursuing will benefit the economy as a whole.

For example, Desjarlais said research shows that money spent with a business that engages Indigenous people in the economy is more likely to circulate locally. Indigenous income earners are more likely to spend within their region and province to meet their personal and household needs. He welcomes additional research, pointing to an interest in the sociological impact of greater Indigenous economic activity and its benefits to the public and private sector. He looks forward to the day there is data related to health, education and justice.

Engineering was a starting point for his efforts to connect economic activity to societal well-being in a way that relates to his lived experience as an Indigenous person raised in Northern Saskatchewan who was educated and works in the southern half.

**“Engineers like to solve problems. Engineers really start to elevate their game when they start to understand the socio-political world and people and they take their strong acumen in engineering and design, which is inclusive of people and stakeholders, and start to solve bigger institutional problems in terms of industry and interface.”**

Those who question the need for a group such as the IOCCG may point to equality as key to fair competition. Desjarlais explains the need to recognize equity when considering equality. He explains using an example.

Some point to their ancestors immigrating to Canada to settle the west, building homes and livelihoods, who say their family’s success was the result of hard work and dedication alone. They point to this as evidence that Indigenous people can get ahead if they work just as hard.

What that assertion does not recognize is that government programs and supports were created for those immigrants to encourage the population and development of Western Canada. It also does not recognize the policies and programs developed to control Indigenous people as this development took place and how this resulted in the intergenerational trauma in Indigenous families and communities.

This treatment was not equal. Ignoring those facts of history allows inequality to continue. Equal treatment now does not achieve equality. It is through equity that equality can be achieved.

Equity addresses the circumstances of those participating. Circumstances can vary by participant. Developing desired outcomes and applying equitable — rather than equal — treatment to achieve those outcomes is one way to get beyond a zero-sum game to one that generates gains.





# Designing with a Community

BY MARTIN CHARLTON COMMUNICATIONS



**T**he ideal community would be one designed by the people living in it to reflect and support their values, traditions and lifestyle, if you ask Dr. Terry Fonstad, BE, MSc, PhD, P.Eng., P.Ag, FEC, FGC (Hon).

From his experience, he has seen more subdivisions designed and built for other reasons than what he would consider people-centred communities. It was his experience early in his career working on-site at First Nations communities that reinforced this to him.

## Early engineering experience

Before becoming an Associate Dean of Research and Partnerships at the University of Saskatchewan, Fonstad worked in construction to satisfy his interest in understanding how things work. He recognized this

interest was leading him toward an education in engineering, eventually earning a PhD. It wasn't just engineering that intrigued him, but the funding of projects and the infrastructure that resulted because of funding requirements.

Working as a young engineer during the mid 1980s to the mid 1990s shaped his pursuits today. During this time, First Nations communities were building schools and water and wastewater systems were required to support those facilities. Often, there was also a housing shortage in the community. He explained that designs of subdivisions from that time typically reflected more urban designs that minimized costs by placing houses as close together as possible. This arrangement was often in stark contrast to how homes in the community were traditionally placed and reflected a very different social fabric.





### Learning traditional knowledge

By working on-site and through his relationships with Indigenous people, he learned some traditional knowledge. Some of what was shared with him were cultural considerations around water. Due to its ability to support life, there are traditional practices for protecting and using it that are practical while embracing water's sacredness. Other practices relate to homes. For example, a home may have been placed to face the south so the doorway could be left open for the sun to warm the interior for much of the day. A collection of homes might have been placed in an arc to create a central space with a sense of community to support family interactions and to provide protection from outside threats. The community designs often demonstrated the importance of women, particularly the matriarchs, caring for and guiding younger generations at home.

What traditionally had been observed and understood about nature and community and then practised to keep people safe, secure and fulfilled was passed from one generation to the next. While this knowledge may not have been shared in a scientific manner, scientific reasons can be found that explain why those methods are best practice.

"There are just things that these communities and peoples did that were all for very, very good reasons," said Fonstad.

This experience led him to a realization about the infrastructure that had been developed for First Nations communities based on cost models and designs for urban Canada.

"The long and the short of it is, it's almost like recolonizing," said Fonstad.

### Designing for a community

Costs are a very important consideration of engineers developing designs, but it seemed to Fonstad that costs would not escalate unreasonably by making slight, but significant changes to adapt a design to what is important to a community.

**"Something as simple as engineers placing a water treatment plant in the centre of the community as a place of honour to truly represent the importance of that piece of infrastructure to the community," said Fonstad.**

"It doesn't cost any money to move it, and it might cost very marginal amounts of money to make the outside look nicer.

"Something as simple as that would allow us to work within the community's culture and would honour their culture and still get the job done as an engineer."

### Looking at the triple bottom line

As the country gradually embraced truth and reconciliation, Fonstad sorted through his own professional experience and arrived on an opportunity for a project.

He knew a First Nation that had built the first stage of a subdivision. A design for a second stage was underway, but he had some students do their own. They could consult the technical staff, but there was not sufficient time to consult the community.

Their task was to create two designs – one being a typical urban design. Fonstad explains the second.



“(Let’s) see if we can’t lay the houses out in a different manner that’s based on social and cultural priorities that are at the same level as environmental and financial,” said Fonstad.

#### “Let’s do a true triple bottom line.”

The differences between the designs were easy to spot. For example, each home was placed so that together they formed an arc. Exiting the front of the homes lead to one another while vehicles were driven up to the back of the homes. The water and sewer lines weren’t placed under streets to reach the homes. Instead, they ran through fields and pathways.

“The infrastructure (of the second design) cost exactly the same as the other one, so the cost was absolutely no different but the feel and the look of that community was very, very different,” said Fonstad.

“You could actually see the cultural difference. You could see it was a much healthier community, we thought, and we got some really good reviews from the tribal council and the band staff that we were working with.”

#### Changing funding requirements

Fonstad approached what was then Indian and Northern Affairs (INAC) but is now Indigenous Services Canada (ISC) about the results of the project.

“I asked, ‘How can we get this to change?’ Because every planner that I talked to and every engineer I talked to had been trying to push the envelope on these rules for 30 years now,” said Fonstad.

“They work with the bands to try to get what the communities want, but they’re restricted because the finances have these strings attached.

“They said, ‘Really, until somebody can document this — because we’ve got 30 years of anecdotal evidence — and publish it so ISC is almost forced to do this.’

“All we’re trying to do is maybe help facilitate that by putting some of this in the published literature so that the policymakers have to pay attention to it, because they don’t tend to pay attention to anecdotal information,” said Fonstad.

#### Documenting the difference

A new research project was developed and Dr. Kerry McPhedran, MSc (Biol), PhD, P.Eng., was brought on board in 2015 to lead the team with his research capabilities. McPhedran is an Associate Professor in the Department of Civil, Geological, and Environmental Engineering at the U of S and a Centennial Enhancement Chair in Water Security for Indigenous Communities.

Fonstad explains this is a community co-design project that is about putting people and their quality of life in the community at the centre of the design rather than designing to maximize the dollars per front foot of development or to efficiently move vehicles through a community.

It is the Muskoday First Nation and Muskeg Lake Cree Nation Community Co-Design project, which is funded through contracts with each First Nation. Muskoday First Nation is about 26 kilometres southeast of Prince Albert while Muskeg Lake Cree Nation is about 93 km southwest of that city. Both are planning subdivisions.

McPhedran explains how, through their research, people will be front and centre.



“So rather than doing engineering first, we’re doing this project thinking of the social side and the health side first and then bringing in engineering after that,” said McPhedran.





**“(We’re) seeing, if we have social issues and health issues that are arising from the engineering later, are we’re paying for it later?” said McPhedran.**

The project has three objectives. The first is learning how to engage a community in the design process.

“This is typically not a strength of most engineers,” said Fonstad.

“How do you engage an Indigenous community to allow them to envision what their community is going to look like 10, 20, 30 years down the road? How do we turn qualitative data in to quantitative data that can be applied to a design?”

“That’s a very specialized field, and it’s not something that engineers normally would do but how do you come up with a best practices kind of a document that would say, ‘If you’re going to engage Indigenous communities, here’s something that’s written and supported by Indigenous communities and facilitated by university professors.’”

He sees it as developing management practices that “empower Indigenous communities to take ownership of their vision and then empower engineers and planners to help them attain that vision.”

The second objective is to learn how to balance community desires and needs with developing cost-effective solutions. This relates to the initial capital costs and finding ways to adapt the design so it doesn’t result in a proposal that is potentially cost prohibitive.

Finally, the third objective is tracing social and health costs and possible associations with engineering designs. This would relate to the operation and maintenance of the infrastructure once built, but also any community, family or health issues that were influenced by the initial design.

“It’s talking about the triple bottom line: social, economic and environmental,” said McPhedran.

“We know that economic side of things. It’s well-known when we put in a sewer pipe or when we open a water treatment plant, we know how much it is. That’s a well-known, easy thing.

“On the environmental side, we’re getting better at, I think,” said McPhedran, pointing out how a dollar value can be assigned to a tree, as an example.

“On the social side, we don’t know the costs of mental health (for example). It’s really hard for us to know, so that’s why we want that social side to be first.”

### **Quantifying health and social issues**

That is why they are collaborating with the U of S’s Dr. Wanda Martin, RN, BScN, PhD., and Dr. Lori Bradford, PhD., for their expertise in nursing and social science, respectively. Martin is an Associate Professor in the College of Nursing. Bradford, an Assistant Professor with the College of Engineering and School of Environment and Sustainability, has been nominated for a Canada Research Chair related to incorporation of social and cultural goals in engineering design.

“The way we envisioned it was to have someone that could bring social and cultural values into the engineering design process,” said Fonstad.



**“What you really want is somebody that can take qualitative things and make them quantitative so engineers can use them.”**

Determining how and what to quantify is underway. Sometimes, it could be establishing a dollar figure. For example, what are all the factors and incremental costs associated with a boil-water advisory? How much is it for accessing, transporting and storing water for each home? What is the financial cost of the mental strain for those carefully monitoring how their family uses the available water? How much are the expenses associated with becoming sick from ingesting or bathing in unsafe water?





**Dr. Terry Fonstad, BE, MSc,  
PhD, P.Eng., P.Ag, FEC, FGC (Hon)**



**Dr. Kerry McPhedran, MSc  
(Biol), PhD, P.Eng.**



**Tim Vogel  
Engineer-in-Training**

Other times, quantifying could involve using numbers to rank or compare. That may come from information gathered during targeted interviews or questionnaires with many community members that can help identify what should be quantified. What they share can corroborate a story that identifies what is important to the community and the associated health and social aspects.

“We always come back to using numbers,” said McPhedran.

The qualitative information is collected, in large part, due to work by community researchers, who are part of this research team.

Local people from the Muskoday and Muskeg Lake area who have a very good understanding of the community and its interests fill these roles. They, for example, facilitate interviews with community members. These individuals are well-connected so they are trusted and can ensure more people’s perspectives are heard and incorporated into the research.

“That way, whatever happens, we’re not coming in and doing research and leaving. They will actually get something tangible — somebody that’s trained in this area,” said McPhedran.

### **Sharing engineering experience**

There are also three PhD students on the team, including Tim Vogel, Engineer-in-Training. Fonstad sees this project not just benefiting these students’ education, but those who will train to become engineers at the U of S in the future.

**He and McPhedran hope some retired APEGS members who worked with First Nations will share details about their lived experiences during their careers with these students.**

This will help the students compare what occurs today to events and approaches of the past, providing context that may identify red flags and knowledge gaps in their research.

“Different consulting engineers already have that knowledge but they keep it internally because that’s their business, but we’re hoping they make it a bigger picture because there’s more than enough work for everybody,” said McPhedran.

**Fonstad recognizes there are engineers right now working with First Nations that share his perspective on the infrastructure funding for these communities.**

**His intention for this project is to provide the literature necessary to convince the federal government to change infrastructure funding requirements to better support the traditions, interests and needs that First Nations communities clearly express.**

He also hopes it inspires non-Indigenous people to conceive of inclusivity slightly differently. There is opportunity in considering how other cultures understand and embrace living together rather than focusing on convincing others to accept the dominant culture.

For example, many cultures are accustomed to multiple generations of a family sharing a home. Many immigrated to Canada desiring to replicate that family life in their new home. Helping people in all communities identify and articulate their interests and values so their community looks and functions in ways that are supportive of that is a broader implication of this research.



Rob Martell, P.Eng.

# Understanding the Past, Engineering the Future

BY MARTIN CHARLTON COMMUNICATIONS

**R**ob Martell, P.Eng., is now at a point in his career and his life that he is ready to learn more about those who came before him and to prepare others to follow him as he settles into his own space as an Indigenous engineer.

In his role as Principal Mechanical Engineer for BHP, he is contributing to the design of what is expected to be “the largest potash-producing mine in the world.” He has spent more than 20 years preparing for his responsibilities at Jansen S1 today, developing his experience first at Cameco and then Agrium after earning his degree in engineering from the University of Saskatchewan.

During his journey to become an engineer and build his career, he has gradually learned more about his family’s history. Details have trickled out to him about the earlier generations in his family and their experiences with federal legislation and policies.

As he slowly pieces together the past, he is also looking ahead, discovering how he can share his experience, both professional and personal, to encourage others — within the company that employs him as well as the community.

“One thing I’m looking towards is trying to understand my own history and seeing how maybe sharing that story with my colleagues in this company will help them better understand their responsibilities related to truth and reconciliation,” said Martell.

Growing up in Saskatoon, Martell found that he, like many other engineers, has an aptitude for math and science, especially physics. He understood engineering to take a practical, hands-on approach to problem-solving, which appealed to him.

He finished high school around the time that thousands were regaining their legal status as Indians because of Bill C-31. The Assembly of First Nations explains in a fact sheet that this bill amended the Indian Act to eliminate enfranchisement (a legal process that once existed for terminating a person’s Indian status.)



BHP.com

Many who were enfranchised were women and children who lost their status when the women married non-status men. Others lost their status for serving in the Canadian military, going to university, or becoming a priest. However, a person could also apply to be enfranchised. When a man was enfranchised, so, too, were his wife and children. Those who were enfranchised could vote, own property off-reserve and buy alcohol, which, at points in history, had been denied to status Indians. Being enfranchised meant being removed from your band list and losing all associated benefits.

Martell explained what he understands about the story of his father’s family and how it impacted his life. The family lived in rural Saskatchewan on a road allowance near Glaslyn.

They lived on this piece of land because Martell’s great-grandfather gave up his status to receive veterans benefits after returning from the First World War. Martell explains that contributed to the family losing their connection to their band and much of their extended family.

Martell’s grandfather has his own story. He doesn’t know all the details of his grandfather’s early life, but from the pieces shared with him, he understands his grandfather

was required to attend residential school even though he did not have status. He eventually ran away from the school with one of his half-brothers.

By the time Martell was ready for university, his father was able to gain status for both of them and the rest of the family. That helped him access the funding he needed to pay for his university education.

As a student, he had opportunities to work for the City of Saskatoon's engineering department as well as Cameco, flying in to its Key Lake mine on a weekly rotation. That experience gave him the perspective he needed to see what his classes were preparing him for in his career and helped him settle on mechanical engineering.



BHP.com

**“I kind of started realizing more about the profession than I learned in school and growing up,” said Martell.**

Once he graduated, he had a couple of job offers, but it was the one from Cameco that allowed him to stay in Saskatchewan. There, he was exposed to real-world problems that engineering could address and gained experience with mining equipment used for raiseboring, a mining method used at Cameco's McArthur River mine, where he spent a lot of time.

He also started to learn about mill processing, developing knowledge he could apply working for his next employer, Agrium, as a project engineer. First, he learned about maintenance, which meant understanding how operators were using the equipment and ensuring it could continue to perform the job required of it. That led to working on improvements, such as addressing bottlenecks in the processing of the resource. Working on improvements allowed him to develop his knowledge on capital projects process, which eventually led to a position as a lead for project systems integration and support.

This experience led him to being part of a major capital project – the expansion of Vanscoy mine known as Project VAULT.

“It was good to be part of that project and to see it from the concept of the project and what they're trying to do to get to the ultimate capacity and designing right through all of the phases,” said Martell.

“I was lucky enough to start early on in the project — I'd say (from) like one of the earlier concepts — and saw right through all the engineering, construction and commissioning, start-up and was involved in optimization. Kind of getting things to run the way that we intended them to run since I was involved in the design.”

Moving to BHP has allowed him to work on another major capital project — the Jansen S1 project near Lanigan. BHP announced in August that it had approved spending \$7.5 billion to complete the project.

“My role is primarily acting as an owner's engineer within the mechanical field,” said Martell.

“The role is mainly an auditing role. We don't essentially do the engineering, but we make sure that we're seeing that all of our key value drivers are in the design and we maintain the value that we'd like to see in this project.”

Production levels, operating costs and minimizing downtime are all factors he must consider when executing his responsibilities today, but he foresees his role changing over time, just as it did when he was at Agrium.

**“In supporting the design through execution, I'll probably eventually work into some sort of operations role that will actually be maintaining the value of the asset being developed,” said Martell.**

He would advise young engineers to seek to work with companies whose purpose and actions align with their own values. He appreciates what it means to work for a resources company that is providing the world the resources it needs for energy and food production.

“The BHP purpose is essentially to bring people and resources together to build a better world, which is something I feel strongly about,” said Martell.

It is also important to him that his supervisor at BHP is encouraging him to connect with his heritage and find his own way of including it in his professional identity and purpose at this point in his career.

“It's actually in my key performance indicators for the year, so it's part of my development plan to be able to do that because I expressed my interest in it,” said Martell.

Joining the Saskatchewan Professional Chapter of the Canadian Indigenous Science and Engineering Society



(.caISES) gave him perspective on his career. .caISES describes itself as “a forum to come together to network, to give and receive professional development, to offer fellowship with individuals with similar goals, dreams, and expertise.”

He is interested in encouraging Indigenous students’ interest in science, technology, engineering and math (STEM), but wants to do it in his own way.

“I would say there are not a lot of Indigenous engineers out there who, at least, identify or even network in the profession.”

“A lot of Indigenous people who are in engineering or STEM are pushed into promoting STEM and into more about management and policy development in government relations-type roles.

“I find myself a rarity in that group. I’m still technical and work heavily technical and I kind of still want to work in technical while looking for opportunities to work on (promoting STEM.)”

He sees how Indigenous engagement is a global matter because of his work for BHP, which is headquartered in Australia with operations there as well as Chile, the U.S.

and Canada – all of which have an Indigenous population. He has noticed through his interactions with global colleagues this level of understanding within the company.

He is part of a truth and reconciliation committee at BHP. As Canadians take in the news of unmarked graves being identified this year at residential school sites, he sees how people are growing in their willingness to look at the truth of the past. As painful memories are brought up for some Indigenous people, Martell sees those who recognize the need to take responsibility today to address systemic racism created by previous generations’ actions and decisions.

“It had always had been there but we didn’t talk about it right,” said Martell.

Sharing and receiving truth is vulnerable. He considers that perhaps because many more Canadians are showing interest in and acceptance of the past, some Indigenous people, like his father and other family members, are somewhat more comfortable revealing additional details about the family’s history.

There is also the fact that he and they are aging. They may feel more prepared to share and for him to receive more of the truth at this point in their lives.

“This committee that I’ve just joined, it’s interesting to see how there is this relationship and that it’s not just them being ‘We’re here now and just tell us what to do.’ It’s like, ‘Well, what is our part?’ and taking responsibility from that side.”



BHP.com

# Ten Things NOT to Say to Indigenous Employees

BY MARTIN CHARLTON COMMUNICATIONS



Garry Bosgoed, P.Eng

Earlier this year, Garry Bosgoed, P.Eng., developed a four-part series of blog posts titled “Ten Things Not to Say to Indigenous Employees.”

Bosgoed maintains a blog on the website of his company, BOSGOED Project Consultants. He is its president and CEO.

He started his first post explaining why he felt compelled to write the series. He describes how, although colleagues treated him as a qualified member of their team and did not overemphasize the fact that he is a member of Peepeekisis First Nation, others he had professional interactions with seemed unaware they were making assumptions, being patronizing or creating discomfort and awkwardness through their actions and words.

“I was once told by someone in the Human Rights Commission that I experienced more racism than anyone they had ever met,” wrote Bosgoed in that post.

“When I thought about that statement, I realized my experiences relating to racism occurred with people who, I believe, meant no harm.”

The full posts can be found at his website at [bosgoedprojects.com](http://bosgoedprojects.com). The following is a condensed version of them.

1.

## Do not assign them to Indigenous jobs or projects without asking first.

Bosgoed recommends not offering someone who is Indigenous a role or project position dedicated to Indigenous issues without discussing with them their career goals and interests. While some individuals would be honoured and qualified to take on the opportunity, others may have different aspirations.



2.

## Do not say, ‘Good for you!’ when you learn they are university graduates.

He advises that learning someone’s Indigenous identity should not lead you to disregard their professional experience. He describes his experience of meeting a vice-president of a smaller engineering company when he himself was a senior vice-president of a global project delivery company. During the introduction, the other vice-president said to Bosgoed, “You are Aboriginal and an engineer? Good for you!” before speaking about his own project experience and suggesting Bosgoed may not have worked on similarly valued projects, which was an incorrect assumption on his part.





3.

**Do not assume an appointment is a “token.”**

He describes another experience of being appointed to a board after being found qualified for an appointment. He shared this news with a senior manager in a company he visited. This senior manager responded by saying, “Was that a token appointment?” After considering his comment for a few days, Bosgoed broached the subject again with this manager, who was new to Canada and a person of colour. While the manager’s first reaction was to defend himself by explaining he had experienced racism himself, Bosgoed reminded him of his company’s code of conduct. He apologized to Bosgoed and future conversations improved.

4.

**“I thought you would feel more comfortable sitting with other Indigenous people at a banquet.”**

Bosgoed describes attending a large banquet. The seating chart for the event had all Indigenous people attending seated at the same table. While Bosgoed was happy to meet those at the table, he would have enjoyed sitting with those he already knew at other tables. He believes it was a missed opportunity because non-Indigenous people at other tables would have appreciated sharing a meal with those individuals at his table. He also points out that Elders invited to such events should be seated at the head table.

5.

**Don’t assume their prior employment was the result of an equity program.**

An experience meeting a senior executive in a government department led Bosgoed to make this point. As they walked through the executive’s office space, Bosgoed asked if he had any Indigenous employees. He was hoping to meet someone he could invite to speak at schools about their career. The executive turned to him and said, “You are already taken care of, aren’t you?” He felt the comment was condescending and wondered if this person assumed he was asking for an equity position and was the beneficiary of a program that “takes care” of Indigenous engineers. While Bosgoed’s CEO apologized for the interaction, they did not confront the person or notify the department because he thought it could “hurt the First Nation’s cause if he were called out for his behaviour.”



6.

**“Would you be the owner of a new company so we can attract Indigenous contracts?”**

Some procurement strategies developed by some companies and governments are based on majority Indigenous ownership. Asking an Indigenous person — who may or may not be qualified — to head an enterprise that is run by non-Indigenous people simply to win work misses the point of these strategies. They are to acknowledge how Indigenous people have for decades not been included in the system and to allow for wealth and employment to be generated for Indigenous communities and individuals.



7.

**“Do you pay taxes?” Yes, I pay taxes.**

Bosgoed wonders if this position is to suggest Indigenous people are not contributing to Canadian society the same as non-Indigenous people. Only First Nations people who live and work on reserve are exempt from paying taxes. It is important to remember the treaties and legal cases which provide historic and legal reasons for on-reserve tax exemption.



8.

**Do not remove Indigenous employees from a project because they are Indigenous.**

Bosgoed was removed from two different projects because of being Indigenous. The clients in these instances had never met with or spoken to him before asking for him to be removed. In the first, he was to be a project manager on a project that included a First Nation. One of its members objected to Bosgoed being involved because he is a member of Peepeekisis First Nation.

In the second instance, Bosgoed was introduced at a project meeting as a senior vice-president, general manager and a First Nations person. The environmental consultant on the project objected to Bosgoed’s participation. That person’s scope included Indigenous community engagement and they were concerned that Bosgoed’s interest in the project was only in its Indigenous aspects.

In hindsight, Bosgoed says his employer at that time should have challenged the clients “in a thoughtful yet professional way” to support him as an employee.

9.

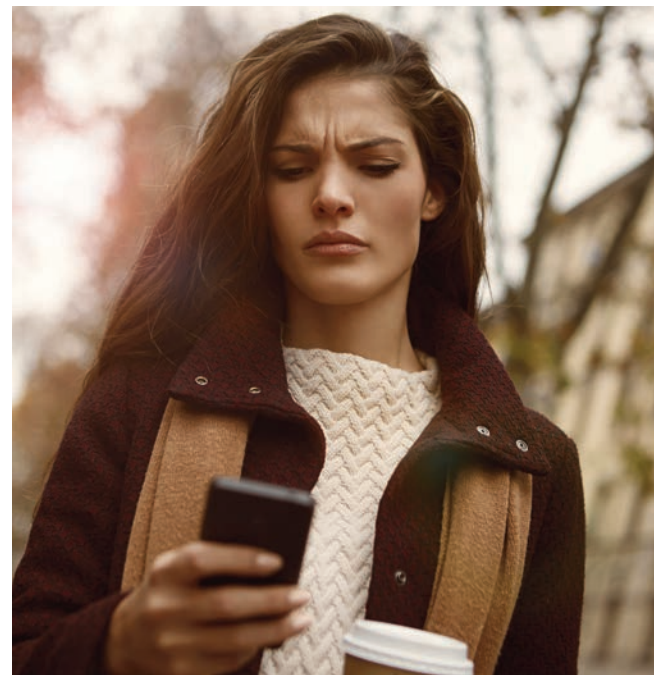
**“We don’t need any Indigenous board members right now.”**

Bosgoed was invited by a cabinet minister to a first meeting about a deputy minister position of a new department. Before they met again, they both attended an event that recognized Bosgoed’s company for its charitable contributions. The charity’s CEO described Bosgoed as being First Nations. At the second meeting with the minister, Bosgoed was informed there were no Crown board seats for Indigenous people available. Bosgoed says, “I felt all of my accomplishments which had prepared me for the ‘big job’ were erased simply by being Indigenous.”

10.

**Silence**

Indigenous employees need to be invited into the same professional culture as all other employees. Coffee breaks, corporate challenges, charitable campaigns, sports teams, after-work drinks, and social events allow employees to get to know one another and to be known for being their unique selves. Non-Indigenous people should not assume Indigenous people “have their own things” and invite them to participate so all individuals can get to know one another.



# Letter to the Editor

This Letter to the Editor is in reference to an article that appeared in the May/June 2021 issue (Issue 192) of *The Professional Edge* on page 19 headlined “Adding Colour to a Grey Area”.

September 3, 2021

## **Duty to Consult no Longer Beneficial to First Nations In B.C.**

The Duty to Consult (DTC) initiative as set out by the SCOC rulings (2004-2005) was an historical achievement by Indigenous Peoples of Canada. First Nations were to be “advised” as to any potential infringements of their rights when entering their traditional territories. The manner in which it was implemented serves to diminish its benefits rendering it ineffective and bereft of its intended purpose.

Aboriginal Rights are “community rights” – and not so much individual protester rights. First Nation rights may include trap lines, hunting and fishing, food/water gathering, burial sites, spiritual/sacred sites, land disturbances and freedom of movement across their territories. Rights may also include economic opportunities on their traditional lands. The consultation process does not distinguish between Treaty and non-Treaty lands. The catch-phrase “inadequate consultation” seldom includes any specific or defined issue which is not being properly consulted. A total of 93 First Nation bands in B.C. have endorsed three pipeline projects: NG, TMX and CGL – so how were they not adequately consulted? The consultation process with First Nations is essentially an information session with a mutual objective to accommodate on relevant issues through discussions in good faith. Examples of historical issues would be the location of a winter road, noise from aircraft when flying over traditional hunting and trapping areas and employment opportunities. The DTC process does not determine if a project is or is not in the public interest. In any consultation the distinction between “traditional” lands and “Crown Title” must be made. The Canadian high courts which ruled on the TMX never considered the intervener status of biased governments, environmental groups or First Nation opposition bands which could be viewed as the unreliable witness, irrelevant testimony and hearsay that might otherwise be banned from many normal judicial processes.

The marine shipping aspect with regards to mechanical engine-propeller vibration as an effect on killer whales’ communications shows the bias in the consultation process. This issue is “cargo-based” as the only vessel expansion under review is one that carries an Alberta oilsands product through the TMX pipeline.

The cancellation of the Northern Gateway pipeline and the oil tanker ban (Bill C-48) may be “infringements” of First Nations rights since they prohibit energy development on their lands even after First Nations have pursued and endorsed the project.

The UN must gain universal acceptance from First Nations before speaking on their behalf through the UNDRIP protocol since such an initiative may not be directed at the desired economic prosperity of remote native bands in northern B.C. The DTC First Nations initiative in B.C. was intended to benefit Aboriginal people. The process has become completely contaminated by special interest groups and encumbered by discussions on irrelevant issues. It has become a true Canadian failure in many respects and is unlikely to be effective in the future.

Keith Metcalfe, P.Eng., P.Geo.

# Membership and Licence Fees

## 2022

### Membership and Licence Fees due on or before Dec. 31, 2021



#### **Fees notices were mailed in mid-November**

It is the responsibility of members and the official representative for a Certificate of Authorization to make sure contact information is up to date, including your email address. If you do not receive your fees notice, contact APEGS. Fees are due on or before Dec. 31, 2021 regardless of problems with delivery.

#### **How do I pay my fees?**

Log into APEGS Central, your online profile, by clicking "Login" in the top right corner on any page of the APEGS website. If you have never used the system before, click on "Forgot your password" and follow the instructions.

Even if you are mailing a cheque or your company is paying for you, please click on "Pay Now" in APEGS Central to be guided through updating your profile. You can also use your profile to make all other fee payments, enter Continuing Professional Development (CPD) credits, renew Permission to Consult, manage your email/mail subscriptions and volunteer with APEGS.

#### **What happens if I do not renew?**

You would no longer have the privilege of practicing engineering or geoscience on projects or properties located in Saskatchewan. Use of title in Saskatchewan is also a privilege of membership.

Members who do not retain their membership in APEGS and/or in another equivalent Canadian association will lose coverage under the National Secondary Professional

Liability Insurance Program. Also, failure to maintain your membership will result in ineligibility for benefits under the group life insurance program offered through Manulife and Engineers Canada if you have subscribed to this insurance.

#### **What if I am not working in Saskatchewan?**

Members who are retired or not working (at anything) in Saskatchewan can retain membership and may be eligible for a waiver of the annual licence fee. More information can be obtained from the documentation accompanying your fees notice or from the APEGS website under Members.

#### **What if my membership ceases and I need to reinstate?**

Memberships that have ceased are subject to a 15 per cent fee to reinstate in the same calendar year. Members who notify the APEGS office in writing of their intent to resign their membership on or before Jan. 31, 2022 may reinstate their membership and licence during the calendar year without the payment of a reinstatement or application fee. The late payment penalty for the holder of a Certificate of Authorization is 15 per cent of the annual fee.

For reinstatement procedures for subsequent calendar years, see the APEGS website under Apply.

#### **Eligibility for Life Membership**

Members who are 65 years of age and retired are eligible to apply for Life Membership. An application comes with your fees notice in November.



# APEGS announces New Executive Director and Registrar



Stormy Holmes, P.Eng., FEC, FGC (Hon.)

“I am so excited to carry forward my volunteer experience with APEGS as I move into the administration of the association,” said Holmes.

**T**he Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) welcomes Stormy Holmes, P.Eng., FEC, FGC (Hon.) as the new Executive Director and Registrar effective January 4, 2022.

“Solid work has been done over the last few years around the governance of APEGS, and I recognize the great honour and privilege of leading APEGS through the next steps and into the future.”

As Executive Director and Registrar, Holmes will be responsible for providing executive leadership to key governance and operations activities of APEGS, including regulating the professions, effective governance and strategic alignment, executive oversight of the association, staff management and stewardship of APEGS’ assets.

Leadership Source, a firm experienced in executive searches in Western Canada, was relied upon to support the process of finding a replacement for Bob McDonald, P.Eng., MBA, LL.B., who will retire in January 2022. That process ended with APEGS’ Council approving the successful candidate for this role.

Holmes developed her qualifications for this role over more than 20 years through a combination of work experience, primarily at AECOM, as well as volunteer activity, most recently as Chair of APEGS’ Governance Review and Governance Change Steering Groups.

Having obtained a B.A.Sc. in Environmental Systems Engineering from the University of Regina in 1998 and a Certificate in Administration in 2001, Holmes registered as a Professional Engineer in Saskatchewan in 2002 and obtained Permission to Consult in 2006.

Holmes held various leadership roles over the last 13 years, working for the City of Regina and AECOM. Her leadership responsibilities were at a local, regional, and national level and required her to work in the private and public sector, progressively increasing her responsibilities across disciplines.

Holmes’ name may be familiar to APEGS’ members, especially those who follow the association’s volunteer activities. Over the last 15 years, she has energetically contributed to the work of Council and numerous committees, including being:

- APEGS’ President from 2018-2019.
- Council member from 2000-2003 and 2013-2020.
- Committee member since 2004.
- She is also the current APEGS representative to the Engineers Canada board of directors.

Joining APEGS as a volunteer was a continuation of Holmes’ dedication to the engineering and geoscience professions that began when she was a student at the University of Regina. She has served numerous organizations dedicated to the professions since then, including being:

- Board member of Regina Engineering Students’ Society.
- Instructor and board member of Educating Youth in Engineering and Science.
- Past-President and volunteer with Regina Engineering Society.
- Member of Student Policy Committee of the Canadian Council of Professional Engineers (now Engineers Canada).
- Editorial Committee member for Western Canada Water.
- Past-chair and board member of the Association of Consulting Engineering Companies - Saskatchewan (ACEC-SK)

She has been recognized for her contributions by being awarded APEGS’ Promising Member Award in 2004, which honours members who have accomplished exceptional achievements in the early stages of his/her career. In 2009, she was awarded the Fellow of Engineers Canada designation, which recognizes individuals who have given noteworthy service to the engineering profession through their work with either Engineers Canada or its provincial and territorial engineering regulators. She was also awarded honorary Fellow of Geoscientists Canada in 2019.

# Notes from APEGS Council

The APEGS Council held an online meeting via Microsoft TEAMS on Sept. 24, 2021. The meeting was attended by Council and the Directors to Engineers Canada and Geoscientists Canada. The next Council meeting will be on Dec. 3, 2021 in Regina and is expected to be held in-person. Microsoft Teams will be made available for those unable to attend in-person.

## **Council received the following presentations and information items:**

- The Executive Director and Registrar provided an update on COVID-19 impact in the office and staff changes.
- Report from Engineers Canada – Holmes
- Report from Geoscientists Canada – Ansdell
- Regina Engineering Society – Lemieux
- Saskatoon Engineering Society – Thakkar
- CIM/Geology Saskatoon – Cruikshank
- ACEC/SK – Nelson
- CPD Compliance and Assurance Reviews – Wimmer

## **Council approved the following motions:**

- Larry Doke was inducted into APEGS Council as a Public Appointee.
- The Communications Director presented the strategic communications plan for 2022 and the overall plan for the annual meeting and professional development conference. An approval of the plan for the ad campaign and \$272K was approved separately from the budget to reserve media space.
- The approval of \$35K for a project manager to lead the 2022 Conference event.
- Approval of a land acknowledgment and the supporting mediums of the disclosure.
- That the following people be appointed to the Constituent Society Relationships Task Group: Edwin Edquist, P.Eng., Shayne Rozdilsky, P.Geo., Catherine Griffith, P.Eng., Kamran Akhtari, P.Eng., and Gavin Jensen, P.Geo., as Liaison Councillor.
- That Catherine Griffith, P.Eng., be appointed as Chair of the Constituent Society Relationships Task Group.

- Approval of the External Funding and Participation policy.
- Approval of the proposed changes to the Guideline for Funding External Parties, including a name change to Guideline for External Funding and Participation.
- That Council appoints Patrick Ducharme, P.Eng., as a member of the Corporate Registrant Task Group.
- That Council approve a process of natural attrition and not replace the outgoing Councillor's position since Council intends to gradually decrease its size over the next three years.
- April 11, 2022 is set as the polling day for the 2022 Council elections.
- Nicole Barber, Engineer-In-Training, be appointed as the Nominating Committee Vice-Chair for a two-year term until May 8, 2023.
- That APEGS can start accepting National Council of Examiners for Engineering and Surveying (NCEES) experience records again.
- That the Life Member applications of the members listed in the agenda be approved.
- That Dan Bonnet, P.Eng., be appointed as the Chair of the Professional Practice Exam Committee for a two-year term until May 8, 2023.
- Approval of the revisions to the Professional Development Committee terms of reference.
- Approval of the one-year extension requests for the 43 members-in-training be approved and three extension requests be denied.
- Council approved a refund of the Professional Practice Exam application fee in the amount of \$250 + GST paid to an Engineer-in-Training.
- Council approved a refund of the Professional Practice Exam application fee in the amount of \$152 + GST paid to an Engineer-in-Training.

## **Council noted and received the following reports:**

- Registrar's reports for June, July and August 2021.
- The unaudited financial statements for May, June and July 2021.
- Executive Committee minutes, board minutes and the reports from the committees and task groups, Investigation Committee minutes and Discipline Committee minutes.

# Continuing Professional Development

The Continuing Professional Development (CPD) Program requires APEGS members to complete ongoing professional development activities to maintain and improve their competence. It encourages members to engage in lifelong learning to protect public health, safety and welfare. The program provides tools for members to assess their current skills, knowledge, and abilities, determine activities to maintain or enhance them and report completed activities online to APEGS as professional development credits. For more information, navigate to the CPD menu at [apegs.ca](http://apegs.ca).

## CPD Reporting

### CPD Reporting Deadline

Members are reminded that they have until Dec. 31, 2021 to earn continuing professional development (CPD) credits for the 2021 reporting year.

While members can update their APEGS online CPD report at any time, the deadline to have all 2021 CPD information entered online is Jan. 31, 2022.

### 2020 CPD Reporting Compliance Review Results

In 2021, APEGS administratively suspended a total of 515 members for failure to meet their 2020 CPD requirements. As of Oct. 15, 2021, 83 of those members have had their licence reinstated.

Also in 2021, three members were sent to the APEGS Investigation Committee for stating that they “Reported Elsewhere,” but upon a compliance check it was discovered that these members did not report their CPD to those jurisdictions as claimed.

As a reminder, a member who is administratively suspended is still an APEGS member but is not licensed to take responsibility for engineering or geoscience work on projects or properties located in Saskatchewan.

To determine if a member is under an administrative suspension, please refer to the APEGS online register at [apegs.ca](http://apegs.ca).

## Featured CPD Opportunities

### Online Ethics Modules

APEGS has free one-hour online ethics modules available to assist members in obtaining their ethics credit for the year. The modules are not mandatory and are offered as one option available to members.

#### Our current ethics module topics are:

- Module 1 - Professionalism and Ethics
- Module 2 - Conflict of Interest
- Module 3 - Investigation and Discipline

For more information and to access the modules, please visit the CPD menu at [apegs.ca](http://apegs.ca).

### 4 Seasons of Reconciliation

#### Indigenous Awareness Training

4 Seasons of Reconciliation promotes a renewed relationship between Indigenous Peoples and Canadians, through transformative multi-media learning. The course is designed to help fulfil Call to Action 92 of the Truth and Reconciliation Commission and provides insight into the history of residential schools, treaties around the country, and reconciliation and restitution initiatives. Featured are award-winning reconciliation documentaries, slideshows, quizzes and an additional video library that is available after you have completed the course.

#### How to access the course:

1. Sign-up using this form:  
<https://share.hsforms.com/1zY6dQk6hRSJKyVYJZH7eQ4z7zm>
2. The 4 Seasons team will add you within two business days and an invoice\* for \$38 plus tax will be sent to your email from Reconciliation Education ([noreply@notify.thinkfic.com](mailto:noreply@notify.thinkfic.com)).

\*The first 230 members to sign up will have their invoice cancelled.

Go to [apegs.ca](http://apegs.ca) to view a short trailer about the course under CPD / Professional Development Courses / 4 Seasons of Reconciliation

### 2022 Spring Professional Development Days

A variety of online courses will be offered in the spring of 2022. Refer to the Events page at [apegs.ca](http://apegs.ca) and future issues of *The Professional Edge*.

## Attention Licence Waiver Holders

Members who hold a licence waiver for the entire year in 2021 are reminded of the CPD Program change for 2021. Members who hold a licence waiver for the entire year require a minimum of 30 credits annually obtained outside of professional practice including one hour of verifiable ethics training, which shall be claimed under Formal Activity as part of the 30 credits.



# Member Profile



Chennoa Tracey, Engineer-in-Training

I'm originally from the village of Loon Lake, Sask. It was here that I grew up fishing, riding quads and loving the outdoors on the farms of friends.

A number of experiences sparked my interest in engineering. I had always loved the creative aspect of building and designing things. I had a number of projects growing up, such as LEGO creations, intricate snow forts, and eventually helping with changing car or quad parts.

I was the maintenance summer student for a couple years where I was able to hop onto a few machines, such as skid steers and ride-on mowers, and operate the garbage truck. That experience allowed me to learn some more hands-on skills, which I think made me more inclined to choose mechanical engineering later on in life. I also have two relatives that I look up to enter the field of engineering and I believed that if engineering is what they chose, it must be worth choosing.

As much as I enjoyed these things at the time, I thought that I would be in the field of biology or architecture instead of engineering. While I was in the College of Arts and Science at the University of Saskatchewan for two years, I found out really quickly that I was more drawn to the sciences as opposed to humanities and it appeared to be more lucrative, too. In those two years, I completed all of my non-engineering electives which gave me time to be very involved in the student groups.

I was in the College of Engineering from 2014 to 2018. At the end of my first year of engineering at the University of Saskatchewan, I chose mechanical engineering as my discipline. It had all of the cool topics and, in my heavily biased opinion, the best professors.

Engineering was a challenging degree but only because studying was just one part of the experience. I spent just as much time studying as I was busy with the Saskatoon Engineering Students' Society, Huskie Formula Racing (the university's race car team), The Sheaf (the campus newspaper), the Indigenous Students' Union and travelling across the country for engineering conferences and competitions.

All of these experiences together culminated into a great university experience that I am grateful to have had, even with the added self-induced stress of doing well while doing so much.

I have been gaining engineering experience since I was a student. I had the opportunity of getting into an Indigenous mentorship program before my last year of being in the College of Engineering. In this student position, I helped with vibration analysis, machine design and dipped my toes in the world of additive manufacturing which I continued after obtaining my degree.

From there, I transitioned into a more technical consulting role in 2019 where I learned more about pipe stress analysis which was a great new asset to my knowledge base. But I found I lost some passion doing technical work exclusively.

At the beginning of this year, a short-term opportunity to work out of the country as a field engineer came up and I was off to the U.S. to learn firsthand about induced polarization surveys with geoscientists in the world of mineral exploration. It was a refreshing switch to be out of an office setting to a field setting.

Now I get the best of both worlds with Great Plains Contracting. I am co-ordinating construction projects, which ties together my

love for being out in the field, representing and promoting Indigenous people in STEM fields, and getting a balance of both hard technical and soft-skill roles.

I became an Engineer-in-Training in August 2018 and I am looking forward to the day I obtain my professional engineer designation.

Family has always been a huge support for whatever endeavour I tried to achieve. Most notably though were my work mentors and university professors. There are a lot of really smart people in all engineering fields and I've been lucky to have worked with some very smart and caring people. The mentors I have had over the years have been the highlight of each work experience.

They always have gone above and beyond to ensure I understood concepts. They laid the foundation of how I can be a good role model for others, whether it is other females or Indigenous people considering STEM. One of the best lessons I learned is that if you want something enough you will find a way to make it happen, whether

that is through asking for help from others, or being creative and addressing whatever barriers exist.

I also feel I have had very cool opportunities open from being involved outside of work that are engineering adjacent such APEGS subcommittees and the Canadian Indigenous Science and Engineering Society (.caISES) professional chapters and conferences. I am very much a people person and really appreciate the knowledge shared by others during my young career.

Over the last few years, I have really enjoyed staying fit through aerial silks classes. Now that the weather is a little cooler I've enjoyed jogging with my two husky malamutes, Argo and Aurora. Otherwise, I am usually found riding my CBR (a sports bike) to get ice cream or a cup of tea at a locally owned cafe. Once the pandemic calms down a bit more I want to get travelling back in my schedule, too. My top three places I want to see next are Croatia, Turkey and Iceland. I'm often very busy, but that's how I like it.



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# Gems of Geoscience



Nathan Bridges, P. Geo.

Nathan Bridges is Vice-President of Exploration with CanAlaska Uranium

I grew up in southwestern Ontario about two hours southwest of Toronto in a small town (by Ontario standards) named St. Thomas.

In 2004, upon finishing high school, I attended the University of Windsor for two years working toward a general sciences degree. Like most students, I wasn't really sure what I wanted to study. I anticipated that I'd study law or be a doctor.

Then, I took an Introduction to Geology class as my elective in my first year and was instantly caught by the science. The different processes occurring throughout Earth's history have always fascinated me. In addition, I came to recognize how important the geosciences are to the world's growing population, providing sustainable long-term development for all corners of the globe.

During my undergraduate years, I spent my time working in the Abitibi Greenstone Belt in Quebec on research projects. I also spent a few weeks as a research assistant working in the Kapuskasing Uplift area near Chapleau, Ontario, which has by far the worst bugs that I've ever encountered in my career.

My favourite rock is from there. The Kapuskasing Uplift consists of deep crustal rocks uplifted from a lower crustal level of the Superior Province. I'll admit, my knowledge of the Kapuskasing Uplift is limited, but I've always liked this rock because of the texture preserved within it. The sample has spectacular mineral coronas of hornblende around clinopyroxene preserved throughout. It always stood out to me as my favourite rock because you can see the mineral relationships so clearly in the hand sample.

This rock is significant to me because it reminds me of my early career years. I spent several weeks slogging through bogs drilling back pack holes into outcrops. At night, we'd hang out around the fire and discuss the challenges that we faced during the day. I sometimes wonder how I made it through some of those days; but on frustrating days in my career now, this rock reminds me that the challenges I face in a day are temporary and they become fond memories for the future.



Photo supplied by Nathan Bridges

Bridges appreciates that this sample from Kapuskasing Uplift has spectacular mineral coronas of hornblende around clinopyroxene preserved throughout.

To complete my BSc in Geology, I transferred to the University of Western Ontario. From there, I spent two additional years at Western where I completed my MSc in Geology in 2010 studying the Lac Cinquante Uranium Deposit in Nunavut. I spent a considerable amount of time on the tundra in Nunavut at that time. Upon completing my MSc, I worked for Kivalliq Energy, the company that sponsored my project, for a few months in Nunavut.

From there, I ended up in Saskatchewan working for Cameco Exploration and got my P.Geo. in 2013.

I spent 11 years working for Cameco. For the first 10 years, I was part of the project teams in the exploration department spending the majority of my time on Cameco's Read Lake project where we made the Fox Lake Deposit discovery in 2013. The team took Fox Lake through the delineation and inferred resource stage. I also worked on Cameco's Millennium Deposit, Cigar Lake Extension Deposit, and various other greenfields exploration programs during that time.

In my last year at Cameco, I moved into a geoscience role. In this role, my job was to support the project teams on geoscience initiatives, targeting and long-term planning for projects.

In July of 2021 I left Cameco for a VP of Exploration role with a junior uranium company called CanAlaska Uranium. Since coming to CanAlaska, my life has gotten quite busy, but I've thoroughly enjoyed the change and look forward to where this role will take me. We've got a great team at CanAlaska and I'm excited for the future.

I think what I appreciate the most about being a geoscientist is how much I get to travel Northern Saskatchewan and the rest of the world to look at interesting deposits and rocks. I've been able to see some of the most remote and beautiful parts of our country, places that many people will never touch foot on.

I'm also very thankful for all the opportunities that I've had to work with great geoscientists along the way. I've learned so much from my mentors and colleagues, and this has helped me to become a better geologist.

I also enjoy my time with my wife, Ashlee, and two children, Cohen, who is eight years old, and Ayden, who is five as well as our two dogs, Rosie and our newest addition, Molly.

## APEGS' Office Remains Closed

The APEGS office has been closed to the public since March 23, 2020. The office remains closed to the public and APEGS will re-evaluate the situation in January 2022. Refer to the bottom of the homepage at [apegs.ca](http://apegs.ca) for current information.

Information about whether APEGS events are virtual or in person is also available on the APEGS homepage at [events.apegs.ca](http://events.apegs.ca).

Staff members continue to respond to email and telephone messages to maintain operations as well as possible under the pandemic circumstances.

### Contact information for APEGS continues to be:

Email – [apegs@apegs.ca](mailto:apegs@apegs.ca)

Telephone – (306) 525-9547

Toll-free – 1-800-500-9547 (Canada and USA)

APEGS' highest priority is to safeguard the public as well as applicants, members and staff. APEGS asks all in the Saskatchewan engineering and geoscience community to adhere to government regulations and recommended best practices, such as self-isolation and personal distancing to prevent community transmission of COVID-19.

## Flare Gas to Power project

BY GUY BRUCE, P.ENG., FOR APEGS' ENVIRONMENT AND SUSTAINABILITY COMMITTEE  
AND PROJECT ADVISOR, FIRST NATIONS POWER AUTHORITY



*This is the third of a series of articles on the United Nations Sustainable Development Goals and how they relate to the practice of engineering and geoscience.*

**F**lying Dust First Nation (FDFN) has a vision to be part of the economic fabric of Saskatchewan. Nearly 10 years ago they began to look for economic development opportunities that would benefit their community and help oil producers deal with evolving greenhouse gas emissions regulations.

Hard work, persistence and a unique relationship between First Nations Power Authority (FNPA) and SaskPower has enabled this dream to become a reality.

In 2018, the FNPA and SaskPower signed a First Nations Opportunity Agreement. This agreement sets out the framework for development of up to 20 MW of electricity generation capacity by FDFN and their partners from one or more flare gas stacks. The result will lead to reduced GHG emissions as well as a significant revenue stream and jobs for the Flying Dust community.

The opportunity exists because the gas released during oil extraction is a major source of GHG emissions in Saskatchewan. The vented gas, which is mostly methane, has a major greenhouse gas impact that is many times more potent than carbon dioxide (CO<sub>2</sub>). The Saskatchewan government now requires flaring (combustion) of all associated gas, above certain volumes, to reduce methane emissions. In addition, regulations are now in place which require oil producers to limit their overall GHG emissions. As the main byproduct of combustion from the flare stack is CO<sub>2</sub> and heat, this represents an opportunity for electricity generation.

Many oil producers have the option of delivering the gas they produce to a mid-stream facility which extracts high-value

liquids such as butane and propane and produces pipeline-quality natural gas (mostly methane) for SaskEnergy and other customers. When the option to deliver associated gas to midstream facilities does not exist, or is not economical, oil producers look for economical ways to capture the waste gas and turn it into useful energy in the form of carbon-neutral electricity generation.

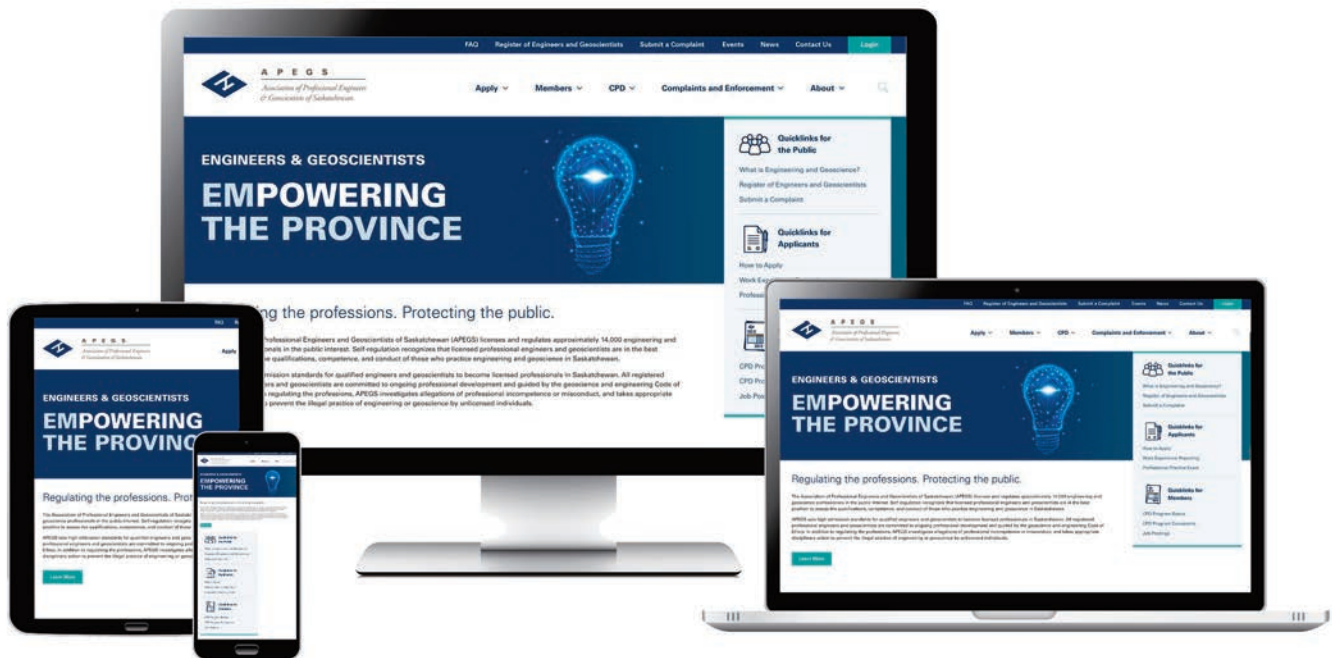
SaskPower's Power Generation Partner Program, which ran for three years, was one such option and may have proven viable for some. That program had a cap of 75 MW for carbon-neutral generation, which included flare gas to power generation. An additional opportunity for carbon-neutral generation is provided through the FNPA agreement with SaskPower.

When the FDFN Flare Gas to Power projects are fully operational they are expected to produce 20 MW of dependable, base load electricity, enough to power as many as 20,000 homes. FDFN's partners will bring the associated gas from oil producers and deliver it to a FDFN power-generating facility. The facility will house engines designed to burn the gas cleanly and efficiently and drive a generator. The electricity produced will then be purchased by SaskPower and delivered into SaskPower's grid.

Every kilowatt hour of flare gas generated electricity produced is one that does not have to be produced by one of SaskPower's power plants, some of which are coal fired. As a result, the overall GHG emissions intensity in Saskatchewan will be reduced.



# New Website Launched



## APEGS introduced its new website in October 2021.

The redesigned website has numerous improvements.

### Design and User Experience

The new website features a streamlined navigation and user process, reducing the amount of visual “clutter” and allowing for a more intuitive and user-friendly navigation experience. Using current best practices, the refreshed site moves users seamlessly through the site, ensuring relevant information is easy to find. In addition, the overall design of the refreshed site is more dynamic and visually appealing, encouraging visitors to browse longer.

### Content Optimization

A complete content overhaul of the existing site ensured information is concise, relevant, easy to understand and consistent in terms of tone, voice, and reading level. Revising all existing content provided the opportunity to better align it with the needs of the user and allows for the incorporation of critical keywords to improve search engine optimization.

### Functionality/Development

The refreshed site is more accessible, with an emphasis on performance and speed, reducing page load and execution time for the user. A modern, semantics-driven HTML and structure, combined with a greater focus on search engine optimization, has enhanced usability and visibility. The redesign also incorporates better mobile and tap-based device support and improves readability and usability for high-resolution monitors and devices. In addition, the refreshed site features an easy-to-use content management system for quicker, more simplified updates.

# Retrospective



Bob McDonald, P.Eng., MBA, LL.B., FEC, FGC (Hon.), FCSSE - Executive Director and Registrar

Bob McDonald, P.Eng., MBA, LL.B., is wrapping up his time as Executive Director and Registrar of APEGS before retiring in mid-January.

Looking back on his more than 20 years with APEGS, he shares what he recognizes about the regulation of the professions, the association and those who have dedicated themselves to APEGS through their work and volunteer efforts.



## Being of Value to APEGS

When McDonald started working as APEGS' Director of Membership Services in mid-January 1999, he saw what he could contribute. He recognized working for APEGS was an opportunity to apply his education and experience to benefit the public and members.

McDonald graduated with a B.Sc. in Chemical Engineering from the University of Saskatchewan in 1978 and was registered as a professional engineer in 1980. He also has both an MBA and LL.B., and is a member of both APEGS and the Law Society of Saskatchewan. Bob served on the Body of Knowledge Task Team of Engineers Canada to establish the syllabus for the professional practice examination. He was a partner in a Regina law firm prior to joining APEGS.

During his time with APEGS, he moved into other roles, including becoming Director of Membership and Legal Services and Deputy Registrar before being named Executive Director and Registrar. In addition to handling the responsibilities of his roles, he was able to step in to provide assistance as needed.

He provided staff support to APEGS' committees and boards, including the Education Board, the Image and Identity Board, the Discipline Committee, the Consulting Practice Committee and the Investigation Committee.

Being a lawyer, he was also able to represent APEGS for nine weeks of hearings at the North Battleford Water Inquiry in 2002. He also appreciated the opportunity to do government relations work with Engineers Canada at Parliament Hill.



## A Growing Association

During his years with APEGS, McDonald has seen the numbers grow. When he started in 1999, APEGS had about 5,000 registered members and eight staff members. Each year, there were around 200 international applicants. As he prepares to leave APEGS, there are now 15,000 members, 25 members of staff and 1,000 to 1,200 international applicants a year. Much of that growth accelerated starting in 2004, but it has been more modest in recent years.



## The Culture of APEGS

Through his experience, McDonald has recognized how the contributions of all who volunteer and work for APEGS have resulted in a culture made up of three qualities.

The first is fairness and relates to APEGS' role as a regulator of the professions.

"Our obligation to the public is safeguarding and regulating the professions in the public interest," said McDonald.

He sees it as necessary going forward to be aware of the legal framework around the regulation of the professions, not just in Saskatchewan, but across Canada and not just for engineers and geoscientists, but all self-regulated professions. He advises monitoring trends in the public's confidence in self-regulated professions so as to establish an appropriate level of transparency in order to withstand public scrutiny.

**"Self-regulation is a privilege granted by, essentially, the public of Saskatchewan as represented by the government of Saskatchewan through, in our case, *The Engineering and Geoscience Professions Act*, said McDonald.**

"We don't want to get into such a situation that we look at self-interest over public-interest."

He points to the power of social media as an instrument capable of eroding public trust. Those uninformed posting to and sharing on these platforms can put pressure on the political process and influence public policy.

The second quality of the culture is respect, which is demonstrated in interactions between staff members, with the public as well as applicants and members.

The third is service, which is revealed through APEGS' staff avoiding being strictly officious in their work to regulate the profession to instead providing guidance. He recalls learning from Dennis Paddock, P.Eng., his predecessor who retired in 2016, who he describes as "a wonderful mentor and friend."



## How Service Motivates

The value of service was made clear to him in a letter he received from a member about his impact on their career and those of many other members. He said the letter exemplifies what motivated him in his work with APEGS.

"I have stopped to think about all the engineers that have assisted me with my career and you're at the top of my list," this member wrote.

This person felt more capable navigating the work experience process to become a designated P.Eng. and making education and career decisions because of McDonald's guidance. McDonald provided this guidance not just through his work for APEGS, but also through the law and ethics class he taught engineers at the University of Regina.

He recognizes that quality of service is also seen in the dedication of those volunteering for various committees and initiatives of APEGS.

"APEGS relies very heavily on its volunteer base at any given time," said McDonald.

"We have a lot of reliance on volunteers and staff whose core responsibility is co-ordinating a lot of activity."



## Timing his Exit

He says the time is right for him to step back and for another person to step up to take over leading APEGS.

"We've had some significant change in a governance review project which was followed by a governance change project," said McDonald.

"I didn't want to be in a position that I was essentially handcuffing my successor with a bunch of decisions that I made in the last six months that I was here."

He does not have solid plans for his time in 2022, but has opportunities and interests he will explore between now and then, including writing his thesis for his Master's in History, teaching some classes in law, ethics and economics to engineering students at the University of Regina and volunteering in the area of corporate registration. Plus, some golf wouldn't be a bad way to spend some of his summer days.



# Education Grants for Members

Through the University of Saskatchewan and the University of Regina, APEGS offers six merit-based grants of \$7,500 each to encourage existing APEGS members to further their education.

## Eligibility Requirements

Members returning to post-graduation studies at either university in the field of engineering or geoscience or for an MBA program are eligible to apply. Applicants are evaluated in the following areas:

- Accomplishments in the practice of professional engineering or professional geoscience that indicates exceptional potential.
- Demonstration of leadership, volunteerism and community involvement.
- Service to the professions in public education, understanding the role of professionals in society and/or active participation in engineering/geoscience associations, societies and institutes.
- Reasons for pursuing the post-graduate degree, goals, personal statement and how their studies will contribute to the professions.

## How to Apply

Applications may be sent to APEGS any time throughout the year.

Applications received by Dec. 31 of each year are considered and awarded early the following year with presentations made at APEGS' annual awards banquet, typically in early May of each year.

Visit [apegs.ca](http://apegs.ca) for the application form and more information.



## APEGS and the Calls to Action of the Truth and Reconciliation Commission



St. Anthony's Indian Residential School, male students with nuns, a priest, and school personnel, Onion Lake, ca. 1950

### What was the Truth and Reconciliation Commission and what did it do?

The Truth and Reconciliation Commission (TRC) of Canada created a historical record of the residential school system.

The TRC was constituted and created by the Indian Residential Schools Settlement Agreement, which settled the class actions brought by the tens of thousands of Indigenous people who were enrolled in the Canadian Indian residential school system.

The TRC was active from 2008 to 2015, when it released a six-volume report after years of hearings and testimony from more than 6,000 residential school survivors and others.

### How did the Truth and Reconciliation Commission view reconciliation?

*Honouring the Truth, Reconciling for the Future* is a summary of the final TRC report. It begins by stating:

“For over a century, the central goals of Canada’s

Aboriginal policy were to eliminate Aboriginal governments; ignore Aboriginal rights; terminate the Treaties; and, through a process of assimilation, cause Aboriginal peoples to cease to exist as distinct legal, social, cultural, religious, and racial entities in Canada.”

“The establishment and operation of residential schools were a central element of this policy...”

Later in that same section, the commission explains its view of reconciliation. Reconciliation is “about coming to terms with events of the past in a manner that overcomes conflict and establishes a respectful and healthy relationship among people, going forward.”

“In order for that to happen, there has to be awareness of the past, acknowledgment of the harm that has been inflicted, atonement for the causes, and action to change behaviour.”

### What are the Calls to Action?

The TRC made 94 calls to action in order to “redress the legacy of residential schools and advance the process of Canadian reconciliation.” Those calls relate to various elements of Canadian society, such as education, justice, media, and business, as well as its citizens.

### How is the Truth and Reconciliation Commission and its Calls to Action relevant to APEGS?

At APEGS’ May 2019 annual meeting, a motion was made “that Council give consideration to looking at the Calls to Action from the Truth and Reconciliation Commission to see how they relate to APEGS and see if there are further steps APEGS should be taking towards reconciliation with Canada’s Indigenous Peoples.”

Since then, APEGS has begun a journey to listen and learn to thoroughly understand how those 94 Calls to Action apply to APEGS’ role as a regulator and to our obligations as engineers and geoscientists.

APEGS’ journey includes engaging Indigenous Works to develop a strategy and plan for how APEGS can understand its obligations and respond to the calls to action appropriately.

## What steps has APEGS taken so far?

### Land acknowledgment

APEGS uses the following land acknowledgments to recognize the importance of promoting the engineering and geoscience professions in a manner that is respectful, inclusive, and representative of society.

### In-person meetings and events

I would like to begin by acknowledging that we are gathered on the traditional territories of the Nêhiyawak (Cree), Anihšînâpêk (Saulteaux), Dakota, Lakota, and Nakoda, and the homeland of the Métis Nation. This meeting is located on Treaty # and recognizes Indigenous peoples long-standing presence in this territory. (Insert treaty number based on the location of the meeting. Large centres are as follows:

Treaty 4: Estevan, Moose Jaw, Regina, Swift Current, Yorkton.

Treaty 6: North Battleford, Prince Albert, Saskatoon).

### Virtual meetings and events

I would like to begin by acknowledging the Indigenous Peoples of all the lands that we are on today. While we meet today on a virtual platform, I would like to take a moment to acknowledge the importance of the lands, which we each call home. We do this to reaffirm our commitment and responsibility in improving relationships between nations and to improving our own understanding of local Indigenous peoples and their cultures.

### APEGS website and on-demand online training

APEGS acknowledges that it regulates the engineering and geoscience professions in the jurisdiction of Saskatchewan which is comprised of portions of lands from Treaties 2, 4, 5, 6, 8 and 10, the territories of the Nêhiyawak (Cree), Anihšînâpêk (Saulteaux), Dene, Dakota, Lakota, and Nakoda nations, and the homeland of the Métis Nation.

### Employee email signature

APEGS regulates the engineering and geoscience professions in the jurisdiction of Saskatchewan which is comprised of portions of lands from Treaties 2, 4, 5, 6, 8 and 10, the territories of the Nêhiyawak (Cree), Anihšînâpêk (Saulteaux), Dene, Dakota, Lakota, and Nakoda nations, and the homeland of the Métis Nation.

### Education

For a few years, APEGS has been offering more professional development sessions that focus on Indigenous matters and the obligations of engineers and geoscientists at its spring and fall PD days and the annual meeting and conference each May.

As of November 2021 all APEGS members have access to 4 Seasons of Reconciliation, an online course developed by the First Nations University of Canada. It is a self-paced

course that takes about 2.5 hours to complete and may be claimed as Formal Activity in the APEGS CPD program in addition to satisfying the minimum of one hour of annual ethics training. Members are encouraged to take the course to raise their awareness and to participate in reconciliation.

The first 230 members who sign up for the course will receive free access. The regular cost is \$38 plus tax.

4 Seasons of Reconciliation promotes a renewed relationship between Indigenous Peoples and Canadians, through transformative multi-media learning. The course is designed to help fulfil Call to Action 92 of the Truth and Reconciliation Commission and provides insight into the history of residential schools, treaties around the country, and reconciliation and restitution initiatives. Featured are award-winning reconciliation documentaries, slideshows, quizzes and an additional video library that is available after you have completed the course.

Here is a link to a short trailer about the course:

<https://vimeo.com/299774118/5a39fa9a8d>

### How to access the course:

1. Sign up using this form:  
<https://share.hsforms.com/1zY6dQk6hRS-JKyVYJZH7eQ4z7zm>
2. The Reconciliation Education team will add you within two business days and an invoice\* for \$38 plus tax will be sent to your email from  
[4seasons@reconciliationeducation.ca](mailto:4seasons@reconciliationeducation.ca).  
*\*The first 230 members to sign up will not be invoiced.*
3. Once the invoice is paid, you will receive a welcome email with course access from [noreply@notify.thinkfic.com](mailto:noreply@notify.thinkfic.com).

### Inclusion

During October, the Indigenous Inclusion in Engineering Survey by Engineers Canada and APEGS took place. It aims to help both organizations “learn more about the experiences of both Indigenous and non-Indigenous engineers to ultimately support a more inclusive engineering profession for Indigenous peoples.” A link was emailed to all APEGS members who subscribe to informational emails inviting them to take part.

### Engagement

Guidelines for engineering consultation and engagement with Indigenous communities are being developed by the Canadian Engineering Qualifications Board (CEQB), which is a committee of Engineers Canada. The guidelines follow the development process in Engineers Canada Board policy. Engineers Canada is working with an Indigenous-led team from Urban Systems to modify processes to ensure equitable participation by Indigenous people in the guideline’s development. The guidelines are expected to be released in mid 2023 and will work with APEGS to distribute them.





## APEGS Scholarships and Bursaries

# Applicants Wanted

Do you know a student who is thinking about entering or already enrolled in engineering or geoscience in Saskatchewan?

Encourage them to apply for an applicable APEGS scholarship or bursary noted in the information to the right. Refer to each university's website for more information.

Cut-off dates to apply vary by university, award type and field.

Scholarships recognizing leadership and volunteerism among university students currently enrolled.

### Six scholarships of \$1,875

Three for each university for current students of any field of engineering.

### Two scholarships of \$1,875

One for each university for current students of any field of geoscience.

Scholarships aimed at female university students who are transferring their field of study to engineering or geoscience.

### Two scholarships of \$3,200

One for each university for women in engineering.

### Two scholarships of \$3,200

One for each university for women in geoscience.

Bursaries aimed at encouraging and assisting high school graduates entering the study of engineering or geoscience.

### Two bursaries of \$4,000

One for each university to be applied towards first-year tuition in any field of engineering for a self-identified Indigenous student.

### Two bursaries of \$4,000

One for each university to be applied towards first-year tuition in any field of engineering for a student of any background.

### Two bursaries of \$3,200

One for each university to be applied towards first-year tuition in any field of geoscience for a self-identified Indigenous student.

2022

## Saskatchewan Geoscience Calendar is available!

The Saskatchewan Geological Society's calendar is in its seventh year of production. The images represent an excellent array of interesting geoscience features from across our province, including landscapes, rocks, fossils, and aerial imagery. The calendar is also packed with information in the Did You Know, Digging Deeper and Fun Fact sections.



The calendar is available for purchase in Regina at the MacKenzie Art Gallery, the Royal Saskatchewan Museum, and the University of Regina bookstore and in Saskatoon at the U of S bookstore, the U of S Geology Department, and McNally Robinson bookstore.

Proceeds from calendar sales help the society conduct future outreach projects, provide an incentive for future editions and facilitate additional luncheon talks. Calendars that remain in January are donated to schools.

The society is seeking photos for the next geoscience calendar. Visit [www.sgshome.ca](http://www.sgshome.ca) for details.

The calendar retails for \$10 (1-4 copies), \$8 (5-9 copies) and \$6 (>10 copies). You can also place larger orders online by completing an order form.

Visit the society's website for further details at [www.sgshome.ca](http://www.sgshome.ca).



# New Ad Campaign

In September, APEGS aired new ads online, on the radio (Z99, CJME, C95 and CKOM) and on billboards in Regina, Saskatoon, Moose Jaw, Estevan, North Battleford, Prince Albert, Swift Current, Weyburn and Yorkton.

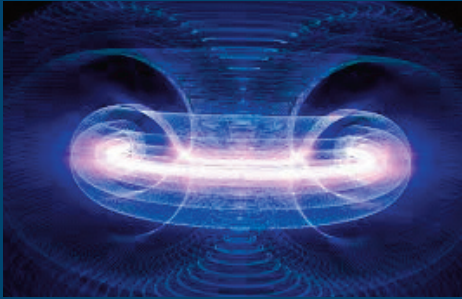


The concept for the new campaign features words and images that can be interpreted as referring to the energy sector as well as alluding to the innovation, creativity, and dynamism of engineers and geoscientists in all sectors. The slogan “Regulating the professions. Protecting the public.” continues to appear with the APEGS logo to reinforce APEGS’ regulatory mandate to protect the public. The ads will appear at scheduled times on each platform until the last week of November. To celebrate Saskatchewan hosting the 2022 Grey Cup, APEGS will air the Mosaic Stadium ads in 2022, which first aired in fall 2019.





# News Beyond Our Borders



bloomberg.com

## Former Shaunavon resident accomplishes major advancement in fusion energy

*Town of Shaunavon/MIT News* – A major accomplishment by a fusion energy project led by former Shaunavon resident, Dennis Whyte, has his team on track to build the world’s first fusion device that can create and confine a plasma that produces more energy than it consumes.

“It’s really a watershed moment, I believe, in fusion science and technology,” said Whyte, director of the Massachusetts Institute of Technology (MIT) Plasma Science and Fusion Center.

Years of intense research and design work resulted in, for the first time ever, a large high-temperature superconducting electromagnet being ramped up to a field strength of 20 tesla, the most powerful magnetic field of its kind ever created on Earth.

This accomplishment resolves one of the most significant technological uncertainties around the possibility of building the first fusion power plant on Earth. That goal has been pursued for decades with limited progress.

Fusion power plants that can produce more power than they consume are being pursued to become practical, inexpensive carbon-free power plants to help limit the effects of global climate change.

“Fusion in a lot of ways is the ultimate clean energy source,” Maria Zuber, MIT’s vice-president for research and E. A. Griswold Professor of Geophysics explained.

“The amount of power that is available is really game-changing.”

Fusion is the process that powers the sun. It is the merging of two small atoms to make a larger one, releasing massive amounts of energy. No solid material can withstand such high temperatures. Something that hot — 100,000,000 degrees or more — must be suspended so that no contact is made with anything solid. Intense magnetic fields control the hot plasma swirl of protons and electrons by forming what is described as an invisible bottle shaped like a doughnut.

What is innovative about this project’s design is the use of high-temperature superconductors, which enable a much stronger magnetic field in a smaller space than what has been possible with previous electromagnets or low-temperature semiconductors. A new kind of superconducting material became commercially available a few years ago, making this design possible.

The project originated in a Nuclear Science and Engineering course that Whyte is leading at MIT and is being done with start-up company Commonwealth Fusion Systems (CFS). Their demonstration device, called SPARC, is targeted for completion in 2025.

Whyte has been fascinated by fusion energy and physics since he was a student living in Shaunavon. He was introduced to the concepts of energy and voltage through his father’s work for SaskTel.

He pursued his interest at the University of Saskatchewan where he achieved his Bachelor of Engineering Physics before moving on to the University of Quebec to complete his doctorate. For nearly 30 years, he has been dedicated to researching fusion energy in the U.S., publishing numerous papers and receiving many awards. For the last 15 years, he has been researching at MIT.

## Ontario removing barriers for immigrants to work as engineers in Canada

CTV – Ontario is introducing legislation to make it easier for immigrants to be licensed to work as engineers by not requiring Canadian work experience.

Licensing bodies would still be able to apply for exemptions that could require Canadian work experience, but Ontario’s labour minister, Monte McNaughton, said they would need government approval.

“They have to make a health and safety case, which would come to the minister for approval,” he said.

What is being proposed would also standardize English-language testing requirements and ensure licensing applications are processed faster, a move McNaughton says will remove barriers



immigrants often face. McNaughton hopes to see the changes brought by the legislation take effect in two years. Ontario is facing a labour shortage with around 293,000 jobs unfilled across the province. This bill would apply to architects, teachers, accountants and social workers as well as 23 trades.

### Alberta bill proposes deadlines for registrations

*Everything Grande Prairie/CTV Calgary/CBC* – Legislation proposed in Alberta would make it possible for engineers and geoscientists applying for jobs in that province from another province to become registered within a month.

The Alberta government introduced the *Labour Mobility Act* in late October. It applies to more than 100 regulated occupations in Alberta.

Under the bill, a regulator must let an applicant know within 10 days their application was received and a decision on it must be made within 20 working days. That decision must be shared with the applicant within 10 days. “The act will make Alberta the first and the only jurisdiction in Canada to legislate timelines for registration decisions,” said Labour and Immigration Minister Tyler Shandro.

Information about fees and documentation required in Alberta would need to be published on regulators’ websites. A timely review process would need to be established and a record of decisions would need to be kept for three years.

The changes being proposed are to help Alberta attract skilled labour. The government pointed to a C.D. Howe Institute report from last year that said that reducing the cost of labour mobility by \$500 per person per year could help Alberta attract around 20,000 additional workers a year. That would add \$2.8 billion per year to the provincial economy.

### Engineers and Geoscientists B.C. completes review to ensure legislative compliance

*Engineers & Geoscientists British Columbia* —Engineers and Geoscientists B.C. Council and staff reviewed its programs and activities against a framework developed after a legislation change in that province.

The review was done against a framework provided by the Superintendent of Professional Governance.

The Office of the Superintendent of Professional Governance is an oversight body introduced in B.C. through the *Professional Governance Act* (PGA) in February 2021.

That legislation also brought forward a new regulatory framework while restricting certain advocacy activities for the regulators under its authority. It intends to ensure that regulators focus only on activities that support their regulatory mandate.

The review determined that core operations and most other programs of Engineers and Geoscientists BC can continue.

However, some require modest changes in order to comply with the PGA. Two online directories that allow registrants to advertise their services or employment availability were closed. Also, the Benevolent Fund Society, which provided financial grants to registrants in need, will be dissolved.

The staff and council also considered a registrant motion that had come forward at the 2019 Annual General Meeting proposing that Council consider establishing a separate advocacy body.

Council directed that staff report back to Council (no earlier than fall 2022) with an assessment of whether the question of a separate advocacy body should be revisited.

### U of A course aims to uplift Indigenous voices in STEM

*University of Alberta Gateway* — After seeing a lack of Indigenous representation in Science, Technology, Engineering, and Mathematics (STEM) growing up, a University of Alberta professor is working to have those voices be heard.

Associate professor Kim TallBear is the principal investigator of the Indigenous Science, Technology, and Society research and teaching hub in the faculty of native studies at the U of A. In partnership with associate professor Jessica Kolopenuk, TallBear helped develop the Indigenous Peoples and Technoscience course which aims to refute the separation of Indigenous knowledge and science.

The course is available online through the U of A’s faculty of native studies webpage.

### McMaster University student reflects on National Day for Truth and Reconciliation

*Engineering McMaster*—McMaster University promoted the stories of some of its campus community members for the National Day for Truth and Reconciliation.

James LeMoine, a PhD student in Mechanical Engineering, was one of those community members. LeMoine is the recipient of the 2021 Indigenous and Black Engineering/Technology (IBET) PhD Fellowship in the

Faculty of Engineering. He completed his undergraduate and master's degree at McMaster University and is currently researching electro hydrodynamics (EHD) with the ultimate goal of reducing greenhouse gas emissions and the carbon footprint.

LeMoine is Anishinaabe from the Mississauga of the Credit First Nation and part of the Migizi (Eagle) clan. He explained how an event to promote post-secondary education to Indigenous high school students inspired him to learn more about how earlier generations of his family were affected by residential schools and how that trickled down to his life experience. He also provided a reading list for others who want to learn more about Indigenous Canadians' experiences. Some titles he recommends are:

- *21 Things You Might Not Know About the Indian Act* by Bob Joseph
- *Living in the Tall Grass* by Stacey Laforme
- *The inconvenient Indian* by Thomas King
- *Treaty words: For as long as the river flows* by Aimée Craft

### Mini-conference outlines reconciliation opportunities for engineers

*Canadian Consulting Engineer* — RJC Engineers, an engineering firm with locations across Canada, helped mark Canada's first National Day for Truth and Reconciliation by co-hosting a virtual mini-conference that drew more than 500 registrants from across Canada.

The mini-conference outlined some of the ways consulting engineers can contribute to Indigenous communities and inclusion. It was titled 'Building a Foundation for Reconciliation: The Role of Architecture, Engineering and Construction in Indigenous Protected and Conserved Areas'. It was organized by the Conservation through Reconciliation Partnership as part of its Virtual Campfire Series.

The purpose of the IISAAK OLAM Foundation is to support the establishment of Indigenous Protected and Conserved Areas (IPCAs) and to educate Canadians in general about their value and relevance. Eli Enns is the co-founder and CEO of the foundation.

"I see great opportunity for reconciliation through engagement with professions like engineering," said Enns.

"We need to integrate natural and human infrastructure in a more balanced way. If we work with Mother Nature, through examples like micro-hydroelectric generation, we can be more resilient."

Two-eyed seeing is a concept that combines Indigenous and Western ways of knowing that comes from Mi'kmaw Elder Albert Marshall. The need to enhance traditional engineering design approaches with greater empathy for users was emphasized by Eric Wilson, the design engineer

with RJC and civil engineering PhD candidate at the University of Victoria.

"IPCAs offer the opportunity to benefit from Two-Eyed Seeing," said Wilson.

"At the heart of engineering, we're designing infrastructure to make people's lives better, which is empathetic; but issues can arise when a project, such as a social housing complex, is being paid for by someone other than the end user."

### Drone transports lungs for transplant in world first



BNN/Bloomberg – A set of lungs were transported by a drone through Toronto in what is being hailed as a first.

The lungs were in the air for just six minutes as they were transported from Toronto Western Hospital to Toronto General Hospital. They were suspended from the drone in a lightweight, carbon fibre container. Those lungs were successfully transplanted into an engineer who is a drone enthusiast.

"To see it come over the tall buildings was a very exciting moment," said Dr. Shaf Keshavjee, who performed the surgery.

"I certainly did breathe a sigh of relief, when it landed and I was able to...see that everything was OK."

Keshavjee – as well as bioengineering firm Unither Bioelectronique in Bromont, Que. – expect many more organs will be delivered like this in the future in North America. Faster deliveries mean fragile and temperature-sensitive organs are less likely to deteriorate so that transplants have better odds of lasting, which helps when there is a shortage of organ donors.

For 18 months, the team of Mikael Cardinal prepared for this flight. He is Unither Bioelectronique's vice-president of program management for organ delivery system. He has a bachelor's degree in mechanical engineering from the Université de Sherbrooke, including a major in aeronautics, as well as a master's degree from the Université de Sherbrooke.

The team designed a container to withstand changes in elevation, barometric pressure, vibrations and other



jarring events. It held practice flights that were loaded with dummy packages simulating lungs. It did drop tests for the final drone and container, which were outfitted with a parachute and advanced GPS system. It had to receive clearance to fly the drone in the busy area.

The first organ flown by a drone was a kidney transplanted in 2019 at University of Maryland Medical Center in Baltimore.

### Climate change scientists win Nobel Prize for physics



From left: Giorgio Parisi, Klaus Hasselmann and Syukuro Manabe.

Washington Post — Laying down a foundation of knowledge about the Earth's climate and how humanity influences it so that global warming can be reliably predicted has won two scientists — Syukuro Manabe of the United States and Klaus Hasselmann of Germany – a Nobel Prize in physics.

The prize was shared by Giorgio Parisi, a theoretical physicist at the Sapienza University of Rome, for describing fluctuating physical systems and disorder on scales from atoms to planets.

All three have developed accurate predictions for phenomena as chaotic as weather and climate and were honoured for “ground-breaking contributions to our understanding of complex physical systems,” said Göran K. Hansson, secretary general of the Royal Swedish Academy of Sciences.

“The notion of global warming is resting on solid science.”

It is very unusual for a meteorologist to be awarded a physics prize. Manabe is a meteorologist at Princeton University who has been described by his colleagues as the “father of climate modeling,” able to simulate aspects of global warming before anyone else. He has modeled the Earth's climate since the 1960s, demonstrating how increased levels of carbon dioxide in the atmosphere will lead to increased temperatures at the surface of the Earth.

The Nobel committee explained how a model used by Manabe and hundreds of hours of computing hours led to a critical finding that confirms the key role carbon dioxide plays in heating the planet. That finding is essential for

proving that human industry, which releases carbon dioxide and other greenhouse gases, drives climate change.

The model was of a 25-mile-high column of air used to examine the interplay between solar radiation on the planet's surface and the vertical movement of air due to convection. Computing tested what happened with different levels of gases. The finding was that “if you double the carbon dioxide in the Earth's atmosphere, the surface temperature would increase by two degrees Celsius,” Yale University physicist John Wettlaufer said.

Almost all of work has been confirmed by 50 years of climate research. In addition to influential carbon dioxide model, Manabe has also contributed to predicting how an influx of fresh water into the sea from melting polar ice would alter ocean circulation, slowing the global conveyor belt that influences continental temperatures and coastal sea levels and showed that warming can shape tropical storms.

Hasselmann, another winner, linked weather with climate about a decade after Manabe developed his model. Hasselmann showed how weather, which works on a time scale of days, influences ocean climate over years.

### LEGO researches attitudes about gendered play

CTV News - LEGO released the results of a study about the views held by girls, boys and their parents about the gendering of play and creativity, saying parents may be limiting their daughters.

The study included online, opt-in surveys of 6,844 children aged 6-14 and parents across China, Czech Republic, Japan, Poland, Russia, U.K. and the U.S. The research was done by the Geena Davis Institute.

It found that 74 per cent of boys believe some activities are just for girls and some are just for boys, compared to only 62 per cent of girls who believe the same.

More boys (71 per cent) said they worried about being made fun of if they played with a toy considered to be for girls compared to girls (42 per cent) worrying about how they'd be perceived for playing with a toy associated with boys.

Parents were asked about their implicit bias in the surveys. Parents were asked to think of a scientist or athlete and explain if that person they imagined was a man or a woman. Eighty-five per cent of parents said a man.

They were asked the same about an engineer. The percentage was higher with 89 per cent thinking of a man.

Parents were also asked about activities for their children. A minimal percentage – 20 per cent or less – said they would encourage boys to dance, dress-up or cook/bake compared to girls. Meanwhile, a small percentage – under 30 per cent – would encourage girls to play video games and video games or encourage them to code compared to boys.



The Washington Post

When it came to LEGO, nearly 60 per cent of parents directly stated they encourage their sons to play with LEGO compared to just 48 per cent who encouraged their daughters. Through questions designed to reveal implicit bias, a greater gap was discovered. Those questions found 76 per cent of parents encouraging LEGO for a boy versus 24 per cent for a girl.

LEGO recently announced it will move away from gendering their toys in their marketing as it seeks “to champion inclusive play.”

### World Heritage site studied for engineering feats of early Indigenous people

*New York Post* – A new study sheds light on the “sophisticated” engineering work by early Indigenous people at the World Heritage Site at Poverty Point in northern Louisiana.

Researchers at Washington University in St. Louis revealed new details about a 72-foot-tall dirt mound surrounded by concentric half-circle ridges (like ripples on the surface of water) made of 2 million cubic yards of soil. These massive earthen structures were built to last more than 3,400 years — a huge undertaking that would have been completed in months without modern tools, work animals or even wheeled carts for hauling material.

Researchers believe the area was an important religious gathering place for Indigenous people. It was abandoned 2,000 years ago most likely because of regular floods in the Mississippi River Valley, said Tristram Kidder, the lead author of the study, which was published in *Southeastern Archaeology*.

The structure is especially significant because the people living in that area at that time are believed to be hunter-gatherers who would have had to work in concert to complete the work at an impressive and consistent speed. Archaeologists found no evidence of there being a break between phases of work, which would be indicated by regular weathering of the structure due to rain and climate.

The dirt-based structures at Poverty Point “have held together ... with no failure or major erosion,” said Kidder. “They really were incredible engineers with very sophisticated technical knowledge,”

Kidder credits the Indigenous builders’ thorough understanding of geology and earth sciences for the ability of the structure to withstand years of heavy rain, powerful hurricanes and flooding in the area where they were built.

“Similar to the Roman concrete or rammed earth in China, (they) discovered sophisticated ways of mixing different types of materials to make them virtually indestructible, despite not being compacted,” Kidder explained.

He added, “There’s some magic there that our modern engineers have not been able to figure out yet.”

### Geology contributes to understanding origin of Earth’s oxygen-rich atmosphere



www.noaa.gov

*Scientific American* — One of geology’s greatest unsolved mysteries has been confronted by studying colorful mats of primitive microbes living in a sinkhole at the bottom of Lake Huron.

Initially, Judith Klatt, a biogeochemist at the Max Planck Institute for Marine Microbiology in Bremen, Germany, thought that, through her research, she would learn something about Earth’s early ecosystems.

Instead, she has contributed to our understanding of how, exactly, Earth became the only planet known to have an oxygen-rich atmosphere.

Geologic clues suggest microbes may have started releasing oxygen via photosynthesis as early as three billion years ago or even before. But it took about half a billion years for that oxygen to build up in the atmosphere and then a billion more for it to reach modern levels and set the stage for complex life.

Scientists have long been puzzled by those delays. Klatt and her colleagues identified a possible explanation based on her sinkhole work — early Earth’s days were simply too short.

Then, soon after the solar system formed, a Mars-sized object crashed into Earth and sent up a spray of debris

that became the moon. Drag from it gradually slowed the planet's rotation, increasing the length of a day from about six hours to 24 hours today.

That slowdown has been known by scientists for decades, but few linked it to oxygen levels.

Then, University of Michigan oceanographer Brian Arbic heard a talk about Klatt's work with a Lake Huron sinkhole. Arbic, a co-author on the new paper published in Nature Geoscience, wondered whether changing day length could have affected photosynthesis over geologic time.

Because it is fed by oxygen-poor, sulfur-rich groundwater, the sinkhole approximates conditions on early Earth. Communities of microscopic bacteria blanket the lake bottom in purple and white mats. Klatt and her colleagues examined how photosynthesizing, oxygen-producing cyanobacteria lie hidden under sulfur-eating competitors at night—and how the two literally swap positions at dawn and dusk.

The researchers found that the time they take to trade places creates a lag between when the sun rises and when photosynthesis ramps up, limiting how much oxygen the mats can generate on short days. Klatt showed in the lab that the mats produced no oxygen on artificially-created short days, but oxygen production increased when the "day" got longer.

### Greenland promotes mining of environmentally responsible mineral

Reuters – A mineral known as anorthosite that is found on the moon as well as countries on Earth, including Canada, is drawing the attention of mining companies, investors and even NASA to Greenland.

Anorthosite is a rock that was created in the early days in the formation of our planet. Mining companies and investors are hoping to sell it as an ingredient to make fibreglass as well as a relatively sustainable source of aluminium. Anorthosite can be used as an alternative to bauxite to produce aluminium, one of the minerals seen as central to reducing greenhouse gas emissions because it can be used to make vehicles lighter and is fully recyclable.

Meanwhile, NASA is interested in the mining of anorthosite as it tests equipment that would involve mining on the moon and even establishing communities there. NASA has been using crushed anorthosite powder from a smaller Greenland mine already in production, operated by Canadian-based Hudson Resources.

"The deposits in Greenland and elsewhere are not exactly like the moon, but they're pretty darn close," said John Gruener, a space scientist at NASA's Johnson Space Centre.

"If we're really going to live off the land at the south pole of the moon, which everybody is interested in now, we will have to learn how to deal with anorthosite, the dominant rock that's there," he said. "Having another supply of anorthosite from Greenland is great."

Greenland's government, elected in April, has an ambition to grow its tiny economy so it can realise its long-term goal of independence from Denmark, but it intends to honour the environmental platform on which it campaigned. Greenland is promoting anorthosite as an environmentally responsible mineral while banning future oil and gas exploration and wanting to reinstate a ban on uranium mining.

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# News From The Field



## University of Saskatchewan's first-year engineering program RE-ENGINEERED

*The StarPhoenix/University of Saskatchewan* — The first-year program for University of Saskatchewan engineering students has been completely overhauled and is now known as RE-ENGINEERED.

Sean Maw, P.Eng., is the Jerry G. Huff Chair in Innovative Teaching at the College of Engineering. He can explain what has changed in one word.

"Everything," he said.

"It's probably the biggest overhaul in Canadian engineering education in many years, anywhere."

The first change is students no longer take five or six classes simultaneously. Classes have staggered start dates, so assignments and tests don't converge at the same time.

Meanwhile, students' days are in synch so they break for lunch and their days start and end at the same time, allowing for more social interaction between students. Classes are also better integrated, so students aren't being asked to know something they haven't yet learned in another class, and the programming is different, giving students more marketable, job-ready skills, Maw noted.

Engineering students get multiple chances to show they know something, a system that Maw says is more "natural" and "forgiving." Like medical students, they now get competency-based assessments rather than the typical flow of assignments, midterms, more assignments and then finals, which is a first.

Finals are a thing of the past. Instead, students will spend one day each day of the last week of December in different engineering disciplines to help them choose what direction they want to go. In April, they get an introductory course for their second-year studies.

Alumni Jane Graham and Ron Graham, P.Eng., recently donated \$900,000 to the College of Engineering. Of that, \$500,000 will support the RE-ENGINEERED program. The college's Ron and Jane Graham School of Professional Development will use a \$400,000 contribution from the Grahams to support a project coordinator who will monitor and evaluate initial outcomes of the RE-ENGINEERED program and help develop a suite of professional development opportunities for engineering students, alumni and other professionals.

## Hard hat ceremony celebrates USask engineering students



*University of Saskatchewan* - USask Engineering officially inducted its second- and third-year students to their chosen disciplines at the annual Hard Hat Ceremony.

Last year, the ceremony was held virtually, so this year's event at Saskatoon's Prairieland Park included third-years. Family and friends attended this year's event online to reduce numbers at the occasion.

Each discipline group (chemical, civil, computer, electrical, engineering physics, environmental, geological and mechanical) was called to the front of the room.

There they received words of wisdom and encouragement from a USask Engineering alum before having their hard hats placed on their heads. Students recited the college's Statement of Ethics, reminding them their actions must reflect the high standards of the profession.

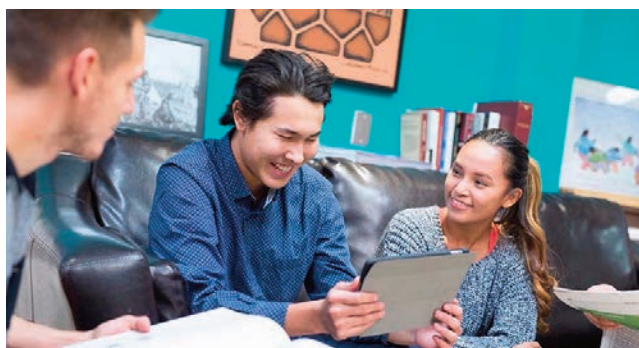
Dean Suzanne Kresta, PhD, P.Eng., F.E.C., shared important advice with these students.

“Keep working hard as you continue your journey. While it is true that no one lies on their death bed wishing they had spent more time at work, it is also true that the times I have felt most alive are the times I have worked in the service of something much larger than myself,” said Kresta.

“Those times spent working hard with close colleagues are also memories that we cherish, and the things we build with high performing teams are some of the enduring joys of our professional lives.”

APEGS was a hard hat sponsor, as were Calian Advanced Technologies, K+S Potash Canada, O’Kane Consultants, Saskatoon Engineering Society and Vendasta.

### Mining training resources developed for Indigenous teachers and learners



**Saskatchewan Polytechnic** — A virtual hub has been created for teachers with a goal of showing Indigenous students the different career options in mining.

The Diggin’ Digital Professional Development Resource Hub has resources, materials and professional development opportunities that incorporate Information, Communication and Technology (ICT) and Science, Technology, Engineering and Math (STEM) in lesson plans in culturally relevant and appropriate ways.

Saskatchewan Polytechnic received funding from the International Minerals Innovation Institute (IMII) Diversity and Inclusion Challenge to create it.

A two-day Diggin’ Digital Bootcamp for grade seven and eight Indigenous youth is also being offered by Sask Polytech. The Indigenous community has participated in the design and development of each bootcamp. In June a pilot done with the Lac La Ronge Indian Band saw 56 students receive training at two different schools over two days.

The resource hub and bootcamp are free for users. Both programs have been designed to inspire and engage Indigenous learners to pursue ICT and STEM subjects and careers.

“Research indicates that interest in STEM begins to wane as early as grade three,” said Dr. Larry Rosia, Sask Polytech president and CEO.

“Early engagement in these subjects is critical. Our team plans to engage with a minimum of 200 teachers through the resource hub and 200 students through the digital bootcamps this academic year.”

Al Shpyth, IMII’s executive director, says the digital collaborations such as Diggin’ Digital will be a “cornerstone of future success” for his industry.

### “Made-in-Saskatchewan” agreement supports companies’ lithium plans

**Think GeoEnergy** — DEEP Earth Energy Production and Prairie Lithium have agreed to exchange subsurface mineral permits and establish an Area of Mutual Interest (AMI) in the Williston Sedimentary Basin in southeast Saskatchewan.

The agreement is for select stratigraphic intervals that are approximately 1,500 meters – 3,500 meters below the surface at various locations across the AMI. The exchange covers approximately 110,227 hectares (272,376 acres) of existing mineral tenure, vastly increasing each company’s resource development capacity.

Prairie Lithium’s focus is in shallower formations. However, DEEP’s deeper geothermal brine also has the potential to contain lithium for commercial extraction. They are working collaboratively to share well data and potential resource testing opportunities and are jointly exploring the lithium potential across the AMI.

Prairie Lithium has developed proprietary lithium-extraction technology which can extract lithium from DEEP’s geothermal resources. Prairie Lithium will access DEEP’s Border-4 wellbore to test the lithium potential in an upper stratigraphic interval, above DEEP’s geothermal reservoir.

DEEP’s CEO Kirsten Marcia, P.Ge., says she sees this is as an example of Saskatchewan companies being able to work together for “multiple economic wins”.

### Cameco signs agreement with nuclear reactor company

**CBC Saskatchewan** — Cameco signed an agreement with a nuclear reactor and fuel design engineering company to explore collaborating in supplying fuel for small modular reactors (SMRs) in Canada and the United States.

Maryland-based X-energy says this partnership with Cameco will further its project of bringing “the world’s first commercial advanced reactor to market in North America.”

“Cameco is a cornerstone of the Canadian nuclear industry and has global reach,” the company said in a news release.

As one of the largest global suppliers of uranium, Cameco’s CEO says the corporation is well-placed to support this new type of reactor.

“We intend to be a fuel supplier of choice for the emerging SMR and advanced reactor market and look forward to working with X-energy to see what opportunities might exist around their innovative reactor technology,” said Cameco president and CEO Tim Gitzel.

### Solar panels part of pilot project for gas bars



Federated Co-op Limited

CKRM — The gas bar at the Co-op cardlock on the outskirts of Regina has solar panels on its canopy as part of a pilot project by Federated Co-op which could help lower energy and power costs at Co-op locations across Western Canada.

Manager of Engineering Technology and Design Chris James, P.Eng., says a lot of design work went into allowing for solar technology.

“There’s a lot of — I would say — solar shading canopies that are implemented in North America maybe that aren’t as worried about snow and rain, so we did some thoughtful design here around how to keep the elements from coming through the canopy.”

The pilot project will last one year. If all goes well, this will be a design option for Co-op locations across the network when building new canopies at their gas bar locations.

“We feel that if we run this through a year pilot, we should have enough information to inform how we roll this out.”

### Minister provides overview of Saskatchewan’s helium industry

*Gasworld* — Saskatchewan is among the top five locations with helium resources with significant underground reserves with attractive geology, according to the Minister of Energy and Resources, Bronwyn Eyre.

Saskatchewan has a goal to surpass 150 wells. Right now, there are ten active wells, 24 in the drilling process and three purification plants established. Work is already underway to meet the ambitious 2030 target with a number of companies already active in the province such as North American Helium, Weil Group, Thor Resources and Royal Helium.

“We know we have economically viable reservoirs and world class concentrations,” said Eyre.

“We’ve done extensive geological surveying over the last few years, so we have confidence in what we put out in terms of estimates can come to fruition.”

The province also holds significant potential in terms of exploration, Eyre said.

“Saskatchewan has undertaken studies of nearly 90,000 oil and gas wells and conducted more than 7,000 gas analyses, with the results showing that Saskatchewan has world class resource potential with deposits of up to two per cent helium concentrations.

“On top of that, reservoir discoveries in the province are continuing as we speak. Exploration, production and processing are all being ramped up and we’re seeing new projects being developed. We are expecting big things from helium in the province, more wells, more jobs, more facilities, more exports – that’s the goal.”

Eyre explained it is her understanding that 0.5 per cent concentration is typically considered a good benchmark, and so Saskatchewan wells should be delivering way over the norm.

### 12-year cathedral restoration project wrapping up



cbc.ca

*The StarPhoenix* – The restoration project that began 12 years ago for St. John’s Anglican Cathedral on Spadina Crescent will be complete this year.

It was expected to be a three-year project when work began in 2009. Since then, the original cost to renovate the building has more than doubled to \$3 million.

Major issues with the building date back to its construction more than 100 years ago, such as a leaky roof due to drainage issues and a lack of insulation.

“We were totally naive in thinking we’d have it all done by 2012,” said Bob Halliday, P.Eng. He was the chair of the property committee for the historic downtown church when the project began and is still involved now.



Halliday said the project has transported him back in time. In some ways, the restoration mirrors the original construction, which began in 1912 and lasted until 1917 because of delays during the First World War.

“Just the whole thing just makes an engineer’s blood race,” Halliday said of the restoration.

“All the interesting things you find out about how people did things 100 years ago. I don’t know how many buildings are being built in Saskatoon today that will last 100 years. So, this building was built to last.”

The project began when the church received a grant from the Frank and Ellen Remai Foundation in 2009, five years after the cathedral’s exterior received municipal heritage designation.

Other funding sources include private donations, the Saskatchewan Heritage Foundation, the Anglican Foundation, the columbarium inside the cathedral and a loan from the Anglican Diocese of Saskatoon.

“We were surprised by how much (money) it took because when we started, every time you open up a roof, you don’t know what kind of rotten wood you’re going to find,” Halliday said.

The chapel roof needed to be rebuilt and the rooftop gutters that drain water into pipes inside the church needed to be refurbished to address the constant leaks.

Perhaps the most visible aspect of the restoration will be the new shingles on the roof, which feature a brick-coloured diamond design set against grey. The diamond pattern mimics the original roof on the neo-Gothic building.

“If you try to raise money for gutter restoration, it’s not a big seller, but putting shingles on the roof, that’s easy for most people to grasp,” Halliday observed. The church boasts about 230 members, which is healthy for a downtown church, but not a huge number from which to collect donations.

For those who attend church, the work is already reaping rewards, such as lower temperatures during the hot summer thanks to the new insulation. In the winter, it’s expected to save money on heating and keep the interior warmer. The end of leaks will provide a more comfortable environment for those who attend services, as well as the musicians who play there because of the cathedral’s great acoustics.

But the restoration is not just about those who use the church, according to Halliday. He called the structure with its distinctive spire a “landmark building.”

“We’re doing this for ourselves,” Halliday said, “but we’re also doing it for the city.”

## Water treatment plant renewal includes progressive design-build format



Journal of Commerce

*Journal of Commerce* – For the first time in Canada, a progressive design-build format will be used in the construction of a water treatment plant.

The format is planned for a major upgrade of the Buffalo Pound Water treatment plant. All three levels of government will jointly fund the \$222-million renewal project.

“This format is more commonly used in the United States,” Buffalo Pound president and CEO Ryan Johnson, P.Eng., points out.

“Design-build presents inherent risks in terms of cost. Progressive design-build gives us more control over the outcome.”

Johnson explains that in a progressive design-build, there is more of an integrative process. Management meets with the engineer and contractor to plan the project.

This allows for the engineer or contractor to learn about aspects only the manager might know. Sharing this knowledge can better guarantee a fixed price.

The Buffalo Pound Water Treatment Plant was built in 1955 and expanded in 1957. The 100,000-square-foot facility serve Regina, Moose Jaw and communities in-between.

“We introduced new processes in 1985 and expanded again in 1989. We introduced a UV system in 2017 and new back-up generators over the last couple of years,” Johnson explains.

“When this project is completed, we shouldn’t have to do any more upgrades for at least 25 years.”

The design contract was awarded in June 2020 to Graham Infrastructure Inc. and Aecon Water Infrastructure Inc. and that the project will use primarily Saskatchewan tradespeople.

The project is primarily renewal with some elements scheduled for demolition and replaced with construction.

The plans call for new offices, a brand new ozonation process, new low lift pumps, a repurposing of the regeneration facility to a new chemical storage facility, clarifiers converted to dissolved air flotation, conversion of the granular activated carbon conduction to a biological

process and some new processed waste lagoons with rehabilitation of existing lagoons.

Johnson notes the overall size of the plant will remain about the same once it is done.

Work is expected to begin early in 2022. The project is expected to be completed in 2025.

### **BHP executive visits Humboldt**



*Humboldt Journal* – BHP’s president of Minerals America visited Humboldt in September as part of the company’s effort to collaborate with local people.

“Our commitment here is to be here for the next 50 to 100 years,” said Rag Udd.

“If we’re going to be here for the long haul, we want to make sure we’re partnering with the communities.”

Udd met with the mayor, councillors, as well as people around the community to see how they feel about the Jansen expansion and to learn about the community. The company announced in August it will invest \$7.5 billion into the mine. It has already spent more than \$4 billion on capital for the mine.

“We had heard a lot of excitement, and that’s reciprocated on both sides,” said Udd.

He said the company is exploring how ideas around jobs and a balanced workforce that they’ve picked up from other parts of the world could be applied. They are looking at the community’s education facilities and other community infrastructure in relation to the workforce it will need.

During construction, as many as 3500 jobs will be available. Once construction is complete and operations are running, there will be 600 jobs available with BHP preferring to recruit people locally. This strategy is to build a workforce that stays with their jobs and live in the area long-term, Udd said.

Although the mine isn’t expected to begin operating until five years from now, BHP wants to look at skill sets and training now. They intend to connect with local high schools and encourage a gender-balanced workforce with at least 20 per cent Indigenous people.

### **Modern technology to help decarbonize BHP’s Jansen mine**

*CTV Saskatoon* – A BHP executive says the Jansen mine is an opportunity to help the company’s decarbonization efforts.

The company announced earlier this year it will spend \$7.5 billion to build the mine, which is BHP’s first foray into the potash industry.

Giles Hellyer, vice president of potash operations for BHP, said Jansen is one of the most significant and largest conventional underground mines that has been built in 50 years, which is an opportunity to use modern technology to decarbonize the mine.

For example, most underground equipment will be electrified from day one and BHP plans to get there completely by the early 2030s. In addition, modern processing technology requires less energy, he said.

The company is contemplating the possibilities of capturing energy to reduce the energy consumption required and carbon capture and storage.

“There’s just so many amazing things going on. I mean we’ve got a really talented workforce here in Saskatchewan, that have been helping us to design Jansen in a way that’s really tremendously exciting.”

BHP aims to reduce operational greenhouse gas emissions by 30 per cent from 2020 levels by 2030 and achieve net-zero emissions by 2050.

“It’s a challenge, but it’s one we’re up for. But you don’t get that chance every day that there’s something like this with Jansen from day one and that’s why we’re just so excited,” said Hellyer.

The mine is expected to produce 4.35 million tonnes of potash per year with ore extraction starting in 2027 with a two-year ramp-up period.

### **FCL looks to sell oil-producing business, keep refinery**

*Reuters/CTV* – Federated Co-operatives Limited (FCL) is selling its crude oil assets, but plans to keep its Regina refinery.

FCL hired the Bank of Montreal to dispose of 550,000 hectares of land that produce 3,000 barrels of oil per day, located in Saskatchewan, Alberta and British Columbia. The assets may be worth \$80 million to \$100 million, an industry source said.

FCL spokesperson Cam Zimmer did not comment on the reason for selling the production business but said the co-op is committed to owning its refinery long-term.

FCL made C\$7.9 billion in sales in 2020 from energy, crop supplies and food. More than half of FCL’s revenue came from energy last year, according to its annual report.

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# Calendar of Events

## **LEED Green Associate (GA) Training – Webinar**

Dec. 18, 2021

Jan. 15, 2022

<https://leadinggreen.com/online-leed-green-associate/>

## **PSMJ Virtual Project Management Bootcamp – ACEC-SK**

Jan. 17, 2022

[https://www.acec-sk.ca/events/psmj\\_virtual\\_project\\_management\\_bootcamp\\_january\\_1719\\_2022.html](https://www.acec-sk.ca/events/psmj_virtual_project_management_bootcamp_january_1719_2022.html)

## **ACEC-SK Young Professional Virtual Leadership Series**

March 2022

[https://www.acec-sk.ca/events/acec-sk\\_young\\_professional\\_virtual\\_leadership\\_series\\_.html](https://www.acec-sk.ca/events/acec-sk_young_professional_virtual_leadership_series_.html)

## **University of Regina’s 13th Annual Inspiring Leadership Forum**

Regina, SK

March 2, 2022

<https://events.eply.com/ILF2022>

## **PDAC: The World’s Premier Mineral Exploration & Mining Convention**

Toronto, ON

March 7-10, 2022

<https://www.pdac.ca/convention/attendee-info>

## **Registration Deadline – APEGS Spring 2022 Law & Ethics Seminar and Professional Practice Exam**

March 11, 2022

<https://events.apegs.ca/events/105567>

## **SUMA Convention and Tradeshow**

Regina, SK

April 3-6, 2022

<https://suma.org/events/conventions-and-tradeshows>

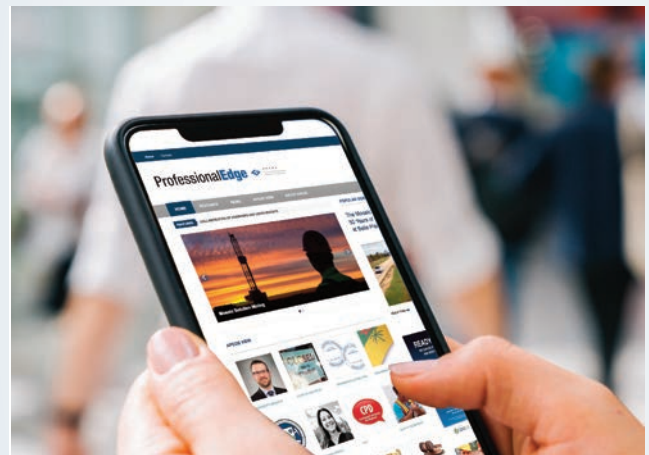
## **APEGS 92nd Annual Meeting and Professional Development Conference**

Saskatoon, SK

May 5-7, 2022

<https://events.apegs.ca/events/97783>

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