



A P E G S

*Association of Professional Engineers
& Geoscientists of Saskatchewan*

THE PROFESSIONAL

EDGE

ISSUE 180 • MAY/JUNE 2019



89th Annual Meeting



Just the *facts*

about Engineers Canada-sponsored
Disability Income Replacement Insurance

There's no denying it: to even think about yourself or a close family member becoming disabled – even temporarily – is incredibly unpleasant. But the facts will tell you that it's something to which you should at least give some thought – **so you're prepared, just in case.**



1 Canada Life and Health Insurance Association, "A guide to disability insurance," January 2016.
2 Parachute, "The Cost of Injury in Canada," 2015.
3 www.disabled-world.com, "Disability Insurance: Benefits, News and Claims," 2017.
4 Based on a percentage of your monthly earnings, while you are disabled and unable to perform your occupation.

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The odds of suffering from a disability before age 65 are **1 in 3**¹

It's unfortunate, but true: **disabilities are disturbingly common.** Every day in Canada, 165 Canadians are involved in an accident that leaves them partially or totally disabled.²



Disability has a **high financial cost**

While disability certainly takes immense physical, emotional and psychological tolls, people who suffer from disability also take a tough financial hit. After all, **nearly 50% of mortgage foreclosures are due to disability.**³

To give you an idea, have a look at the total annual cost to Canadians who suffer disabilities caused by different injuries, when you factor in health care costs plus the costs of reduced productivity and other issues:²

| Description | Total cost (\$ Million) |
|------------------------------------|-------------------------|
| Transport incidents | 4,289 |
| Falls | 8,680 |
| Fire/burns | 366 |
| Unintentional poisoning | 1,264 |
| Struck by/against sports equipment | 187 |
| Other unintentional injuries | 7,127 |
| Violence | 1,142 |
| Undetermined intent/other | 598 |



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Disability Income Replacement
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Front Cover: 2019 APEGS award winners.

Front row L to R: Ken Linnen, P.Eng., FEC; Deborah Rolfes; Nathalie baudais, P.Eng.; Lanre Akindipe, P.Eng.; Jay Magus, P.Eng.

Back row L to R: Nicholas Kaminski, P.Eng.; Nathan Bruce, P.Eng., APEGS President Terry Fonstad, P.Eng., FEC; Kevin Hudson, P.Eng.; Esam Hussein, P.Eng.

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President's Message



Terry Fonstad, Ph.D., P.Eng., P.Ag., FEC

“Working together, Engaging Community”: That was the theme of this year’s APEGS 89th Annual Meeting and Professional Development Conference held in Regina, May 2-4, 2019. For me the “working together” resonated with two sections in our Code of Ethics. 20(2)(e) calls upon each of us to conduct ourselves with fairness, courtesy, and good faith toward each other and others and give credit where it is due. Additionally, 20(2)(d) calls for us to 1) keep ourselves informed in order to maintain our competence, 2) strive to advance the body of knowledge within which we practice and 3) provide opportunities for professional development of our subordinates (anyone over which we have been given authority). This year’s Annual Meeting and track sessions reflected these qualities of good character, mentorship and continual self-improvement.

“E ngaging Community” was reflected in many of the “communities” we are part of or impact. This year’s Annual Meeting was a great way to connect with our engineering and geoscience community with track sessions on leadership as we contribute to our work and home communities. A track session and keynote speaker raised our understanding about engaging with Indigenous communities. This year’s Annual Meeting and Professional Development Conference truly left every attendee richer for participating. Thank you to all organizers, volunteers and presenters for your time and efforts.

As I begin my year as president, I reflect on the many mentors who have influenced my career and life. Many who have served as APEGS presidents before me. Engineering and geoscience are truly mentored professions and each of us must continue to pay forward the opportunities and guidance our mentors have given us.

We must also never take for granted the privilege we have been given to self-regulate the professions of engineering and geoscience on behalf of the people of Saskatchewan to safeguard the public and the environment. *The Engineering and Geoscience Professions Act* lays out four objects that we are charged with:

- Ensure the proficiency and competency of our members in order to safeguard the public;
- Regulate the practice by our members in accordance with the Act and Bylaws;
- Promote and improve the proficiency and competency of our members;
- Foster the practice of the professions by our members in a manner that is in the public interest.

With more than 13,000 members, one might wonder how APEGS delivers on these requirements with only 20 staff members. The answer is that over 225 volunteers tirelessly complete academic and experience reviews, administer the professional practice exam,

provide leadership on investigations and discipline, engage and support our future engineers and geoscientists and foster the practice of the professions by our members by developing the many opportunities for each of us to improve our proficiency and competence along with numerous other activities. Without this army of volunteers and the excellent support the APEGS staff provides, we would never be able to meet our obligations to the people of Saskatchewan.

I want to take this opportunity to thank each and every volunteer and staff member for all your hard work and time over the past year and encourage anyone that might

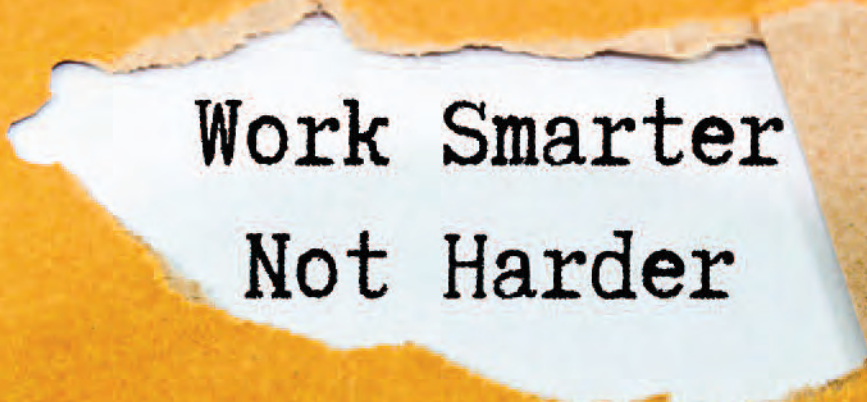
be interested in volunteering to contact the association. I guarantee you will gain as much or more from the experience than you put in.

I look forward to engaging our members in the coming year as we conduct a review of our governance structure and support continuing professional development toward our mandate of safeguarding the public and the environment. Thank you for the opportunity to serve.

Terry Fonstad, Ph.D., P.Eng., P.Ag., FEC
APEGS President

Save the Date:

Fall Professional Development Days



Work Smarter
Not Harder

DATE: November 14 and 15, 2019

LOCATION: Saskatoon, SK

Registration opens September 1, 2019.

CTEL Platinum level courses to be offered in addition to other great professional development offerings.

Inclusion in the Professions

BY MARTIN CHARLTON COMMUNICATIONS



Deanna Burgart, P.Eng.

Engineering has an image problem. It is a profession viewed as the preserve of white males. In Saskatchewan as elsewhere, both visible majorities (i.e. women) and visible minorities seem reluctant to enter the profession.

What can APEGS and its members do to foster a

greater atmosphere of inclusion? That was the theme of the 2019 Plenary Session of the APEGS Annual Meeting, which welcomed keynote speaker Deanna Burgart, P.Eng.

Burgart ticks many boxes – a female Indigenous engineer with a physical disability – which has led her to become an advocate for inclusion in the workplace.

As Burgart described, a culture of inclusion is one where every individual feels empowered to be authentic, be heard, to contribute and feel valued regardless of the differences they bring to the discussion.

“Cultivating this requires acknowledgement of our own lenses, unconscious biases and the willingness to see things from other perspectives,” Burgart said.

The process of cultivating inclusion is a more daunting one than it may seem, Burgart noted, since diversity is like an iceberg. At the tip are the easily identifiable differences like skin colour, gender, visible disability, language, age and body type. But beyond that lie many more subtle differences such as behavioural type, culture, economic background, gender identity and cognitive abilities, to name a few.

While all of these factors deserve attention, Burgart’s focus is on the concept she calls “Indigneering”, which she defines as “combining Western scientific principles with Indigenous perspectives of interconnectedness and respect for Mother Earth.”

Defining “Indigenous”

The beginning of the journey towards Indigenous inclusion starts with an understanding of the distinct groups

covered by the umbrella term Indigenous, which includes First Nations, Métis and Inuit.

The first and last are relatively easy to define. First Nations describes full members of one of the various nations of North America’s original pre-contact inhabitants. Inuit describes the same concept for the peoples of the far north.

Métis has a more subtle and still contentious definition. The original French term merely meant “mixed race” but over time the various sorts of mixed-race communities developed unique cultures. Canadian courts have recognized that members of these cultures are entitled to many of the same rights as First Nations. The key, though, is cultural attachment, not genetic. Simply coming from mixed-race parentage or having some First Nations heritage does not make a person Métis under Canadian law. To secure traditional Métis rights, the person must establish a connection to a long-standing cultural community and be recognized by that community.

Guidelines for Indigenous Relations

It is vital for engineers and the companies they work for to understand that each of these Indigenous groups is distinct and, further, that within each group there are many nations or sub-groups. There is no one-size-fits-all approach to Indigenous relations.

There are some guidelines, however. First, there is the Supreme Court of Canada ruling that governments and companies have a duty to consult Indigenous groups on matters that affect their lands or their rights.

Second, there is the United Nations Declaration of the Rights of Indigenous Peoples, to which Canada is a signatory, which asserts amongst other things that Indigenous people have the right to their culture, language and traditional territory and have the right to self-determination and autonomy in matters related to their internal affairs.

But the most significant guidelines in Canada are the articles of the Truth and Reconciliation Commission. Section 92 of that report deals specifically with the role of business in approaching reconciliation and bears study by Canadian engineering firms, Burgart said. In summary, this section’s calls-to-action:



The sacred Bentwood Box that travelled with the national Truth and Reconciliation Commission to collect items (personal objects, artworks, photos, papers and fabrics among others) from survivors and other participants.

- Engaging in meaningful consultation in advance of economic development projects.
- Providing Indigenous communities with equitable access to jobs, training and long-term community benefits from economic development projects.
- Educating the company’s management and staff about the history of Indigenous peoples as well as providing skills-based training in intercultural competency, conflict resolution, human rights and anti-racism.

Benefits of Indigneering

By including Indigenous people in decision-making, businesses gain a better understanding of what Burgart called the “quadruple bottom line” of sustainability. Instead of focusing solely on profits, businesses should focus on benefits to people, the planet and prosperity under an overarching respect for culture.

To this end, Burgart noted the many ways in which Indigenous communities fail to participate in the prosperity delivered by economic development projects. In northern communities where many resource projects are located, grocery prices are astronomically high. Over half of the Canadian communities not on the electrical grid are Indigenous. Dozens of First Nations lack clean drinking water.

Indigenous communities also suffer from poorly funded, lower quality education systems, seasonal or otherwise

undependable transportation access and systemic racism as reflected in examples such as the missing and murdered Indigenous women crisis. Burgart called on businesses to show leadership in helping Indigenous people overcome these systemic disadvantages.

The benefits of building these relationships would flow in both directions as businesses would benefit from Indigenous world perspectives. The principles of this perspective include:

- Interconnectedness;
- Stewardship of the land;
- Time is circular and relationships are long term;
- Humans are not at the centre;
- Reciprocity and offering;
- Shared wealth and gift-giving.

These perspectives will lead businesses to new positive approaches. Instead of operating in silos, companies can learn to operate through interconnectedness. Instead of being focused on quarterly profits, businesses can benefit from the extreme long-term “seven generations into the future” approach. They can learn to appreciate cumulative effects on land and water and approach business with a spirit of reciprocity rather than an attitude of exploitation.

Through goodwill and concerted effort at reconciliation, everyone will benefit, Burgart asserted.

Why Price Carbon?

BY MARTIN CHARLTON COMMUNICATIONS



Your challenge, engineers and geoscientists, should you choose to accept it, is to bring forth fresh ideology and innovation in infrastructure and technology that would curb greenhouse gas emissions (GHG).

For now, Canada’s solution to reducing GHG emissions is a tax.

Brett Dolter, an assistant professor in the department of economics at the University of Regina, presented a solid argument on taxing CO₂ at the recent APEGS annual meeting and professional development conference.

“We’ve had this pretty clear trend of increasing CO₂ over the past century,” he said.

“Re-radiated heat is the problem we face now – that heat is trapped by the greenhouse gases and it results in a higher temperature on our planet.”

Effects of Climate Change

Dolter cited numerous examples of how atmospheric pollutants may have contributed to climate change - extreme in some cases.

The top five recorded temperatures on this planet have been recorded over the past five years.

More heat in the atmosphere means there’s more energy in the atmosphere. Increased energy triggers more intense storms and a higher potential for damage to infrastructure.

We’ve seen powerful hurricanes and subsequent flooding in the southern U.S. Widespread wildfires torched much of California last summer.

Closer to home, it is possible climate change could result in Saskatchewan experiencing hotter summers, with the potential becoming greater for decades-long droughts. Wildfires in the north could become more intense and more frequent.

“All of this carries real economic costs,” Dolter explained. “Climate change is creating costs and destroying capital. It impacts our well-being. It leads to lower productivity and lower output. We have to account for that and hopefully find ways to keep it in check.”

Saskatchewan a Major Culprit

In Canada, the federal government implemented a nationwide carbon price, beginning at \$10 per tonne of carbon dioxide equivalent emissions in 2018 and rising to \$50 per tonne. In April, a carbon tax was introduced in Saskatchewan.

Since 2013, Saskatchewan and Alberta are among the planet’s largest emitters of GHG gases per capita – because of our heavy reliance on our industrial economy. Other than New Brunswick, we are more than six times any other province and several European countries.

To get from where we are now to the target goal, we have a 200-million tonne emissions gap. That is the equivalent to 20 Boundary Dam coal power plants going offline or shutting down 100 Co-Op refineries – our two biggest emitters.

“This is a big task to meet that reduction,” Dolter said. “That’s asking a lot to shut down that equivalent. We need to find ways to reduce our emissions without shutting down industry.”

Price Signals

Dolter reflected on Paul Romer’s argument for carbon pricing, citing, “carbon pricing can drive innovation,” said the Nobel Prize-winning economist from New York University’s Stern School of Business. “It sends a signal to

entrepreneurs to the market that we're increasing this price over time and there are opportunities for you to develop and sell products that help people reduce their pollution."

"The problem is not knowing what to do. The problem is getting a consensus to act."

Romer continued: "If we start encouraging people to find ways to produce lower carbon energy, everybody's going to be surprised at the progress we'll make as we go down that path."

"All we need to do is create some incentives that get people going in that direction, and that we don't know exactly what solution will come out of it — but we'll make big progress."

Far to Go

But the world as a whole has not made progress.

In a united front, Canada and hundreds of countries have attempted to tackle the rising concerns with climate change through a reduction in GHG emissions – the Kyoto Protocol in 1992; the Copenhagen Accord in 2009 and the Paris Agreement in 2015. Each year, the goalposts were moved on the intended target number.

In Paris, the agreed upon goal was to keep the increase in global average temperature to well below 2 Celsius above pre-industrial levels and to limit the increase to 1.5 °C. To reach this targeted goal, there needs to be an 80 per cent reduction in GHG emissions by 2050, and net negative GHG emissions in the latter half of the century.

China is by far the global leader in GHG emissions, with the U.S. a distant second. Canada doesn't register in the top five, yet it will require collective action by all countries to solve the problem.

"The policy is very simple," Romer said. "If you just commit to a tax on the usage of fuels that directly or indirectly release greenhouse gases, and then you make that tax increase steadily in the future, people will see that there's a big profit to be made from figuring out ways to supply energy where they can do it without incurring the tax."

Problems with Carbon Pricing – And Solutions

There are three main critiques of carbon pricing and the choice of how to spend carbon pricing revenues can help address them:

- Carbon leakage: Companies may leave for jurisdictions that do not impose a carbon tax. This would result in lost economic activity and no real reduction in GHG emissions. This threat can be alleviated by rebating carbon pricing revenues back to vulnerable, trade-exposed firms.



- Regressive distributional impact: Energy expenses are a higher proportion of earnings for low-income households. Carbon pricing expenses will be a higher proportion of earnings for low-income households. This issue can be addressed by sending carbon pricing revenues back to households in the form of rebate checks.
- Slower economic growth: Rebates might slow the economy. Without carbon pricing, the Canadian economy will grow at 2.03 per cent. With carbon pricing at \$30/tonne and with rebate cheques, the economy will grow at 1.91 per cent per year. Growth only slows to 2.01 per cent if carbon pricing revenues are used to cut corporate incomes taxes. This means there are trade-offs to consider when deciding how to spend carbon pricing revenues.

On the flipside, B.C. has had a carbon tax since 2008 and it has reduced its emissions anywhere from five to 15 per cent, with no negligible impact or production performance.

In closing, Dolter likened society's culture shift in climate change to turning around the Titanic.

"You can't turn it on a dime because the ship would turn over. But you can turn it slowly over time. Carbon pricing puts a hand on the rudder and begins steering us in the right direction."

The Rumours of Coal’s Demise have been Greatly Exaggerated

BY MARTIN CHARLTON COMMUNICATIONS



Corwyn Bruce, P.Eng.

In 2002, on the TV drama *The West Wing*, fictional Democratic President Jeb Bartlet dismissed clean coal as just “... a term pollsters came up with because it polls higher than regular coal.” A decade later, real Democratic President Barack Obama declared that carbon capture and sequestration (CCS) was an important part of America’s energy future.

Part of what changed the popular and political attitudes towards clean coal was SaskPower’s world-leading success in building a CCS facility on the coal power plant at Boundary Dam unit 3 (BD3).

Corwyn Bruce, P.Eng. was a SaskPower engineer involved in the development of the CCS facility and is currently on secondment to the International CCS Knowledge Centre. The centre was established with the support of a \$20 million grant from BHP Billiton to share the knowledge gained from the BD3 Project throughout the world to accelerate the deployment of CCS as a means to significantly reduce carbon dioxide (CO₂) emissions.

World Leader

Bruce recalled how SaskPower beat other CCS contenders to commercial operation with the world’s first fully integrated carbon capture plant on a coal fired power plant. He noted that BD3 was nearing the end of its service life but still had much valuable existing infrastructure. In the face of tightening federal regulations on coal, SaskPower was motivated to find a way to preserve those assets. As well, there appeared to be a ready market for CO₂ to be used as part of enhanced oil recovery and volatile natural gas prices, at the time, made that power option less attractive.

But a significant incentive, Bruce said, was a \$240 million federal grant for the development of clean technology that helped kickstart the initiative.

“The grant was in place in advance of the formal decision-making playing out which allowed SaskPower to make a host of preparations. Saskpower was able, on a preliminary basis, to source suppliers, materials, sub-contractors and the like. So, when the formal decision was made to proceed, the project team was able to start real progress almost immediately. This ‘shovel ready’ status, and the many spin-off benefits associated with the project, led to the project approval.”

Dramatic Benefits

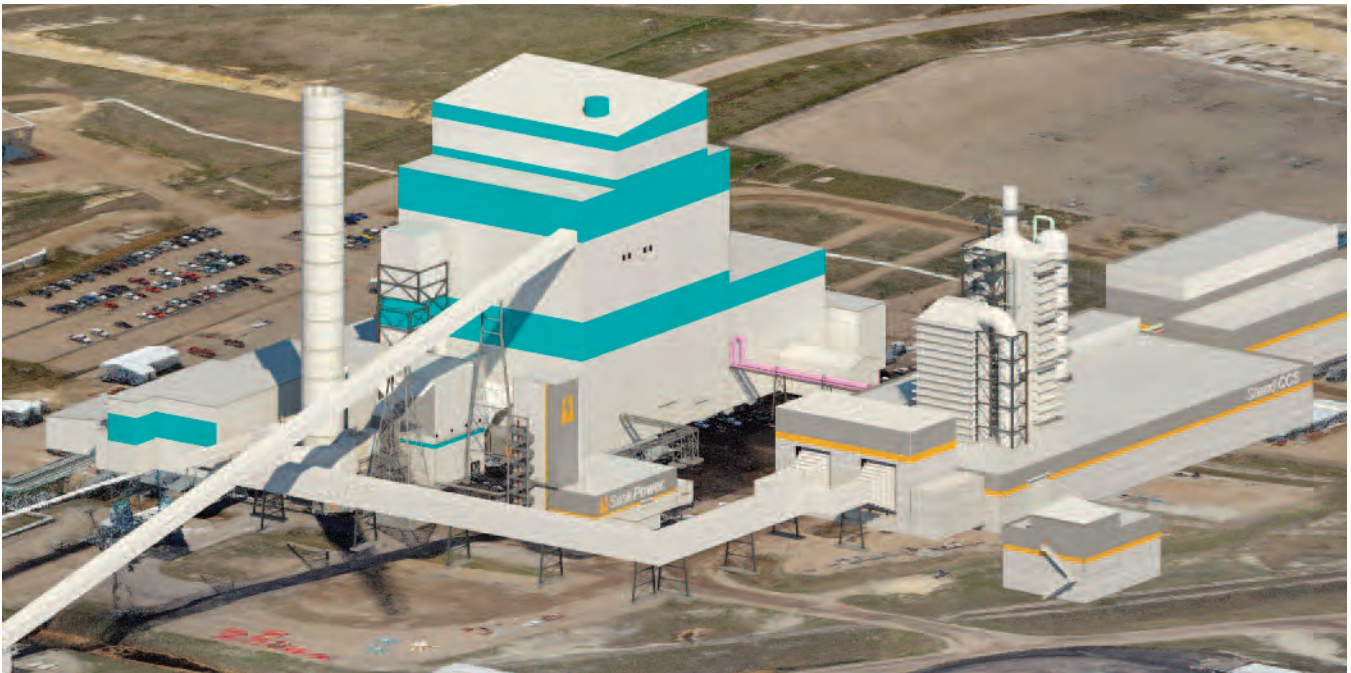
The benefits have been dramatic and have continually improved. The upgrades have expanded the life of the 45 year old power plant by about 30 years. Since it went online in 2014, the BD3 CCS plant has captured 2,600,000 tonnes of CO₂ emissions – the equivalent of taking 650,000 cars off the road. Where conventional lignite coal plants put out roughly 1,100 tonnes of emissions per gigawatt hour, BD3 can now put out as little as 140 tonnes. The plant also keeps many other pollutants out of the atmosphere, including blocking 100 per cent of the plant’s sulphur dioxide emissions.

As with all first of a kind projects, many lessons were learned, and a number of these learnings were incorporated into the feasibility study for a potential second generation CCS facility at the Shand Power Station.

“In the event that SaskPower makes a decision to proceed with CCS on Shand, there will be many new advantages. We would be able to assess all the lessons learned from Boundary Dam. We have been able to try out new technology and different suppliers. Shand is a newer power plant so there would be less retrofitting required. The physical layout of the site would require less infrastructure. Altogether, the capital cost per tonne of CO₂ at Shand is expected to be 67 per cent less than it was at Boundary Dam,” Bruce said.

Spreading the Good Word

All of this expertise had made the staff and the team that led BD3 highly sought-after as consultants for CCS projects



Shand Power Station

elsewhere, hence the creation of the International CCS Knowledge Centre as a vehicle for SaskPower to share its knowledge.

This includes not only other power plants, such as a facility in Australia that Bruce is helping but also other high-emitting industries such as cement and steel plants. The Knowledge Centre is actively supporting CCS development in Asia, Europe and in other regions of Canada, too.

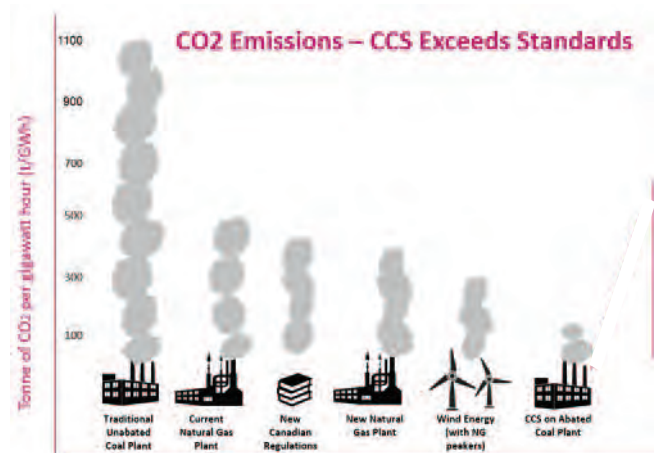
“I have a really great job. I get to travel all over the world and help people with cool projects,” Bruce said.

Clean Coal is a Reality

According to the International Energy Agency’s coal analysis and forecasts, much of the world still relies on coal, such as China, India and Poland. Like all nations, these countries are looking to find a balance of energy security and meet their commitments to global climate goals. The best part of the job, Bruce says, is the ongoing contributions the Knowledge Centre is making to the future of the planet and sustainable energy production.

With the added efficiencies of second generation, emissions are expected to be cut even further, to less than 140 tonnes per gigawatt hour. Bruce expects this number to go even lower with future improvements, and with the environmental benefits of low emission byproducts.

*“Zero emissions coal is possible,”
Bruce declared.*



With CCS to abate coal, CO2 emissions drop to 1/4 of the new Canadian regulations, surpassing new natural gas and wind energy (with natural gas peakers).

CCS prevents pollution by capturing:

Numbers from SaskPower Boundary Dam

- 100% SO₂
- 70% PM_{2.5}
- 92% PM₁₀
- 50% NO_x
- 90% CO₂

Personal Leadership

BY MARTIN CHARLTON COMMUNICATIONS



Kellie Garrett

Can one person make a difference to a team's performance?

Well, that's up to you. Your attitude and actions as an employee can impact a workplace culture positively or negatively, according to Kellie Garrett.

Kellie's presentation 'Personal Leadership and You' at the APEGS annual meeting tackled a range of topics, including interpersonal dynamics in the workplace and four personal leadership skills that contribute to healthy work environments and to improving relationships with coworkers.

Kellie is a former senior vice-president at Farm Credit Canada, responsible for business strategy, customer experience and marketing. Today, she is a speaker and executive coach who consults on leadership and internal culture.

Each day at work, we're greeted with this choice: Do I help improve my team or do I stick to my own work and complain about my boss, my coworkers and our workplace culture?

Leadership is a choice, Garrett said.

"We all know people who have a management position who don't act like leaders and others who take it upon themselves to act like a leader without a title."

Dare to Lead

Kellie's presentation revolved around Brené Brown's best-selling book Dare to Lead.

Leadership is not about titles, status and wielding power. According to Brown, "A leader is anyone who takes responsibility for recognizing the potential in people and ideas and has the courage to develop that potential."

In the book, courage results from four skills that can be learned:

- Rumble with vulnerability
- Live with values
- Brave trust
- Learn to rise.

Rumbling with Vulnerability

Rumbling refers to getting comfortable being uncomfortable and staying with it.

It's important to note that vulnerability does not equal weakness. But don't let your ego get in the way. Your ego will do its best to prevent you from being vulnerable because our ego wants to protect us from shame.

Shame is inevitable, Garrett noted. But the antidote to shame is empathy (for ourselves and others).

Live with Values

Our values are a way of being or a belief that we hold most important.

Living those values, putting them into action in the workplace requires a step-by-step approach of self-reflection and discipline. Living with values requires:

- A clear understanding of your core values.
- A strong sense of the behaviours that are in alignment with those values
- Recognizing when your behaviour is out of alignment.
- Correcting course and adjusting behaviours as needed.

Of course, a little integrity is required to live out our values.

Operationalize Values

Brown's book shares the three core values used in her workplace:

- Be brave.
- Serve the work.
- Take good care.

Be Brave

- Give feedback in a respectful way.
- Be aware of the emotions that are most likely to arise from feedback (e.g. will it make the recipient defensive?)
- Understand how your emotions affect your behaviour.
- When there is a setback, failure or disappointment, identify and share learning opportunities.
- Own your mistakes.

Serve the Work

- Take responsibility for our customers' experience.
- Be responsible for your energy in certain situations.
- Take ownership of adapting to a fast-paced environment.

Take Good Care

- Treat your colleagues with respect and compassion by responding in a timely and professional manner.
- Practice gratitude with your team.
- Be mindful of people's time.

The trick, Brown suggests, is understanding how to put these values into action so that behavioural expectations are clear.

Braving Trust

Garrett noted that it takes guts to trust others. It's easier if we trust ourselves.

Trust is built in small gestures over time and it's the glue that holds teams and organizations together. But trust at work is complicated.

Why? There are a variety of factors, including individual performance, office politics and hidden employee networks.

Also, most of us have been burned by someone at some point in our lives, which can lead to issues with trust. That is often a sticking point for many of us - if trust is broken, then it often cannot be repaired.

This is when we engage in trust-destroying behaviours like avoiding, excluding and criticizing.

A vital question to consider in all of this is how would you rate your own trustworthiness? If you want to be trusted, be trustworthy.

Learning to Rise

Garrett explained that what Brown calls the learn-to-rise process is about getting up from our falls, overcoming our mistakes and failures and facing hurt in a way that brings wisdom. Here's How it Works.

The Reckoning: Walking into our story. This is when we recognize emotion and get curious about our feelings and how they connect with the way we think and behave.

The Rumble: Owning our story. Get honest about the stories about our struggle. Then challenge these assumptions to determine what's truth, what's self-protection and what needs to change if we want to be courageous leaders.

The Revolution: Process becomes practice. Write a new ending to our story based on key learnings from our rumble. Use this new story to change how we engage in the world, ultimately transforming the way we live and lead.

"Personal leadership means choosing your attitude and actions no matter what others are doing. You can demonstrate personal leadership whether you're a boss or not. Don't just focus on what work you accomplish, but how you go about your work – specifically your attitude and interactions with others," Garrett said.



Grid Unlocked

BY MARTIN CHARLTON COMMUNICATIONS



We typically think of electricity as a wonder of modern technology. But according to Grant Crawford, P.Eng., Director, Distribution Grid Asset Management & Planning at SaskPower, most electrical networks have until recently been technological antiques.

“If you had a time machine and brought Alexander Graham Bell to modern times, he wouldn’t recognize today’s telecommunications. If you brought Tesla to the present, he’d probably say ‘oh yeah, that’s all the stuff I invented,’” Crawford said.

A good example of this, Crawford noted, is the way power outages are detected. SaskPower depends on customers to report an outage and then it sends field workers to drive around and visually inspect the extent of the outage.

This obvious need for improved efficiency is only one reason why SaskPower is undertaking a wide-ranging grid modernization initiative, Crawford said.

Out with the Old

A major reason for overhauling the electrical grid is that it is past its prime. Crawford noted that Saskatchewan has more power poles than it has people and most of them were built in the 1950s. Many are now coming to the end of their useful lives. As it stands, SaskPower is replacing about 15 poles a year at a cost of about \$300,000 each. The time is ripe for SaskPower to look at new ways to generate and distribute power to help minimize these replacement costs.

Clean and Green

As with every aspect of energy today, SaskPower’s grid will be affected by the carbon tax and moves to cleaner renewable energy. The era of huge coal plants generating power for vast areas of the province is coming to an end.

This will affect SaskPower in a number of ways. First, the utility is facing increasing competition from self-generated power through home solar which is becoming cheaper every



year. SaskPower has had to adapt to these changes from consumers by instituting net metering devices to allow home solar generators to tie their power into the overall grid.

As well, SaskPower is receiving an increasing number of proposals for mid-sized power generation such as flare gas-powered generators, large solar and wind installations and small hydro-electric facilities. All of these demands, Crawford says, have caused SaskPower to radically rethink how it delivers power.

“Even though, to this point, we have been almost a monopoly (except for Saskatoon and Swift Current), we still have to think like a business. And the number one rule in business is ‘what the customer wants, the customer gets,’” Crawford said.

At the same time, carbon pricing will give consumers incentive to consider more electrical options such as electric cars. These devices will require a more heavy-duty electrical system than can be provided through solar. Likewise, industrial users still need a power system that is robust enough to handle sudden large draws of power which can't be handled by renewable sources.

Those Darn Millennials

Demographics also play a part in driving SaskPower's need to change.

To this point, SaskPower has had the benefit of a predominantly Baby Boomer workforce who have become the holders of a great deal of corporate memory and deeply ingrained skills that allow them to operate almost on an intuitive level. These employees are loyal and long-serving. Many have been with the company for over 30 years. One served for 46 years.

The Millennial employees coming up behind them are different in nature. They do not yet have the depth of skills of the Boomers. Nor are they likely to, since Millennials are inclined to change jobs every few years. On the plus side, they are also more in tune with technology than their predecessors. All of this points to the need to develop more technological solutions to help capture the lost skills of the Boomers and to adjust to the higher turnover rate of the Millennials.

As well, Millennials are helping drive the province's power profile, since they are more inclined to adopt clean energy solutions like home solar.

The Fourth Industrial Revolution

Most modern industries went through several stages – steam power (first industrial revolution), electrification (second), IT and automation (third) and cyber-enhanced advanced automation (fourth). As Crawford described it, the electrical grid systems largely sat out the third industrial revolution and are now poised to leapfrog into the fourth.

SaskPower's initiatives for modernization include remote monitoring of all grid assets, doing away with the need to manually inspect power outages. It also involves automated GPS repair vehicle tracking for more efficient dispatch to trouble spots.

The company is also instituting automated customer messages to cellphones to notify customers of planned outages or update them on anticipated repair times for unplanned outages.

Most significantly, it will require the construction of what Crawford calls “a smart grid” to monitor not only conventional assets but the ever-growing number of net meters and independent power sources.

Not for the Weak of Heart

Crawford noted that, to accomplish these tasks, grid modernization has to be a corporation-wide endeavour. It is not a project assigned to just one unit. Every unit of the company, from generation to customer service, is tied into the project.

It requires a complete change of mindset for the company, Crawford said. It must transform itself from a near-monopoly monitoring and distributing power from a handful of generation facilities to a facilitator of power transmission coming from thousands of distributed power generators.

“If you are looking for a challenge, it doesn't get more daunting than that.”

The FYI on CPD

BY MARTIN CHARLTON COMMUNICATIONS



Continuing professional development (CPD) has been a hot topic at APEGS annual meetings for many years and 2019 was no exception. With the new mandatory reporting requirement passed at the 2018 Annual Meeting, APEGS members have more questions than ever on this topic. APEGS staff members Luke Brisebois, P.Eng. and Jolene Arthur were on hand to give some guidance.

Brisebois brought an important perspective to the discussion. In addition to being an engineer, he has recently completed his law degree.

“CPD is part of our obligation as a profession, similar to other professions. It’s a vital part of keeping our skills sharp,” Brisebois said.

Although CPD has been in the APEGS bylaws for a long time, until last year members could track their CPD requirements themselves and any reporting was purely voluntary. The move to mandatory reporting was necessary to keep APEGS in line with its counterparts across the country and other professional associations.

“It helps maintain public confidence for our professions both individually and collectively. It’s in your interests to protect your professional reputation. If something goes wrong on a project, a verifiable CPD record allays concerns that professional competence might have been a cause.”

APEGS has made every effort to make reporting easy, Brisebois said, by allowing members to submit their annual

reports online. There is no need to send in supporting documents, although those documents should be kept for at least three years in case the member is audited.

While reporting at the end of the year is quick and easy, Brisebois emphasized that members should invest thought at the start of the year in creating a CPD plan rather than simply picking up CPD opportunities at random. He encouraged members to ask themselves a series of questions to create this plan:

- Where are my skills at now?
- Where do I want them to be?
- What are the skills and competencies I need to stay on top of trends in my current career?
- What are my future career goals and what skills will I need to achieve them?

Brisebois also stressed that, in the interests of reinforcing professional competency, a CPD plan must focus on a member’s scope of practice.

With this plan in hand, members can head out to find CPD opportunities that fit the minimum requirement of 80 hours covering at least three out of six potential categories. Each category has been assigned maximums for which hours can be counted towards CPD requirements.

Professional Practice (max 50 credits) – this is the good news: just going to work allows you to cover off the lion’s share of your CPD requirements. You just need to keep a record of your employment or contract projects.

Formal Activity (max 30 credits) – a typical example of this is taking a course for which a certificate is issued.

Informal Activity (max 30 credits) – this includes self-directed educational activities such as reading professional books, journals and magazines. Even what you are doing right now – reading *The Professional Edge* – counts for about an hour of CPD time. Just keep a log of what you’ve read and about how much time you spent reading it.

Participation (max 20 credits) – this covers any sort of volunteer activity, either inside or outside of the profession. While volunteering on an APEGS committee is an obvious way to cover this off, even coaching your child’s soccer team counts. “In any public setting, you are acting as an ambassador for the profession which has value both for APEGS and your professional reputation.”

Presentations (max 20 credits) – you can earn points by teaching as well as by learning by giving presentations at conferences or being a guest lecturer at a college.

Contribution to Knowledge (max 30 credits) – ideas also count for CPD, in ways such as making submissions to professional journals or receiving a patent.

“There is obviously a lot to choose from this list so it really should not be difficult at all to accumulate the required hours,” Brisebois said.

In addition to the 80 CPD hours requirements, members must also log an hour per year of verifiable ethics training or refresher courses. However, Brisebois noted that APEGS offers a free online ethics module that counts towards this requirement.

CPD for the past year must be filed by January 31 of the following year at the latest. Members can apply for reductions or exemptions, for example in the case of parental leave.

Once the report is filed for the year, there is nothing more for the member to do except to hold onto the supporting documents. APEGS conducts random audits of supporting documents. As well, members may be required to produce them for any sort of competence or misconduct investigation.

What happens if you don’t submit your report? Brisebois said that APEGS was prepared to be understanding – to a point.

“We will issue a series of warnings to encourage the member to fill the gap of hours voluntarily. We will also work with the member to try to come up with a plan to cover the deficit. Ultimately, though, if a member is not cooperative about his or her CPD obligations, we will look at suspending the member’s license until the requirements are fulfilled.”



The Art of Dialogue

BY MARTIN CHARLTON COMMUNICATIONS



Lisa Moretto

media channels, have made communicating rather simple, if not informal. Accessibility knows few limits.

But the old-fashioned means of networking – a handshake, greeting and brief introduction while looking a person in

Hand-written letters have been nearly extinct for at least a couple of decades. Dialing a friend on the telephone is almost as ancient a communication practice.

Are we losing our grasp of the face-to-face conversation as well?

Advancements in technology, coupled with the introduction of social

the eyes – is part of our everyday business world. Engaging in a productive conversation is imperative, according to Lisa Moretto.

“Like it or not, networking is a part of our North American culture. It’s a part of our professional experience. We have to learn how to do this,” Moretto explained during her presentation at the APEGS annual meeting and professional development conference hosted May 2-4 in Regina.

“It’s an idea of exchanging information, exchanging contact, exchanging ideas and opinions and professional knowledge. Think of how valuable that is to you, as a professional, and to us as individuals.”

Moretto is the president of RGI International. She teaches regularly for APEGS and Engineers and Geoscientists Manitoba. She also is a professor at the Rochester Institute for Technology where she teaches technical writing and business communication courses.



Networking occurs almost everywhere – at the grocery store, the local sports field or arena, at the office or conference room. Moretto says these are opportunities to learn valuable information on a variety of subjects. Also, it's a time to share your knowledge.

As we age, our circle narrows. Networking is a chance to meet people who may share similar interests.

Regardless the topic of conversation, it's more than likely you'll come away having learned something.

“When you are networking, you are practising your networking skills, practising your speaking and listening skills,” she says. “And every time you do this, you are representing yourself and/or your company. This is your opportunity to be confident and proud of what you do, what you know or who you work for.”

But Moretto stressed productive conversations are two-way streets.

What can you give to a conversation? What can you gain in a conversation?

No one gains from a conversation where one person dominates. Listening and not just waiting for your turn to talk is equally as important as sharing in a dialogue. Moretto says we listen with our ears, our eyes, our feet and our heart. We listen so we can comprehend. And part of listening is asking questions.

“When we get nervous, we tend to talk a lot. And we talk about things we know best. What do we know best? Ourselves. Try to not fall into that trap of talking about yourself all the time,” she says.

“And don't go into a networking situation looking to just get something out of it like a job interview. Chances are you're going to fail and you'll never want to go back.”

Consider a three-stage approach to an effective conversation:

Stage 1

Basic chat topics – the weather, sports, where you're from. Find common ground. Build a relationship and get the other person engaged and move beyond the basic chat.

Stage 2

This is where you offer opinions and perspectives on the topics. But take it a little deeper.

Stage 3

A more intimate level of talk. Share personal experiences.

When wrapping up a conversation, Moretto offered one final nugget.

“If you network with someone, thank them for the conversation. This will help you look professional.”

Trump, Trade, the New Green Deal: Three Critical Factors for Canada-US Relations?

BY MARTIN CHARLTON COMMUNICATIONS



Christopher Sands

Paul H. Nitze School of Advanced International Studies (SAIS), a graduate division of Johns Hopkins University in Baltimore. Sands teaches courses on federalism in North America and Europe, middle power diplomacy and an annual policy consulting practicum.

As an American who has spent much of his life studying Canada, Christopher Sands comes off as a kind of hybrid. He initially seems Canadian and it's not until he starts talking politics that you realize he's American.

Sands is a Senior Research Professor and Director of the Center for Canadian Studies at the

Sands's keynote speech focused on political trends in Washington, particularly with regards to foreign and trade policy affecting Canada and other countries.

Get Used to Trump

Sands began by predicting that Donald Trump will be re-elected in 2020.

"I don't say that to scare you. That's just the reality of the political landscape in America. The economy is doing well. That's always the baseline by which voters make their decisions. 'Are you better off now than you were four years ago?'" Sands said.

"It is very unusual for Baby Boomer voters to deny a president a second term and those few occasions typically coincided with a recession or an unpopular war. We're not

in a recession and Trump has actually taken steps to pull America back from unpopular wars.”

Free Trade on the Ropes

Assuming that Trump will be around for a while, Sands said it was important for allies and trading partners like Canada to understand Trump’s vision on trade.

“There is no mystery to this. He has been very blunt about it. He does not like North American Free Trade Agreement (NAFTA). He does not like free trade.”

In this context, Sands emphasized that the new United States-Mexico-Canada Agreement (USMCA) is not a free trade agreement. Canadian politicians have tried to console themselves and the public by spinning the agreement as “NAFTA 2.0” but it is nothing of the sort.

“USMCA claws back a wide range of benefits to the United States. You may well feel that this is selfish and an inappropriate way to treat an ally but that’s the Trump vision on trade.”

USMCA in Quagmire



However, Sands predicts that USMCA will not be passed any time soon, if at all.

“There has long been an atmosphere of distrust and partisanship on trade in Washington. When Obama tried to negotiate the Trans-Pacific Partnership, the Democrats didn’t like free trade, the Republicans didn’t trust Obama, so he was very constrained in his trade mandate. These dynamics now apply to Trump and the USMCA.”

Before USMCA can even be introduced to Congress, it’s proponents have to establish its compliance with a laundry list of legislation such as environmental and labour regulations. After that, there are likely to be procedural delays from the Democrats. All of this, Sands said, makes it very unlikely that USMCA will be passed before the 2020 election.

China Policy

On the subject of Trump’s policies towards China, Sands had mixed reviews.

“There has been an assumption in academic and foreign policy circles that China’s ascendancy is inevitable. By the sheer weight of numbers and social and economic trends, America will decline and China will eventually become the world’s dominant economic power,” Sands said.

“Trump rejects this and he confronts it head-on. Part of this, some have said, is that it seems to be part of the American DNA to always want to have an external enemy. Part of it as well is the brinksmanship that was typical of Trump’s business style.”

Sands thinks Trump may well succeed in turning back the tide of Chinese ascendancy.

“People forget that Japan was once the second largest economy in the world. There were bold predictions back then that Japan would overcome the American economy. Where is Japan today?”

On the other hand, Sands is critical that the Trump administration has not done more to support Canada in the Meng Wanzhou case, where China is severely punishing Canada for holding the Huawei executive for extradition to the United States.

“The United States has an obligation not to leave its allies hanging. Canada is being punished not only for following rule of law but for doing what we asked you to do. The Trump administration has given a bit of lip service to this matter, but it needs to be taking strong action against China about this issue.”

Weakening the Alliance

This sort of behaviour is what Sands sees as the most destructive aspect of the Trump administration.

“The United States has forgotten how to rule as a leader, as a country that has its allies’ backs. This sends signals to China, Russia and others that they can push around America’s allies with impunity. In the long haul, that will only weaken American national security.”

No End in Sight

In his closing comments, Sands offered little hope for a change in the direction of American politics in the near term.

“If you look at the Democrats with their proposal for a ‘Green New Deal’, that movement will only lead to further radicalization in political discourse. People think American politics is too polarized now, but I predict that it will only grow more polarized. While that’s dangerous it also opens an avenue for hope. Perhaps it will just burn itself out. Perhaps the growing polarization will encourage the regular voters to come back towards the centre out of frustration that the politics of polarization isn’t getting anything done.”

Member Profile



This issue, *The Professional Edge* chats with Celene Anger, P.Eng., a mechanical engineer currently on secondment from the City of Saskatoon, serving as interim Chief Operations Officer of Remai Modern.

Tell us about your personal and professional background.

I grew up in Saskatoon and graduated from Aden Bowman. After that, I went to the University of Saskatchewan where I took a year of arts and science before switching to engineering.

Why didn't you go straight into engineering?

No one suggested it. In high school, I was good at science and math, but the guidance counsellors never told me what I could do with those skills. Maybe it didn't occur to them that engineering was a path they could recommend to a young woman. I was going to be an accountant. Finally, a classmate in one of my math classes suggested that I apply to the engineering college.

What was your biggest challenge in university?

I always had a job to pay my way through college, so that was challenging. Being a woman in a male-dominated field was also a bit daunting. Fortunately, there were three other women in my class, so we had a support network. But, as one of the few females, the profs always knew when you skipped class.

Partway through my degree, I took advantage of the university's internship program and went to work for IBM in Toronto for a 16-month term. That opportunity gave me valuable on the job experience, but after a year away from school it meant I had to transition back to university life, which was somewhat of an adjustment.

What was your first job after university?

I worked at Husky Oil as an operations engineer in Lloydminster. For the first six months, I did a lot of hands-on work that I really enjoyed. Then I moved into a position that was more on the office engineering side. It was a slower pace than the high-tech industry so I decided to go back to Toronto to work for IBM and associated companies for several years.

When did you start working at the City of Saskatoon?

I started in 2013 with the Transportation and Utilities Department, now known as the Transportation and Construction Department. I worked as the Director of Construction and Design, overseeing a team of over 100 staff comprised of engineering technologists, engineers and accountants. I helped oversee capital projects involving roadways, water and sewer rehabilitation, and new land development and private development oversight.

So nothing in Saskatoon got built without your oversight?

No, not everything. I had very little to do with the city's two new bridges. The Major Projects and Preservation division took care of those projects.

What led you to work for an art museum?

In Construction and Design, I spent a lot of time implementing a management system which involved developing processes and creating procedures. We improved external communications with residents, engaged staff members in a team mindset and delivered excellent service. The City noticed the transformation my team and I achieved and asked me to bring those skills to Remain Modern's team so they can be sustainable moving forward.

What do you feel was your single greatest accomplishment as an engineer?

When I was working for an offshoot of IBM, I helped with the installation of a manufacturing plant in Brazil. In addition to getting all of the equipment shipped in, I had to overcome language and cultural barriers, as well as differences in the work culture. Overcoming those challenges was definitely a proud moment.

I'm also proud of what I have achieved with the City. When I started, there was a fair amount of attrition within my division and people didn't always feel supported. I helped change the workplace environment so staff and workers had ownership and input in their work. As a result, our services improved. Now, there are fewer residents complaining about construction work. People have even thanked us for the way we carry out those projects.

What are your interests outside of work?

I have three teenagers at home, so I don't have much time for interests outside of their interests. When I do get some free time, I'm an avid reader and I like to go hiking and camping.

What is your favourite vacation spot?

I'm not sure if it's my favourite but the last place my husband and I went was Italy for our niece's wedding. The ceremony was in a villa just outside of Florence. The villa was amazing, as were Florence and Rome. We also visited Pompei, which was on my husband's bucket list.

What do you do for professional development?

I am an advocate for workplace training wherever I work. I've taken courses on leadership. I try to keep up with new technology, especially online tools we can use to be more efficient in the workplace. I attend seminars and conferences. And, of course, working in the field provides valuable professional development.

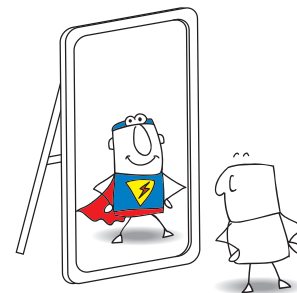
Who has had the greatest influence on your life and career?

In my life, my biggest influence is my dad, although that's a

bit ironic. He was an industrial mechanic and wasn't a big fan of engineers. He probably still isn't, but he's softened a bit since I went into the field. He always encouraged me to listen to the people who are actually doing the job and that good advice has stuck with me.

It's hard to single out one person who influenced my career. During my time with IBM, I worked with a large group of engineers, many of whom had anywhere from 10 to 40 years of experience. It was so valuable to draw on that resource. There were two engineers in particular who taught me how to interact with people and how to approach my career. The most important lesson they taught me is something I've passed on to other young engineers, which is "If you always worry about moving up levels you won't get anywhere. But if you put your head down and concentrate on doing the job well, opportunities will arrive."

Something To Brag About?



The January-February issue of The Professional Edge is all about you!

Our annual Company Profiles issue will profile Saskatchewan-based engineering and geoscience companies and projects.

If you want your company or project profiled or would like to recommend one, let us know.

Please contact:

Professional Edge editor Lyle Hewitt @
lyle@martincharlton.ca

APEGS Governance Review Underway

Earlier this year, APEGS determined that membership growth combined with changes in the regulatory environment make it timely to review the association’s governance structure and activities. The current committee structure is from the late 1980s which is pre-Internet and prior to the addition of geoscientists, engineering licensees and geoscience licensees.

As well, the regulatory toolkit has changed with the removal of the licence for permission to consult and the introduction of required reporting on continuing professional development and online competency-based assessment experience reporting.

The impact of technology on operations and communications has been profound. For example, who in 1990 could have foreseen that APEGS would process online licence renewals from approximately 1,000 geoscientists, 12,500 engineers and 4,900 applications in 2018?

Regina-based T. Bakkeli Consultants Inc. will conduct the review. Stormy Holmes, P.Eng., FEC, FGC (Hon.) Bob McDonald, P.Eng., FEC, FGC (Hon.), Shawna Argue, P.Eng., FEC, FGC (Hon.) and Tina Maki, P.Eng., FEC, FGC (Hon.) are the members of the Steering Committee that will oversee the project. Senior staff and volunteers will be asked to provide information and will have the opportunity to provide input regarding issues and potential improvements. As well, research will be done to obtain information from other professional self-regulated organizations.

“APEGS Council deems it necessary to conduct this review due to substantial changes to technology and growth of

the organization since the last review. We will gain insight into changes that could contribute to regulatory effectiveness and efficiency”, said Stormy Holmes, APEGS Past-President.

“APEGS has been attentive to changing requirements in the past while looking towards the future and this is one more tool to support the organization as we move forward.”

The project will include a review of council, boards, committees and operations, all or some of which may see changes. Recommendations that council will consider are expected to create a modernized structure aligned with regulatory responsibilities, increased role clarity and to enhance APEGS’s ability to plan and prioritize volunteer and staff activities.

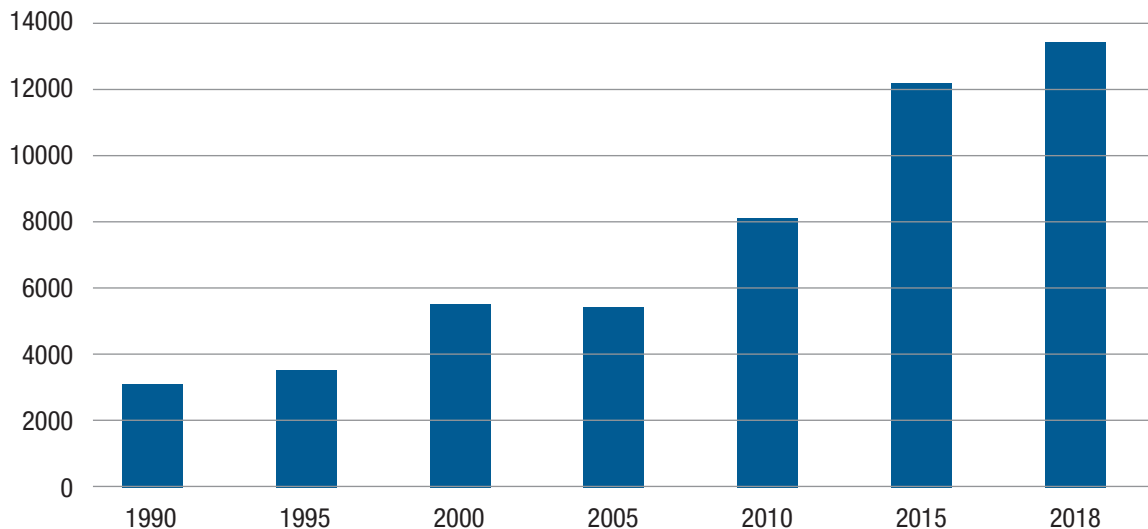
The final report is expected early in 2020 with any changes approved by Council implemented following that.

“I am pleased that APEGS is undertaking this review, which will help APEGS continue to meet its objects of safeguarding the public and the environment and to regulate the professions in the public interest. It is important to ensure that APEGS obligations to the public remain paramount in a contemporary professional regulatory environment,” Bob McDonald, APEGS Executive Director & Registrar said.

If you have questions about the project, please contact the APEGS project manager, Tina Maki, Director of Special Projects.

Please stay tuned for opportunities to provide input.

APEGS - Number of Members and Licensees as of December 31, 2018





News from the Professional Development Committee

- Another sold-out session of Get to the Point! A practical writing course for technical professionals was held on May 1 - 2 in Regina. This course will be offered again in April/May 2020. Stay tuned for more details.
- So far, eight organizations have booked ethics presentations with APEGS this year. Approximately 150 members have now earned their 2019 ethics credit this way.
- The online ethics module was launched April 8, 2019. During the first three weeks of operation, over 90 members enrolled in the course. If you would like to take the free online course, please visit the link found on the APEGS homepage.

2019 APEGS Book Prize Winners



University of Saskatchewan – College of Engineering

Student with the highest Grade 12 marks registered in first year: **Minha Butt**

Most distinguished student at the end of third year:

Chemical..... **Jason Lawrence**
 Civil **Chelsey Yesnik**
 Electrical and Computer **Ethan Paramor**
 Electrical **Le-Ping Mao**
 Engineering Physics **Ashley Stock**
 Environmental **Lyndsey Thorson**
 Geological **Austin Roberts**
 Mechanical **Graham Wilson**

University of Saskatchewan – Geosciences

Most distinguished student at the end of third year:
Lyndsay Hauber

University of Regina – Faculty of Engineering

Student with the highest Grade 12 average registered in first year: **Spencer Reding**

Students with the highest average for semester 6 & 7:

Electronic Systems **Armin Smajevic**
 Environmental Systems..... **Malaya Coppola**
 Industrial Systems **Christopher Chase**
 Petroleum Systems..... **Bradon De Lair**
 Software Systems **Tristan Heisler**

University of Regina – Geosciences

Most distinguished student at the end of third year:
Dylan Matthew Deck

The Association of Professional Engineers would like to congratulate all these winners of a \$300 gift certificate for the book(s) of their choice at their university bookstore.



Notes from APEGS Council

The APEGS Council met April 4 - 5, 2019 in Saskatoon. The meeting was attended by all 19 councillors and the directors to Engineers Canada and Geoscientists Canada. Jolene Arthur, Compliance Coordinator, Luke Brisebois, P.Eng., Compliance Assistant, Mike Griffin, LLB – APEGS External Legal Counsel and Lyle Jones, P.Eng., LLB – Investigation Committee Counsel attended as guests on Friday April 5, 2019. Council will meet next June 12, 2019 in Swift Current.

Council received the following presentations and information items:

- The Director of Special Projects briefed council on the background and the purpose and scope of the Governance Review and the RFP/proposal process.
- Activity updates from the constituent society liaisons, the ACEC-SK liaison, the 30 by 30 Task Group liaison and the Sponsorship Task Group liaison.
- The Executive Director and Registrar provided council with an update on the co-op student that had been hired to help with the member database project ticketing and issue tracking.
- The Director of Registration presented on the Continuing Professional Development project, including background, activities that have been undertaken, lessons learned, current activities and items to complete for the program to be fully implemented. The presentation ended with a viewing of the new APEGS online ethics module.
- The APEGS Directors to Engineers Canada and Geoscientists Canada reported on the activities at the national organizations.
- President Stormy Holmes, P.Eng., FEC acknowledged and thanked outgoing members of Council.

Council passed motions as follows:

- That the Governance Review Project be undertaken and that T. Bakkeli Consultants, Inc. be selected as the consultant with a budget not to exceed \$100,000.

- Requesting that APEGS management propose an implementation plan for the Sponsorship Task Group Report, including policies. A contextual framework will be developed based on the Sponsorship Task Group recommendations which will be shared with Council prior to the policies being developed. Council stood down the Sponsorship Task Group and thanked all the members for their work on this project.
- Appointing Ian Sloman, P.Eng. as the representative for Saskatchewan/Manitoba on the Canadian Engineering Qualifications Board for a second three-year term.
- That the Competency Assessment Guide be changed to require three competencies for the Interim Submission. Furthermore, the guide be amended to allow a maximum of one Interim Submission.
- That in Academic Review cases where engineer-in-training, international grad applicants who have the experience review option to waive confirmatory exams, only the Category 1 competencies need to be passed (Technical Competence) in order to waive confirmatory exams and only two validators are required. Validators do not need to be professional engineers or equivalent.
- That applicants who qualify under a professional level Mutual Recognition Agreement and submit their Canadian or equivalent-to-Canadian work experience in the Competency Based Assessment system shall be required to enter full details in the Employment History Table for their entire experience history. In addition they must complete eight competencies carried out in a Canadian or Equivalent-to-Canadian work environment.
- Amending the Experience Review Committee process for reviewing non Competency Based Assessment reports.
- Amending the Process for the Consensus/Final Decisions section of the Competency Based Assessment – Assessors Guide.
- Approving the 2019 budget for the new Continuing Professional Development Compliance Committee and adding it to the overall 2019 approved budget for APEGS.
- Approving the revised Variation Approval Matrix to be used for Continuing Professional Development variation requests.
- The repeal of policy PD1.0 - Continuing Professional Excellence.

- Approving Life Membership for the following members:

Burch, Elwyn R., P.Eng.
 Carlson, Terry W., P.Eng.
 Daum, S. Gregory, P.Eng.
 Duncan, James W.G., P.Eng.
 Gowrishankar, Shan, P.Eng.
 Hackman, Allan B., P.Eng.
 Hedayat, Adam G., P.Eng.
 Karst, Garry A., P.Eng.
 Klassen, Meryl J., P.Eng.
 Lusby, Clifford G., P.Eng.
 Martin, Bruce T., P.Eng.
 Martin, Lawrence R., P.Eng.
 Martz, Lawrence W., P.Geo.
 McMillan, Allan L., P.Eng.
 Mickelson, Alan O., P.Eng.
 O'Connor, Huntley M.B., P.Eng.
 Safari, Davoud D., P.Eng.
 Setiadi, Francis, P.Eng.
 Wagner, Nelson L., P.Eng.
 Wassermann, James D., P.Eng.
 Wuschke, Steven E., P.Eng.

- Approving the proposed media buys for the 2019 awareness campaign.
- Approving the policy PD2.0 – Professional Development Days Pricing and Cancellation Policy.
- Approving the revised Terms of Reference for the Professional Development Committee.
- Instructing the Student Development Committee to evaluate why the APEGS Gold Medal awards are presented at the University of Saskatchewan and University of Regina and what alternative recognition options there may be.
- Appointing Brad Lulik, Engineer-in-Training as Chair of the Student Development Committee for a two-year term.
- Appointing Justin J. Grill, P.Eng., Carlee Joanna Hansen, P.Geo., Aric Allan Hanson, P.Eng., Ashley Hodgson, P.Eng. and Gregory F. Vogelsang, P.Eng., P.Geo., FEC, FGC to the Investigation Committee for a three-year term.
- Appointing Margaret A. Ball, P.Eng., FEC as Chair of the Investigation Committee for a two-year term.
- That applicants who successfully fulfill all the competencies while participating in the Competency Based Assessment Pilot for Geoscience, will have their experience accepted as meeting the requirement for licensure as a Professional Geoscientist. The results are to be reviewed by the

Experience Review Committee before the competencies are deemed complete.

- Approving policy documents Awards 1.0 and Awards 2.0, which clarify the eligibility of volunteers and staff to be nominated for an APEGS award or receive a member grant.
- Directing the Awards Committee to review the award criteria with respect to the residency requirement for APEGS award recipients.
- Appointing Jody Derkach, P.Geo. Chair of the K-12 Committee until July 31, 2019.
- Appointing Brian AuCoin, P.Eng. Chair of the Discipline Committee for a two year term.
- Approving the revised policy HR5.0 Respectful Workplace Policy.

Council noted and received the following reports:

- Registrar's reports for January 2019 and February 2019.
- The report on compliance activities for January 1 to March 21, 2019.
- The unaudited financial statements for January and February 2019.
- The draft 2018 audited financial statements.
- Executive Committee minutes, Board minutes and the reports from the committees and task groups, Abridged Investigation Committee minutes, Discipline Committee minutes and the Audit Committee minutes.



CPD Tips:

Safety Training
 Earns you Formal Activity CPD Credits

Report on the 89th Annual Meeting of the Association

The 89th Annual Meeting of the Association was called to order in The Canadian Room, Ramada Plaza by Wyndham, 1818 Victoria Ave, Regina, Saskatchewan at 9:00 am Saturday May 4, 2019 with 164 voting members in attendance.

The business of the meeting included:

- Minutes from the 2018 Annual Meeting
- Business arising out of the minutes
- Reports from committees
- Audited financial reports
- New business
- Report of the scrutineers

The Executive Director and Registrar reported on the results of the 2019 council elections. The total number of votes cast was 2,235 (2,189 electronic, 46 mail) being 16.51 per cent of the 13,534 total ballots sent out. There were three spoiled ballots.

The results of the vote were:

Officers of Council — One-year term

- President – Terry Fonstad, P.Eng., FEC
- President-Elect – Andrew Lockwood, P.Eng., FEC
- Vice-President – Kristen Darr, P.Geo.

Councillors — Three-year term

- Group I (Civil) – Nicholas Kaminski, P.Geo.
- Group III (Electrical and Engineering Physics) – Kaylee Puchala, P.Eng.
- Group IV (Geological, Mining, Petroleum, Geophysics and Geoscientists) – Erin Moss-Tressel, P.Eng., P.Geo.
- Group VII (Environmental) – Danae Lemieux, P.Eng.

Returning Members of Council

- Stormy Holmes, P.Eng., FEC – Past President
- Lesley McGilp, P.Eng. – Group II (Mechanical and Industrial)
- Kurtis Doney, P.Eng. – Group V (Agriculture and Forestry)
- Jeanette Gellea, P.Eng. – Group VI (Chemical, Ceramic & Metallurgical)
- Nicole Barber, Engineer-in-Training – Members-in-Training
- John Desjarlais, P.Eng. – North District
- Jessica Theriault, P.Eng. – South East District
- Tami Wall, P.Eng. – South West District
- Cory Belyk, P.Geo. – Geoscience North District
- Gavin Jensen, P.Geo. – Geoscience South District
- Dwaine Entner – Public Appointee
- Wendell Patzer – Public Appointee

Looking for Ethics Training?



Here are two opportunities:

1. APEGS Online Ethics Module

- This module is free for all APEGS members
- Obtain your annual ethics credit today by completing the Ethics Module
- For more information and to access the module please visit www.apegs.ca

2. In-person ethics presentation

- If your organization is interested in hosting an ethics training session for your employees or members, contact the Jolene Arthur at jarthur@apegs.ca to book.

APEGS Member Survey

APEGS secured Insightrix Research Inc. to conduct a member survey between November 15 and December 10, 2018. The purpose of the survey was to gather information on member preferences to guide planning regarding the annual meeting and conference, professional development opportunities, and APEGS' communications channels.

The survey was sent to the 13,000 members, regardless of whether they live or work within or outside of Saskatchewan. The response rate was 14 per cent, with 1,844 members completing the online questionnaire. The findings have been provided to all APEGS committees and staff to aid in planning for 2020 and to adjust any 2019 plans where applicable. The key findings of the survey are:

Annual Meeting and Conference

The professional development sessions and luncheon with keynote speaker are the most valued activities of the three-day proceedings, followed by the annual business meeting.

Networking Opportunities

Members prefer to meet weekdays over a sit-down lunch or at an after-work reception.

Professional Development

The top interest for professional development is business/ project management and leadership.

89 per cent of respondents were in favour of APEGS offering professional development opportunities online.

Volunteering

More respondents were interested in one-time opportunities to volunteer than in serving on a committee or on council.

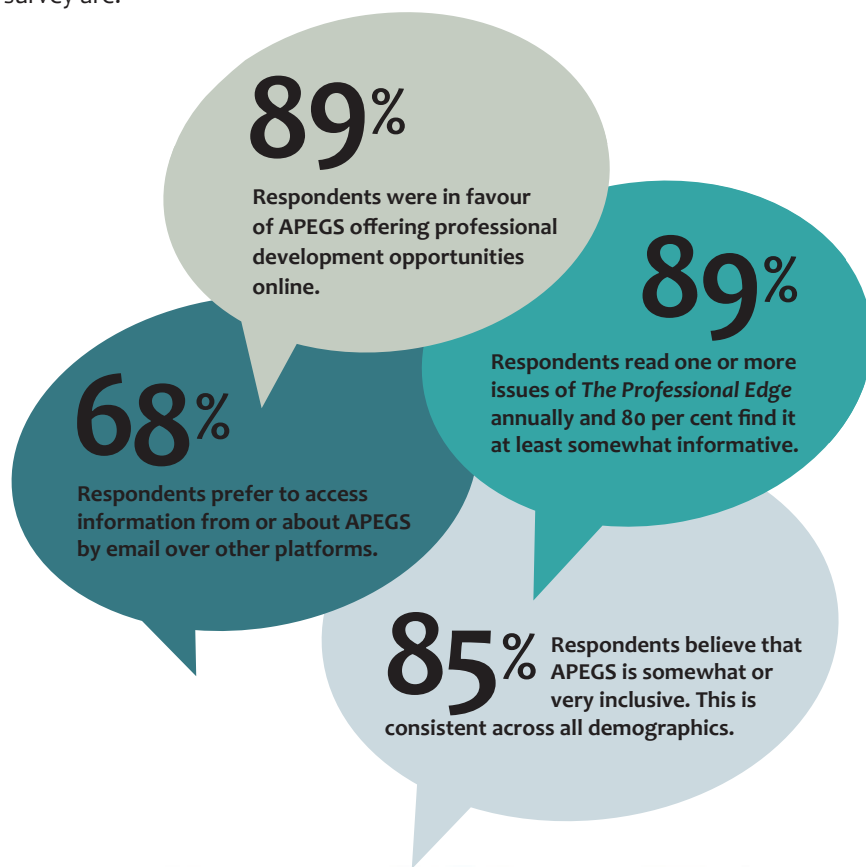
Media Consumption

68 per cent of respondents prefer to access information from or about APEGS by email over other platforms.

89 per cent of respondents read one or more issues of *The Professional Edge* annually and 80 per cent find it at least somewhat informative.

Inclusion

85 per cent of respondents believe that APEGS is somewhat or very inclusive. This is consistent across all demographics.



APEGS Awards

FRIEND OF THE PROFESSIONS AWARD

The Friend of the Professions Award was created in 2013 to recognize exceptional achievements or unique contributions by a non-member in the promotion of the professions in Saskatchewan.



Deborah Rolfes

Debbie Rolfes' natural inclinations and all her education are in the humanities fields; she certainly did not anticipate that so much of her career would involve working with engineers and geoscientists. After obtaining a BA in English at the University of Saskatchewan, Deb moved to Los Angeles and completed a Master's in English at UCLA. This background led to a position as a technical writer and, when she moved back to Saskatoon, as an instructor in professional communication at the University of Saskatchewan, first in the College of Commerce and then in the College of Engineering. During this time, she also completed a Master of Theology in Old Testament Scripture.

In 2006, the same year that she became a faculty member in the Graham Centre in the College of Engineering, Deb was named as a Public Appointee to APEGS Council, a position she held until 2013. On Council, Deb served on the Discipline Committee, where she received extensive training in regulating the professions, knowledge that she now brings to her classroom, helping achieve Ron and Jane Graham's vision of giving future engineers the skills they need to become "engaged citizens." Since leaving Council, Deb has volunteered on the Professional Edge Committee, offered training at track sessions for APEGS annual meeting and professional development days and volunteered on ACEC-SK's Award Committee.

Deb is now serving as the Director of the Ron and Jane Graham School of Professional Development in the College of Engineering at the University of Saskatchewan, where she is leading the evolution of the school as it adds entrepreneurship, business skills and potentially project management skills to the opportunities it offers to engineering and geoscience students and, increasingly, to industry as well.

Debbie and her husband, Matt Sherry, have two children, neither of whom is an engineer or geoscientist. They are, however, engaged citizens in the best tradition of the professions.



APEGS Awards

PROMISING MEMBER AWARD

The Promising Member Award was established in 1995 to recognize exceptional achievements by professional members in the early stages of their careers in Saskatchewan.



*Nicholas Christopher
Kaminski, P.Eng.*

Nicholas is a structural engineer with KGS Group Consulting Engineers based in Saskatoon. Prior to working in the consulting field, he was employed with Ledcor Group in Edmonton, Alberta.

He was interested in engineering from a young age, constructing both Lego and Hot Wheels cities complete with buildings, roads and stoplights. Naturally, he pursued a degree in civil engineering graduating in 2013 and currently, he is an M.Eng. Candidate at the University of Saskatchewan. Nicholas has also obtained his Project Management Professional designation with the Project Management Institute.

He has authored nine published articles for Canadian Civil Engineer and the Association of Polish Engineers in Canada.

For many years, Nicholas has served on various committees with the Canadian Society for Civil Engineering, the Association of Consulting Engineering Companies – Saskatchewan (ACEC-SK) and APEGS. He takes pride in representing a diverse group of technical, business, regulatory and civic organizations. Most notably, he is a member of the Board of Trustees with the Saskatoon Public Library having been appointed by City Council. He is a 20-time donor with Canadian Blood Services and volunteers with Habitat for Humanity.

Nicholas' commitment to volunteerism and governance is exhibited by having obtained his Public Sector Governor designation and a certificate in public governance with the Johnson Shoyama Graduate School of Public Policy through the University of Regina. In addition, he has obtained his certificate in Not-for-Profit Governance with the Institute of Corporate Directors and the Rotman School of Management with the University of Toronto.

Nicholas has been commended for his professional and community achievements having been awarded an SGI Anniversary Scholarship, an APEGS Member Scholarship, the provincial 2018 ACEC-SK Young Professional Award and most recently, an RBC Foundation Scholarship.

In his spare time, he trains for half-marathons and will run in his tenth later this year. He lives in Saskatoon with his spouse Alexia, who is a pharmacist.



APEGS Awards

ENVIRONMENTAL EXCELLENCE AWARD

The Environmental Excellence Award created in 2005 recognizes exceptional achievements by an individual or team in the application of engineering, geological and/or geophysical methods related to environmental protection and preservation.



*Nathan E. P. Bruce,
Engineer-In-Training*

Nathan grew up in Regina and did not go too far away for university. Nathan received his bachelor's degree in Environmental Systems Engineering from the University of Regina in 2014 and returned for a master's degree in the same field in 2015. During his time as a graduate student, he worked in the solid waste research group managed by Dr. Kelvin Ng.

By the end of his degree, Nathan had presented at the Canadian Society for Civil Engineering conference in 2015, published three journal articles as first author and worked as a teaching assistant for undergraduate courses. His conference and journal topics explored provincial waste management trends and landfill gas collection modelling. He completed his degree in 2016.

Nathan previously worked in surveying and design for municipal land development projects and enjoyed the field work. He recently moved to the field of solid waste management to put his specialty to good use, where he now works on landfill projects and waste diversion studies.

A home composting enthusiast, Nathan has gradually acquired a range of indoor and outdoor composting systems. He brought this interest to his workplaces by implementing organic waste diversion programs, including the necessary communication, collection, auditing and take-home processing. Prior to transferring to Saskatoon, he passed the torch to a team of 18 volunteers.



APEGS Awards

EXCEPTIONAL ENGINEERING / GEOSCIENCE PROJECT AWARD

The Exceptional Engineering/Geoscience Project Award was founded in 2001 to recognize accomplishments in engineering and/or geoscience. The project may be located inside or outside the province, but the project team must be comprised predominantly of Saskatchewan engineers and/or geoscientists.



Neighborhood Traffic Review Team - City of Saskatoon

*Neighborhood
Traffic Reviews
City of Saskatoon*

The City of Saskatoon Neighbourhood Traffic Review Program addresses transportation concerns (speeding, shortcutting and pedestrian safety) on a neighbourhood-wide, holistic basis. Recommendations are developed by the administration and residents in a collaborative fashion.

The program allows the city to implement recommendations in a timely fashion. Typically, the community meetings, data collection, traffic review and report are completed within the first year and the recommendations are installed the following year. Traffic calming measures are installed temporarily to determine their effectiveness. This provides flexibility to ensure that the devices meet the community's needs without causing operational issues (such as snow clearing, street sweeping, waste management and transit services).

Highlights of the program include:

- Traffic reviews completed for 50 neighbourhoods and 11 neighbourhoods being reviewed in 2019.
- 90 community meetings held to develop traffic plans for the neighbourhoods.
- Nearly 1,000 recommendations.
- \$4,062,000 spent on traffic calming measures, pedestrian safety devices and program administration.

Nathalie Baudais, P.Eng. is responsible for neighbourhood traffic including managing the neighbourhood traffic review program, pedestrian safety, traffic calming, signage and pavement marking.

Mariniel Flores, P.Eng. has facilitated or led the discussion, at over 60 neighbourhood traffic review public meetings.

Justine Marcoux, P.Eng. was the project manager for all neighbourhood reviews for the first two years of the program and has continued as a project manager for a few neighbourhoods each year thereafter.



APEGS Awards

THE McCANNEL AWARD

The McCannel Award was established in 1983 to honour service to the Association and to the professions as a whole. It is named for Roy McCannel, a founding member of the Association.



*Kevin W. Hudson,
P.Eng., FEC*

Kevin Hudson was born and raised in Saskatoon and graduated from the University of Saskatchewan (Electrical Engineering) in 1991. He worked in natural gas in Calgary and later Regina before returning home in 2006 to work at Saskatoon Light & Power. In 2018, Kevin returned to his alma mater and now works on ways to reduce energy consumption and greenhouse gas emissions.

Kevin was proud to follow in his dad's footsteps, a 1st Class Steam Engineer who also worked in the energy industry at SaskPower Boundary Dam in the late 1950s.

Kevin has long been aware of the key role of engineers and geoscientists to ensure a sustainable energy future. He has volunteered on a number of APEGS committees encouraging students to consider engineering or geosciences as a career and providing professional development opportunities in environment and sustainability.

He has collaborated on innovative energy projects, including developing natural gas storage caverns, a landfill gas collection system, solar power and electric vehicle demonstration projects and the deployment of smart meters for electricity and water.

His most meaningful work has been volunteering with teachers and students on sustainability issues. He worked with students, teachers and other professionals on the APEGS Building Your Future poster series for schools published in English, French, Cree and Denesuline. He was also a founder of the Student Action for a Sustainable Future program, now in its sixth year, which involves 300 grade 5 to 8 students annually in action and inquiry projects.

Kevin was honoured to receive the Saskatoon Engineering Society's Engineer of the Year Award in 2017 and the Rob Dumont Energy Management Leadership Award in 2018. He continues to seek opportunities to raise awareness of sustainability issues.

Kevin lives in Saskatoon with his wife (who teaches high school) and two sons.



APEGS *Awards*

OUTSTANDING ACHIEVEMENT AWARD

The Outstanding Achievement Award was created in 1998 to honour members who show technical excellence and achievement in engineering and/or geoscience in Saskatchewan.



*Esam M.A. Hussein,
P.Eng.*

Esam Hussein, Ph.D., P.Eng. devoted his career to advancing the application of atomic/nuclear radiation in non-destructive testing and imaging, particularly in detecting contraband and threat materials. He trained many highly qualified personnel and leaders in the area. He has six patents of three new technologies, one of which resulted in the creation of a company by two of his graduate students: Inversa Systems Ltd. His work was recognized by two national awards: the Canadian Nuclear Innovation Achievement Award in June 2003 and the Sylvia Fedoruk Award in 1999.

Dr. Hussein is the author of a handbook on radiation applications and two monographs, one on radiation mechanics and the other on computed radiation imaging, in addition to numerous papers and technical reports. Currently, Hussein leads a team of university researchers from both the University of Regina and the University of Saskatchewan to explore the regulatory challenges of licensing small modular nuclear reactors in Saskatchewan.

Esam is a member of the Petroleum Technology Research Centre Board of Directors and has served on the Board of Directors of the Fedoruk Centre and the Board of Governors of the University of New Brunswick. He has been serving as a receiving editor of Applied Radiation and Isotopes since 2011.

Esam is a registered professional engineer in Saskatchewan, New Brunswick and Ontario and he is a member of the Canadian Nuclear Society, the American Nuclear Society, the IEEE Nuclear and Plasma Sciences Society, the American Society for Non-destructive Testing and the American Society of Mechanical Engineers.

He is currently the Dean of Engineering and Applied Science at the University of Regina and he was an engineering professor at the University of New Brunswick and a nuclear design engineer with Ontario Hydro.



APEGS Awards

BRIAN ECKEL DISTINGUISHED SERVICE AWARD

The Distinguished Service Award was created in 1978 to recognize outstanding contributions to the community, the Association and technical and learned societies, as well as to honour distinctive and outstanding achievements in professional and technical fields. In 2004, it was renamed the Brian Eckel Distinguished Service Award to honour the contributions of the late Brian Eckel, a Past-President of the Association. It is an honour given only to those who truly exemplify the best standards in engineering and geoscience in Saskatchewan.



*Kenneth G. Linnen,
P.Eng., FEC*

Kenneth Linnen, P.Eng., FEC grew up on the family farm near Francis and graduated with distinction in Civil Engineering from the University of Saskatchewan in 1972.

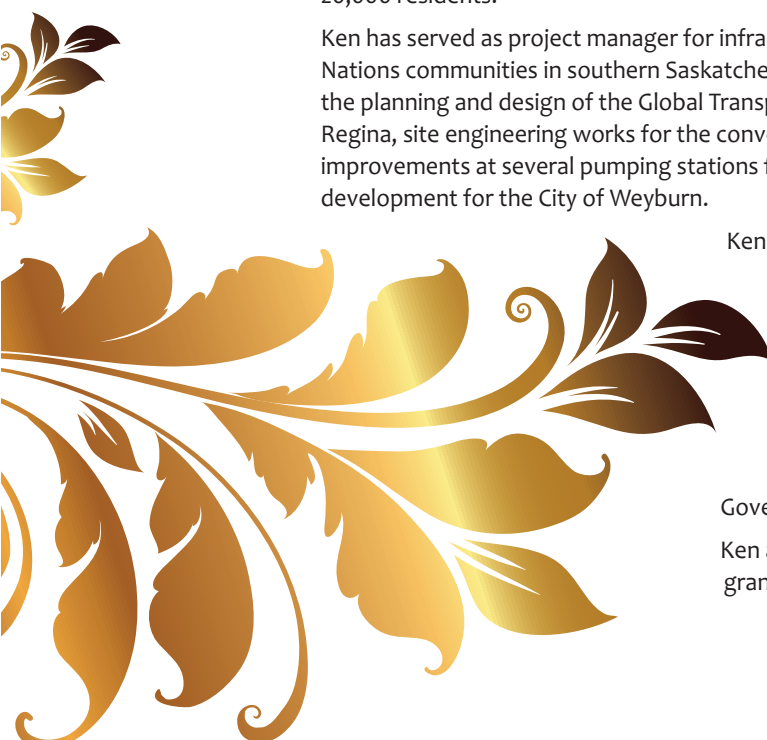
Following several years in the public sector, during which he became Director of the Land Department at the Saskatchewan Housing Corporation, Ken entered the consulting field in the 1980s. He was Saskatchewan manager at Delcan, Vice-President of DWL Engineering and became Principal Civil Engineer at Stantec, responsible for municipal and land development services within Saskatchewan. He has been the Principal in charge of the consulting team for numerous Regina subdivisions such as Harbour Landing, Wascana View, Woodland Grove, Windsor Park and Riverbend, providing communities for more than 20,000 residents.

Ken has served as project manager for infrastructure improvements and community plans for 15 First Nations communities in southern Saskatchewan. Other significant projects include Owner's Engineer for the planning and design of the Global Transportation Hub, the Grant Road School storm detention site in Regina, site engineering works for the conversion of the Plains Hospital to Saskatchewan Polytechnic, site improvements at several pumping stations for Enbridge Pipeline and new subdivision planning and development for the City of Weyburn.

Ken has been a strong supporter of the profession through involvement with many local, provincial and national organizations, in addition to his active volunteer involvement with many community organizations.

His other awards and distinctions have included the Regina Engineering Society Volunteer of the Year Award in 2009, the University of Saskatchewan Alumni Achievement Award in 2011 and the ACEC-SK Lieutenant Governor Meritorious Achievement Award in 2018.

Ken and his wife Sue have three daughters and seven grandchildren.



Annual Meeting Photo Gallery



TOP: The "jersey night" welcome event on Thursday, May 2 was at AGT Lounge in Mosaic Stadium. It featured delicious hors d'oeuvres, tours of the stadium, and a sneak peek of some elements of APEGS' new awareness campaign, which is in development.
L to R: Sebastian Walrond, P.Eng.; Leo Niekamp, P.Eng.; Dwayne Gelowitz, P.Eng., FEC, FGC (hon.); James Kells, P.Eng.

ABOVE: Members and guests participating at the breakfast plenary session.



TOP LEFT: Elder Larry Oakes opened the annual meeting and conference with greetings and a prayer, later providing a PD session with Leah McDonald on Truth and Reconciliation. **TOP RIGHT:** President Stormy Holmes welcomes the conference attendees. **ABOVE:** Strong attendance at this year's business meeting.



Wonderhub Set to Launch

After two years of fundraising, planning and design – and a name change – Saskatoon’s Nutrien Wonderhub is set to launch at the end of June.

Originally named the Children’s Discovery Museum (CDM) on the Saskatchewan, the playful learning environment takes over the former Mendel Art Gallery after the civic gallery moved to the Remai Modern.

APEGS was one of the earliest supporters of the facility’s capital fundraising campaign launched in 2017.

“This was sort of unfamiliar territory for APEGS because we had not previously done much in the way of capital donations. We have tended to focus more on programming-oriented donations. But we didn’t have an over-arching policy that prevented it, so we took our time to ensure that it lined up with the APEGS Value Proposition (AVP),” said Ben Boots, P.Eng., FEC, who chaired a task group that reviewed the fundraising request.

APEGS Council agreed to a direct donation to CDM of \$25,000 a year for 2016-18. APEGS also matched the donations that any APEGS member made up to a total maximum of \$100,000. As well, an anonymous donor also offered to match individual member donations, tripling the value of member gifts. Going beyond the capital project, APEGS is negotiating an ongoing support contract similar to what is in place with the Saskatchewan Science Centre.

The new museum will feature unique exhibits, educational programming and commitment to diversity and local heritage. It will become a creative springboard for the children of Saskatoon and surrounding communities, fostering a lifelong love of learning.

The name change was part of the planner’s efforts to reflect the facility’s spirit.

“Kids tend to think of a museum as something different than what we are. We are loud. We are active. We are hands-on,” Wonderhub’s Executive Director Amanda McReynolds Doran said.

Former APEGS President Ernie Barber, P.Eng., who helped drive the capital campaign, expressed pride and satisfaction in the new facility on behalf of APEGS.

“APEGS and its 13,000 member geoscientists and engineers are proud to be a supporter of Nutrien Wonderhub. This amazing facility will be a place of discovery for kids and their families, where everyone can get close to the practical and exciting world of science and technology. Kids will discover their own creativity and enthusiasm.”

News Beyond Our Borders

U.S.-Canada engineers' mobility meeting

Engineers Canada - Earlier this fall, the U.S. National Society of Professional Engineers (NSPE) and Engineers Canada held a conference call to discuss engineering license mobility between the countries. This followed NSPE's submission of public comments to the U.S. Trade Representative regarding language in Canadian provincial licensure legislation establishing work requirements that create barriers for engineers who are licensed in the United States when trying to become licensed in Canadian provinces.

The two organizations had a positive, productive conversation about license mobility and steps that both countries can take to create fair conditions to ease mobility for Professional Engineers between the two countries, while remaining consistent with protecting public health, safety and welfare.

Agreements such as the one between Accreditation Board for Engineering and Technology (the U.S. post-secondary accreditation body) and Engineers Canada provide a foundation for achieving enhanced mobility. This agreement recognizes the substantial equivalence of accredited engineering education programs between the two countries. In existence since 1980, it has provided benefit for engineers seeking licensure in both countries. Additional work is required to ensure that provincial, territorial and state law and regulation reflect the principles and goals of this and similar agreements. Both organizations are committed to working together to identify additional viable solutions.

Technologists at odds with Engineers Canada

Engineers Canada, TPC news releases - Technology Professionals Canada (TPC) and Engineers Canada continue to be at loggerheads over proposed changes to technologist regulations in various provinces.

TPC is seeking professional recognition for all engineering technology professionals. TPC is calling on all provincial governments to recognize the scope of work undertaken by engineering technology professionals and to enact or preserve legislation that authorizes the practice of that profession by means of exemption to the scopes of practice of the professional engineer.

Engineers Canada responded with a statement of four principles of regulation:

- All work that falls within the definition of the practice of engineering should be regulated by a single government-designated regulator whose mandate includes regulating the practice of engineering in the public interest.
- Individuals who have acquired the necessary competencies by virtue of their academic training and professional experience, who can be held accountable for their work and who have met all of the licensing requirements set by the provincial/territorial regulators can be authorized to practice engineering within either a full or limited scope of practice.
- In cases of overlapping practice of engineering with members of other regulated professions (e.g. foresters, agrologists, architects) the respective regulators must work together to ensure the public welfare is protected.
- Defined scopes of practice (for the purpose of limited licences) within the broad range of engineering activities must be prepared by engineering regulators and must be understandable and enforceable.

In a press release, TPC responded that Engineers Canada "... seeks to promote the agendas of its own members, not the best interest of the public."

Cleaning up on clean-tech cash: Alberta researchers score



Researchers from Alberta Innovates

APEGA - Clean-energy researchers in Alberta are starting 2019 off with a bang, after receiving \$20.5 million in funding to support technology development. Alberta Innovates, through its Climate Change Innovation and Technology Framework (CCITF), considered 160 applications in choosing 29 post-secondary and industry projects.

CCITF is a partnership between Alberta Innovates, Emissions Reduction Alberta and the Government of Alberta. It encourages the development of innovative technologies, engages stakeholders, and ensures meaningful investments in research, innovation and technology.

Eleven of the newly funded projects are led by APEGA members: eight from the University of Alberta, two from the University of Calgary and one from Imperial Oil.

New funding gives masonry an upgrade



Dean of Engineering Fraser Forbes, Masonry Contractors Association of Alberta leadership members Kery Donaghey and Mirko Ambrozic, Masonry Research Chair Carlos Cruz-Noguez, MCAA member Chris Ambrozic and Simaan AbouRizk, Chair of the Department of Civil and Environmental Engineering and School of Mining and Petroleum Engineering.

APEGA - The Great Wall of China, St. Peter's Basilica, the Taj Mahal – some of history's most compelling architectural structures were made with masonry. Appealing to architects and builders because of its artistry, durability, and ability to weather the centuries, masonry has been used for thousands of years.

And now, thanks in large part to a \$3 million endowment funded by the Natural Sciences and Engineering Research Council and the Masonry Contractors Association of Alberta (MCAA), the University of Alberta's Faculty of Engineering can help ensure the trade continues to have a future.

Under the endowment, engineering professor Carlos Cruz-Noguez, P.Eng., PhD, has been appointed as the Chair in Masonry Systems for the MCAA – Northern Region. He will orchestrate research programs to bring masonry up to speed with modern-day expectations.

Dr. Cruz-Noguez will work with a team of academics to conduct his work, some of whom are researching energy and thermal efficiency, reliability and simulation and composite walls. This research has piqued the interest of many of the graduate students needed to support the research, adding additional expertise to the team.



Hamdi Ali

High schooler discovers diamond method

APEGA - An Edmonton high school student has discovered what could be a better way to remove diamonds from kimberlite rock, suggesting a way to increase mining yields. Seventeen-year-old Hamdi Ali recently participated in a University of Alberta (U of A) program offered through Women in Scholarship, Engineering, Science and

Technology (WISEST), an organization that focuses on creating pathways to science success for women and other underrepresented groups.

During her time at a U of A geology lab, Hamdi worked with a mentor on a research project that revealed that the standard industry technique of extracting diamonds from rock—mechanical vibrating plates—may actually destroy many of the diamonds. She came up with a safer strategy: using high-voltage pulses of electricity to break down kimberlite and reveal the diamonds within. Since completing her research, Ali has been asked to present to a number of companies in the industry.

Fjord-ward thinking



The Norwegian Public Roads Administration Concept Drawing

National Post - Norway is working on a technically ambitious solution to cut travel time through its rugged coastal landscape, a place where roadways bump up against majestic glaciers, fjords, and mountains. A third of Norway's 5.3 million citizens live on the west coast of the country, where 50 per cent of export goods originate.

About 1,000 fjords make travel and shipping in the area a beautiful but time-consuming endeavour. Using the existing E39 in all its glory – a 1,100-kilometre highway linking Kristiansand and Trondheim – requires seven ferry crossings and takes a vehicle 21 hours.

A \$49-billion solution will cut travel time by half and eliminate the need for ferries. It will feature three suspension bridges and five floating bridges (supported by pontoons). But there's more. The project could make Norway the first country to build a submerged floating tunnel. The structure will be built within a fjord at a depth of 1,400 metres—too deep to drill supports into the sea bed. So instead, the tunnel portion will dangle in the water, hung from island-like pontoons.

The tunnel will sit 30 metres (100 feet) under the surface of the water, with plenty of room for ships to safely travel above it and submarines below. The tunnel's depth will also protect it from big winds, waves and currents.

The Norwegian Public Roads Administration, the governmental body responsible for the project, aims to complete construction by 2050.

News From The Field

The Dead South members keep their day jobs



Country-folk group The Dead South

Regina Leader-Post - The four members of the Regina band The Dead South have achieved international fame, with sold-out shows around the world. The quartet is winning awards including two 2018 Western Canadian Music Awards, for breakout artist of the year and roots duo/group of the year and a Juno in 2018 for traditional roots album of the year.

And The Dead South is making enough money to allow its members to quit their day jobs — although some haven't.

Cello player and vocalist Danny Kenyon is a structural engineer who has worked on projects like the new Mosaic Stadium, Hill Tower 3 and “a big hole in the floor” at the Royal Saskatchewan Museum for Scotty the T-Rex.

Kenyon admits he isn't doing as much engineering work. Cutting back on other commitments to focus on the band has been part of a conscious effort to prioritize his health.

“Before I would go on a tour, then the next day, I would end up working after a long flight home,” said Kenyon. “Too many years of that'll take a couple of years off your life.”

Engineers busy with Mac the Moose

Discover Moose Jaw - Moose Jaw's Mac the Moose might not be making daily headlines anymore, but that doesn't mean Team Mac isn't doing hours upon hours of work for this project.

The hope is that the city's mascot will get a new rack to reclaim his title. However, the question of whether he can handle it remains.

A team of professionals in various industries hopes to answer that question in the future.

Tourism Moose Jaw's Executive Director Jacki L'Heureux-Mason said members of the team have been in and out of their parking lot conducting various tests and gathering information for the engineering report in a variety of ways.

“We had engineering students here running scans of Mac. This is going to help them create some 3-D imaging (and) once we get the green light from the engineers we can start making some antlers that fit Mac's head appropriately,” explained L'Heureux-Mason.

In order to get the information, they need to do a thorough check of Mac.

“They cut a big hole in Mac's belly and they crawled up and took a look for any signs of weakness that would make this project not safe and feasible.”

She added that her favourite way to execute a project is to do it with a collaborating team, noting that she couldn't have chosen better people to work with.

“I think that we're going to have some very, very proud participants in this. Brysen from Steady Metal Works was like a kid in a candy store getting up there and one of the guys who came from Concentric Engineering said, ‘I will probably never stick my head in the belly of a moose again.’ There's a lot of excitement. It's a unique opportunity and what it means to the community just makes it more special.”

MINING

Mining industry critical of Bill C-69

Saskatoon StarPhoenix - Nutrien wants the federal government to yank controversial new legislation that would overhaul the environmental assessment process for major energy and natural resource projects.

“C-69 creates uncertainty and additional regulation that we think will be bad for our industry, bad for the industries that support and feed our organization. And it's unnecessary. We think it should be scrapped, period,” Nutrien Ltd. Chief Administrative Officer Mike Webb told reporters after testifying about Bill C-69 before a Senate of Canada standing committee in Saskatoon.

Western Canada's energy sector has been one of the most vocal critics of C-69. Some have dubbed it the “anti-pipeline” bill. Saskatchewan's mining industry also has deep reservations.

Nutrien and Mosaic Co. – which together operate nine of Saskatchewan's 10 potash mines – as well as Cameco Corp. were among the speakers who picked it apart in front of the Senate's Energy, Environment and Natural Resources Committee.

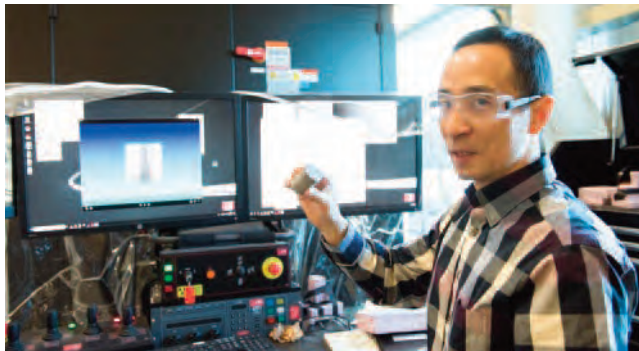
Cameco, which owns two uranium mines and a mill in northern Saskatchewan and has been struggling amid a lengthy depression in nuclear fuel prices, has slightly different concerns about the proposed legislation.

Alice Wong, the company's chief corporate officer, said the biggest challenge facing her industry is that it automatically refers proposed uranium mines to a "much more complicated" approval process that includes a review panel.

"There are no science-based facts to support that. There's nothing in a uranium mine that's different from a regular mine and we're already regulated by our life-cycle regulator, the Canadian Nuclear Safety Commission," she told reporters.

UNIVERSITIES AND RESEARCH

New CT scanner opens new era in core analysis



SRC Researcher

Pipeline News – One of the most significant new diagnostic tools in oilpatch research and development is a new computerized tomography (CT) scanner put in place at the Saskatchewan Research Council (SRC) facilities in Regina.

The Petroleum Technology Research Centre (PTRC) provided much of the funding for the CT scanner and SRC is the organization employing it.

"When we're looking at enhanced oil recovery, whether its bitumen or in the Bakken, what the CT scanner allows us to do is look inside the rock at very, very high resolution and understand what is actually going on during these processes," Mike Crabtree, Saskatchewan Research Council's vice president for their energy division, said.

An operator might cut a four-inch core several metres long. "We would take a section of that core and inject some water and surfactant. Before the CT scanner, we would inject at one end and see what comes out the other end. We might tap the core along the top for pressure, but you would characterize the performance of it by looking at what goes in and what comes out. Maybe when you're finished, you might excavate the core, to have a look inside to see what changes may have occurred."

"The CT scanner allows us to visualize the rock and the

fluid as it is moving through the core. We can see how water and other materials are interacting with the oil at various points in the core. We can then look at different temperatures and pressures and how that performs in real-time. It's a big step forward. It's the only one of its type used in this application in Canada. There are only two or three machines of this power and scale in Canada and probably only about a half dozen across all North America," Crabtree said.

While other labs have medical CT scanners, this one is industrial grade. This provides higher penetration, allowing it to penetrate steel.

In addition to reservoir cores, other items such as metal tools, diamonds, fossils and potash have been scanned.

Capstone projects at University of Regina

CTV News - The year has culminated into a final project for engineering students at the University of Regina. Earlier in April, they showed off their work, eight months in the making.

Natnael Alemu is in his final year as an electronics engineering student and his team's project is focused on monitoring some of Saskatchewan's rough roads. Sensors attached to vehicles collect data on bumps while driving.

Alemu and his team have developed a website (roadquality.ca) that shows the data they have collected. They hope that their software could even have some application with Google.

The annual project day gave students a chance to showcase their work to industry professionals and finish off their year of studies.

Some students, like electronics engineering student Bridget Palaschuk, are already seeing some real-life applications for their projects. She developed a beer keg monitoring system that brings up to the minute stats like temperature, amount poured and even the foam, on a few of the taps at the bar on campus.

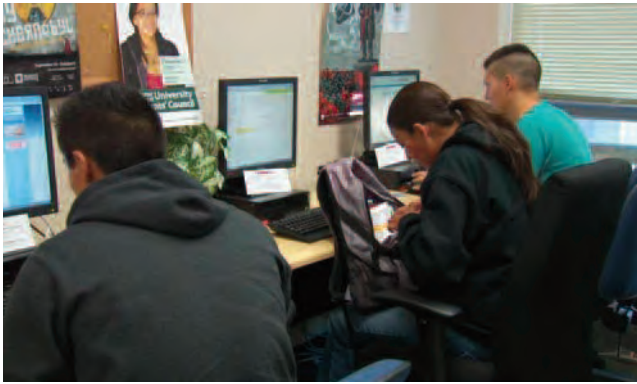
Initiative to encourage Indigenous engineers

Global News - A commitment has been made to increase the number of Indigenous students at the University of Saskatchewan's (U of S) College of Engineering.

The college officially launched a new engineering access program which is part of its Indigenous Peoples Initiatives Community (IPIC).

University officials said the program is designed to help Indigenous students build the academic foundation they need to enrol in the college and provide students with ongoing support to help them complete their degrees.

It was created with support from the International Minerals Innovation Institute (IMII).



Global News

Indigenous students at the University of Saskatchewan's College of Engineering

“It is important to the mining industry to help create new opportunities for Indigenous peoples in the minerals sector workforce,” IMII executive director Al Shpyth said in a press release.

“A degree in engineering provides these students with the tools and qualifications they need to become outstanding role models for following generations of Indigenous engineers.”

U of S officials said the IPIC program supports prospective Indigenous learners with a year of academic upgrading for students who do not have the required pre-requisites to apply to the College of Engineering.

Social, academic and financial supports are available for Indigenous students in the college.

INFRASTRUCTURE

Funding for water and wastewater projects

Journal of Commerce - The Government of Canada has announced it will put \$27.3 million towards eight Saskatchewan water and wastewater projects.

The Government of Saskatchewan will match the federal funding through the New Building Canada Fund and funding recipients are responsible for the remaining costs. In total, \$82.1 million will be invested by federal, provincial and recipient project contributions.

The largest project is a \$20 million wastewater treatment and water distribution upgrade for the City of Martensville, followed by \$13.6 million worth of primary sanitary sewer trunk upgrades for the City of North Battleford. Approximately \$12.2 million will go to the Prairie North Regional Potable Water Supply System maintained by SaskWater in the Lloydminster area and the City of Yorkton will receive \$11.1 million for north sewer system upgrades.

SaskWater will upgrade the regional water treatment plant in Melfort for approximately \$8.5 million and the Town of Maple Creek will have \$5.9 million for wastewater treatment upgrades. Around \$5.6 million will go to

drinking water system upgrades for the Town of Blaine Lake and \$5 million is earmarked for wastewater lagoon upgrades for the Town of Kindersley.

Bridge collapse sparks province-wide inspection

Canora Courier - Following the failure of a newly constructed bridge in the RM of Clayton last fall, the Saskatchewan Association of Rural Municipalities and the Ministry of Highways and Infrastructure partnered through the Municipal Roads for the Economy Program to commission an inspection and structural assessment of bridges known to have similar design and construction, according to a release from the Ministry of Highways and Infrastructure.

An engineering firm inspected six bridges located throughout Saskatchewan and preliminary findings recommend that five of the six bridges be weight restricted to carry less than secondary weights. These weight restrictions affect a bridge in the RM of Caledonia, the RM of Mervin and the RM of Scott as well as two bridges in the RM of Perdue, said the release.

Some of these bridges impact heavy haul routes in the province, including one Alternate Truck Route and one Clearing the Path corridor.

To ensure public safety, the Ministry of Highways and Infrastructure is working with the rural municipalities to weight restrict or close the roadways containing these bridges until appropriate improvements or remedial work can be completed.

Results of the inspection and assessment will be forwarded to the Association of Professional Engineers and Geoscientists of Saskatchewan. In Saskatchewan, professional engineers must follow the Canadian Highway Bridge Design Code when designing a bridge.

ENERGY

Solar plant slated for Weyburn

Weyburn Review - A solar power generating project is being proposed for the RM of Weyburn, with the plan to have it commissioned by December of 2020.

An open house for the project was held for the public to hear information and provide any input they might have.

The project is being proposed by the Pesakastew Solar Limited Partnership on 90 acres of land located southwest of Weyburn, using an array of photovoltaic solar panels to produce 10 megawatts of power for Saskatchewan's electrical grid. The project would be developed by a renewable energy company, Natural Forces, who is a partner along with George Gordon Developments Ltd. and Red Dog Holdings Ltd., both First Nations companies.

According to information provided by the proponents, the benefits of this project are to provide clean electricity to 2,400 homes and displace the equivalent of 18,860 tonnes of carbon dioxide a year.

The project requires a technical proposal, which will be submitted to Saskatchewan Environmental Assessment and Stewardship, with the required preliminary environmental studies currently underway on the proposed site.

The studies began in the spring of 2018 and will continue through the spring of 2019. Once this is submitted, Sask. Environment's technical review committee will determine if an environmental impact assessment will be required.

An extensive list of studies will be done, including soil mapping, a heritage resource review and studies on numerous environmental factors.

OIL AND GAS

Enhanced oil recovery gaining traction

Pipeline News - At times, it has looked like Saskatchewan's leading stance in the geologic storage of carbon dioxide, as well as its implementation in enhanced oil recovery (EOR), wasn't gaining much traction worldwide. But that may be changing.

In late February-early March, Sinopec, one of China's national oil companies, sent a large delegation to Saskatchewan for two weeks to learn about what operators and researchers in the province are doing.

Norm Sacuta, who handles communications with the PTRC, noted that recent changes in American law, specifically one called 45Q, are having significant implications south of the border. Those changes involve credits of \$30 per tonne for carbon dioxide used in enhanced oil recovery.

As such, there's a new term being used these days. Carbon capture and storage (CCS) is now being referred to in some circles as carbon capture, utilization and storage (CCUS). Those tax changes may have a profound impact on the viability of using carbon dioxide in EOR schemes and could revive projects that have stalled.

If something like 45Q was implemented in Canada, Erik Nickel, PTRC's director of operations, thinks we could see the implantation of CCS on the Shand Power Station and other coal-fired power plants and the building of a CO₂ trunk line throughout southeast Saskatchewan, with a ramp-up of CO₂ injection in a lot of the Mississippian oilfields in the region.

At the 2018 Williston Basin Conference, North Dakota's governor boldly predicted that his state would reach two million barrels per day (bbls/d) of oil production, up from the 1.2 million bbls/d at the time (a year later, the state has now reached 1.4 million bbls/d). He said they would reach two million bbls/d by using every CO₂ source possible from

lignite coal production in the state and North Dakota could even become a CO₂ importer.

Nickel said, "Once they start having to write the cheques to put the capture on these plants, that's where the rubber meets the road. Saskatchewan is one of the few jurisdictions that had the guts to actually do it. To me, that's incredibly impressive that we were able to complete this."

ENVIRONMENT

Cameco to clean up contaminated water



Saskatoon StarPhoenix - Canada's largest uranium producer says it's developing a plan to clean up groundwater contaminated with uranium and radiation four months after it was first discovered at a shuttered mill in northern Saskatchewan.

Cameco Corp. reported in December that a sampling well adjacent to its Key Lake mill "was showing an increasing trend in uranium concentration" after 50,000 litres of water were "released" over the previous year.

Carey Hyndman, a spokeswoman for the Saskatoon-based company, said that the incident was immediately reported to the Saskatchewan Ministry of Environment and the Canadian Nuclear Safety Commission (CNSC).

She said the company is working with both regulators, as well as third-party consultations, to determine how the water – which was being used as a radiation shield in the building – moved into the groundwater.

The company also held information meetings with local communities, including the English River First Nation, Hyndman said.

The incident appears to be localized and is not a risk to drinking water sources for animals or for people working at the site and has not moved to nearby bodies of water, Hyndman said.

CBC News reported that CNSC officials believe that while it appears the uranium is isolated, there is more work to be done.

Cameco closed the Key Lake mill and nearby McArthur River mine in early 2018 in the face of persistently weak uranium prices. The shutdown was expected to last 10 months before it was made indefinite months later.

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Calendar Of Events

29th PNWER Annual Summit

July 21 – 25, 2019
Saskatoon, SK
www.pnwer.org/2019-summit.html

ISER- International Conference on Nanoscience, Nanotechnology & Advanced Materials

July 25 – 26, 2019
Regina, SK
iser.co/Conference2019/Canada/51/IC2NAM/

CLEAR - 2019 Annual Educational Conference

September 18 – 21, 2019
Minneapolis, MN
www.clearhq.org/event-2428933

6th Canadian Young Geotechnical Engineers & Geoscientists Conference

September 26 – 28, 2019
St. John's, NL
cygegc2019.com/

WIM/WiN - Mine Your Potential

September 27, 2019
Saskatoon, SK
wimwink.com/

Law & Ethics Seminar

September 27 - 28, 2019
Regina, SK
www.apegs.ca/Portal/Pages/Professional-Practice-Exam

AISES – National Conference

October 10 – 12, 2019
Milwaukee, WI
www.aises.org

Fall PD Days

November 14 – 15, 2019
Saskatoon, SK
(Registration opens September 2019)
www.apegs.ca

Law & Ethics Seminar

April 17 - 18, 2020
Saskatoon, SK
www.apegs.ca/Portal/Pages/Professional-Practice-Exam

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