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MEET OUR DIRECTOR OF PROFESSIONAL AFFAIRS

Christine Wilkins, P.Eng., joins the team as Director of Professional Affairs

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ENGEOActions

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The importance of wellness

Kevin Gallant, P.Eng., talks about how he keeps busy during semi-retirement and how wellness plays a factor in this next phase of his life.



APEGNB STEM Teacher Awards

In 2022, APEGNB recognized five remarkable middle and high school teachers who made STEM learning fun!



What is a Limited License?

Maggie Stothart, P.Eng., FEC, Chair of the Limited License Task Force, explains how and why we are exploring the possibility of a limited license designation.



Ambitious Climate Targets Need Bold Energy Innovation

A commentary from Michelle Robichaud, President of the Atlantica Centre of Energy

Message from the President

Professional Engineers and Geoscientists have a big responsibility as we have the ability to influence the lives of hundreds, thousands, millions, or even billions of people with just one project. As our mission statement says, our professions exist to protect the public.

As President, I have been fortunate to be able to participate in several national conferences and sessions thus far. I am grateful to be able to have a voice at the table and see the impact that our professions have not just on current projects, or legislative changes but also seeing how, as Professional Engineers or Geoscientists, we are able to support the next generation of professionals through every stage of their career. I have been lucky throughout my career to apply my education in different areas and to have worked with great mentors and colleagues and in the process, I have made lifelong friends. Through my involvement with the Association, I have seen the value of our chosen profession which can be extensive and intricate yet welcoming and inspirational. What we do on a daily basis makes the lives of the public better and I am proud to say I am a Professional Engineer (P.Eng.).

If this is your first introduction to the Association of Professional Engineers & Geoscientists of New Brunswick - welcome. Get to know more about us by connecting with your peers and get involved in the many different opportunities that exists through the Association. As President, one of my goals is to encourage and empower the next generation of professional engineers and geoscientists. Whether you are interested in participating on our many committees, attending a local branch meeting or volunteering your time promoting STEM in local schools, there is something for everyone and I look forward to welcoming you to our growing professional community.

This is a period of change within the Association, and I am excited for what the future has in store. We operate in a professional and transparent manner in all that we do. We continue to work with government officials and ensure that our voices are heard when it comes to legislative changes that impact our industries. And as for technology, we are creating systematic changes in how we handle registration practices such as working toward a streamlined



Michelle Paul-Elias, P.Eng. FEC

online application, creative communication tactics such as sharing our story and promoting the diversity of our professions in our marketing campaigns and creating meaningful and strategic outreach partnerships.

Despite the shift that the pandemic brought, APEGNB continues to move forward to enhance the experience of registrants' interaction with their Association.

That said, our work is not done as we look to the future of our professions. I'm asking you as registrants to consider how you may be able to support the initiatives of your Association. Your time and talents are valuable, and we would welcome hearing from you.

Michelle Paul-Elias

MICHELLE PAUL-ELIAS, P.ENG., FEC
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Message from the CEO and Registrar

At APEGNB, we strive to lead the engineering and geoscience professions as a trusted and integral resource in regulatory matters. The work that our staff, Council, and Committees complete on a daily basis emphasizes the importance of this vision. By regulating the professions, we are responsible for establishing and maintaining standards of professional ethics, knowledge, and skill among our registrants, in order that the public interest may be served and protected. This has been our mission and the mandate of the organization for over one hundred years, and we continue to remain fully committed to it.

Over the past few months, APEGNB has taken the opportunity to meet with government officials, including several Ministers (most recently, Natural Resources and Public Safety) to discuss the role of our organization and our specific interests in ensuring the professions are respected and understood. Such communication is key as we want to be informed and engaged as stakeholders at any time legislative changes are introduced that may impact the way you work in the province.

When Bill 119: *An Act to Amend the Engineering Technology Act* was introduced in the Legislative Assembly in June, we were advised and invited to present to the Standing Committee on Private Bills. As we have been observing this draft legislation for over two years, APEGNB had a vested interest in providing feedback to the Standing Committee on our concerns with the proposal. The presentations made by APEGNB and several other members, as well as the Architects Association of New Brunswick, served to highlight to the Committee that there is not consensus around the proposal as suggested. As a result, NBSCETT, the proponent of the bill, was told to work with our organizations to achieve agreement on the wording. To date, we have not had any communication from NBSCETT on this topic.

The work that we had completed during our national review of legislation related to rights and titles for technologists and technicians identified a gap in our current licensing regime. Most other provinces have a form of restricted or limited license that can be issued to individuals who have many years of experience in one particular area or 'scope', and in which they would be able to practice without the direct supervision of a professional engineer or geoscientist. APEGNB's Limited Licensing Task Force has been working diligently over the past several months in an open and transparent manner, communicating with stakeholders and our registrants to determine what model might make sense in New Brunswick, and to ensure that all key stakeholders are engaged to provide their thoughts. More details about this effort are available in the report from Task Force Chair, Maggie Stothart,



Lia Daborn, CAE

P.Eng., FEC, on page 12.

As an organization we are committed to understanding and mitigating risks, including liability and those associated with various activities held under the Association's name. APEGNB recently engaged a consultant to update the organizational risk

profile which will be reviewed by Council this fall. In addition, we are working with key stakeholders, including Branch executive members to ensure that everyone works together to minimize potential risk while maximizing community outreach. These collaborative models are an important part of our Association today and should only grow in the future.

That said, innovation isn't only about growth; we're also investing in innovation to drive efficiency. We continue to identify areas to reduce costs to the organization so that available resources can be dedicated to areas that will have the greatest impact on our key purpose, which is regulation of the professions. Our staff have worked to refine internal processes through the engagement of outside consultants and through the transition to a new database and use of other new technology. These changes will ensure a more efficient process for registrant applications and CPD auditing, to name a few.

As we move into our annual renewal period, our processes will be more focused on registrant risks and compliance with the annual regulatory requirements, including timely payment of license fees, compliance with the annual CPD requirements and the details for all licensed companies and firms (those with a Certificate of Authorization). Our new database enables us to better track and connect individual registrants with their associated companies, ensuring that all annual requirements are being met by both. Per the APEGNB by-laws, license dues must be paid by January 1st of the new year. Keep an eye on your inbox for your renewal reminders in early October.

I look forward to seeing where our vision will lead us in the future. I am confident that we have the proper skills, talent, and resources to support this.

I wish you a very productive yet relaxing Fall!

A handwritten signature in black ink that reads "Lia Daborn".

LIA DABORN, CAE

CEO and Registrar, APEGNB
lia@apegnb.com

A LIFELONG JOURNEY OF WELLNESS

Kevin Gallant, P.Eng., on how he keeps busy during semi-retirement.

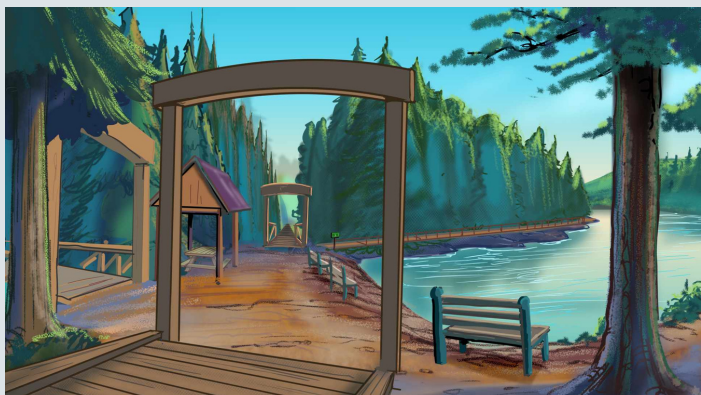
Applied Science is a life-long wellness journey. In the last four decades, I have had two careers as an Engineering technologist and then as an Professional Engineer/Instructor. Teaching and research allowed me to mentor and guide students to new careers and skills development, from business development and drone technology to 3D printing technology and has strengthened my STEM network connections at NBCC and the Department of Education.

I have been fortunate enough in my career to give back to my community in multiple ways, one of which has been participating in our Northeast Branch. For over 19 years, the APEGNB Pumpkin Fling helped bring local communities and STEM education together using entertainment to promote a Fall festival theme in our community. Now, as president of the APEGNB Northeast Branch, I want to bring members closer to climate change projects. In the past year we have shifted our focus slightly and supported a new youth event called Puttfest. The goal of this event was to create a mini-turf eco-system powered with clean energy such as solar.

Since semi-retirement from teaching, I have been involved with various environmental projects and a new commercial fishery of Striped Bass in Natoaganeg.

I love fishing and have a strong connection with fisheries so it was natural for me to engage in this particular area of development. Semi-retirement requires me to do a lot of recreational shoreline fishing for striped bass in the Spring/Fall using both fly and bait lures. I landed over a thousand fish each year in the Miramichi. It has brought NB families and friends within Miramichi estuary shorelines from Loggieville to Redbank.

In my spare time, I am volunteering to help Miramichi plan a forest sheltered trail system with the Miramichi Cyclists for Healthy Living group. This is part of the new City of Miramichi Active Transportation plan which encourages more wellness strategies. A photo of this vision is shown below from a NBCC former colleague artist Rick Knowles. Our group wants to



promote both bike lanes and enhance forested trails like the paved trail networks similar to other NB cities. We are trying to include solar lit trails as part of this strategy. Wellness is a big part of everyday activities such as hiking and kayaking on the Miramichi.

Recently, I was accepted into an Avatar Ignite program to help promote clean energy in the oil/gas sector with a geo-exchange solar hybrid solution. Environmental projects such as biogas were part of my career as an Engineering technology at ADI System in Fredericton. Recently, this Net-zero transition work has continued with the push for Clean Energy for Cleaner Communities with the North Shore Micmac District Council (NSMDC).

This new journey has helped build capacity for solar and wind projects for First Nations communities in New Brunswick.

I continue to volunteer with other environmental groups such as Centre of Excellence for Energy, GAIA and EOS Eco-energy working on clean energy strategies such as solar and micro-hydro.

After many years and my hands in many projects, I find myself reflecting on my career. I am proud to say I helped foster many APEGNB and community volunteer friendships and built and expanded my network which is what professional development is all about. All that said, the most important part of my semi-retirement journey is my family, two boys Alex and Justin and my lovely wife Melanie. Melanie and I plan to enjoy hiking, travelling, and walking beaches including our own majestic, beautiful Miramichi River, its festivities and community spirit.

An artist's rendering of the City of Miramichi's enhanced forested trails.
Photo submitted

Irving Oil to introduce hydrogen for the regional market – a first-of-its-kind investment from a Canadian refiner

Irving Oil recently announced plans to expand its hydrogen capacity at the Saint John refinery, with the goal of offering hydrogen fuelling infrastructure in Atlantic Canada, making the company the first to introduce hydrogen to the regional market.

Republished with permission from Irving Oil
Original publishing date: July 12, 2022

In formalizing an agreement to purchase a hydrogen electrolyzer, Irving Oil will be the first oil refinery in Canada, and one of the first in North America, to make such an investment in this type of clean energy solution.

The company's initial investment in a 5-megawatt electrolyzer, developed by New York hydrogen technology company Plug Power Inc. (NASDAQ: PLUG), is expected to be fully operational by late 2023, and will play a significant role in exploring further hydrogen production to drive emission reductions at the Saint John refinery, as well as clean energy solutions for downstream customers. Once fully operational, the electrolyzer will produce 2 tonnes of hydrogen per day – the equivalent to fuelling 60 buses with hydrogen.

Today, the Irving Oil Saint John Refinery is the largest producer of hydrogen in Atlantic Canada and one of the largest producers in Canada – generating more than 200 tonnes of hydrogen per day, which is used to lower the sulphur content of petroleum products at the refinery. While currently, hydrogen at the facility is produced with natural gas, the hydrogen electrolyzer will create hydrogen using electricity from the local electricity grid.

Irving Oil will continue to work diligently with stakeholders to shift its hydrogen production to low-carbon, or green, hydrogen in the future – with the investment of the electrolyzer as an important first step on this journey. This supports the company's commitment to leadership through the energy transition, to the reduction of greenhouse gas emissions and to the development of more sustainable energy solutions.

"At Irving Oil, we believe that low-carbon hydrogen production, use and distribution will play an important role in our decarbonization journey," said Irving Oil President Ian Whitcomb. "This foundational project will accelerate our company's learning about hydrogen as a downstream product while creating a decarbonization pathway for our Saint John refinery."

"True to the values that have guided our company for nearly 100 years, we are committed to taking concrete steps to evolve our business for tomorrow, to reducing greenhouse gas emissions, and continuing to introduce new solutions to provide our customers with safe and reliable energy every day," said Irving Oil Executive Vice President and Chief Brand Officer, Sarah Irving.



Irving Oil Refinery, Saint John, N.B.

Photo provided

"Driven by our leading electrolyzer technology and unparalleled manufacturing capacity, we are honoured that Irving Oil has chosen Plug to support their initial investment in hydrogen production and look forward to expanding the partnership," said Andy Marsh, CEO of Plug.

The initial hydrogen electrolyzer investment is poised to contribute to Irving Oil's objective of achieving a 30% reduction in greenhouse gas emissions by 2030. The company is committed to targeting industry solutions that will lower emissions and align with carbon reduction goals, while enhancing the opportunities for future development in Atlantic Canada and beyond.

About Irving Oil:

Irving Oil is a family-owned and privately held international energy company. For nearly 100 years, our commitment to doing good business has been grounded in our commitment to people – to our employees, customers, communities and partners. Founded in 1924, our mission is focused on our continued evolution to meet the changing needs of our customers. Specializing in the refining and marketing of finished energy products, we operate Canada's largest refinery in Saint John, New Brunswick, and Ireland's only refinery located in the village of Whitegate. We proudly serve customers with more than 1,000 fuelling locations and a network of distribution terminals spanning Eastern Canada, New England and in Ireland, operating under the Top brand. We are on a continuous journey of sustainable development, working to reduce our environmental footprint while continuing to provide safe and reliable energy to our customers. Named one of Canada's Top 100 Employers for six consecutive years, we are proud of our team and our longstanding commitment to our customers and our communities. Learn more at www.irvingoil.com.

About Plug:

Plug is building an end-to-end green hydrogen ecosystem, from production, storage and delivery to energy generation, to help its customers meet their business goals and decarbonize the economy. In creating the first commercially viable market for hydrogen fuel cell technology, the company has deployed more than 50,000 fuel cell systems and over 165 fuelling stations, more than anyone else in the world, and is the largest buyer of liquid hydrogen. With plans to build and operate a green hydrogen highway across North America and Europe, Plug is building a state-of-the-art Gigafactory to produce electrolyzers and fuel cells and multiple green hydrogen production plants that will yield 500 tons of liquid green hydrogen daily by 2025. Plug will deliver its green hydrogen solutions directly to its customers and through joint venture partners into multiple environments, including material handling, e-mobility, power generation, and industrial applications. For more information, visit www.plugpower.com.

What is it like being a summer student at APEGNB?

FRANCHESKA NICHOLE BAYA,
UNB ENGINEERING STUDENT
APEGNB PROJECT COORDINATOR (SUMMER POSITION)

Hi! My name is Francheska Nichole Baya, or Nichole for short. I am originally from the Philippines and moved to Canada in summer 2019 after graduating high school.

I am now in my 3rd year of Chemical Engineering, and I am also minoring in Environmental Studies at the University of New Brunswick. Mathematics, environmental issues and wildlife conservation are my main passions in life, and these have pushed me to pursue a degree in chemical engineering.

This summer, I was hired by APEGNB to work for 9 weeks as a Project Coordinator. The main project I coordinated was to explore the possibility of an Indigenous STEM Outreach program at First Nations schools in New Brunswick. This was to be on of the first steps of APEGNB's truth and reconciliation journey. It gave me the opportunity to learn about Indigenous culture in the province. I had the opportunity to reach out and visit some of the schools we are working with and have a chat with them about their programs and how we could work together moving forward.

As a female STEM student myself, I was very excited to work on this project to encourage and support the youth, especially women, that pursuing a career in STEM, a traditionally male dominated field, is not as hard and scary as it sounds.



Working at APEGNB was a very good experience and one I would highly recommend! I have learned so much about the road I am about to take as I reach the midpoint of my degree and soon be on my path to licensure. Working at APEGNB has also given me the opportunity to gain connections and share what I know as a student in today's times, and in return, I get to learn a lot from, and about, the professionals and the professional world I am about to enter.

Welcome!

Christine Wilkins, P.Eng.

Director of Professional Affairs, APEGNB

APEGNB wants to extend warmest welcome to Ms. Christine Wilkins, P.Eng.

Christine was born and raised in New Brunswick and is a graduate of UNB Chemical Engineering. Christine started her career in process engineering for the pulp and paper industry before transitioning to consulting services in the water and wastewater industry. She is an advocate and ally of mental health initiatives in the community, is a founding member of *Doula's of New Brunswick*, and in her free time can be found supporting new mothers and families during their newborn transition period. In her spare time, she enjoys volunteering with Hanwell Sports where she coaches soccer for the U4s.

She is also known as "mama" to two healthy (and active!) young boys who keep her negotiation skills sharp and taught her that the key to success is adaptability!

You can connect with Christine at christine@apegnb.com.





Bliss Carman Middle School, Fredericton N.B.

Bliss Carman Middle School Wins Prestigious 2022 ENERGY STAR® Canada Award

Natural Resources Canada (NRCan) selected Bliss Carman Middle School to receive the prestigious 2022 ENERGY STAR® Canada Award for being the highest ENERGY STAR Certified K-12 school in Canada in 2021

Natural Resources Canada (NRCan), the federal department which oversees ENERGY STAR certification for buildings and consumer products, as well as its namesake awards program, awarded Bliss Carman Middle School the 2022 winner in the "Building of the Year – School" category.

The ENERGY STAR Canada Awards recognize businesses and organizations that have made outstanding contributions to protecting the environment through superior energy achievements in Canada. The award originated from NRCan's ENERGY STAR® Portfolio Manager® software. The software is free, web based, and allows for energy benchmarking of the schools. It has proven to be a valuable tool to establish energy metrics (such as the ENERGY STAR Score) and to share these with schools to showcase the results of their day-to-day efforts.

This year was the first time NRCan separated schools into their own award category, and Bliss Carman Middle School had the unique honour and distinction of being the inaugural winner. "Having the real work of energy savings be recognized by this award is a proud achievement and demonstrates the school district's commitment to energy management in our buildings," says Shawn Tracey, Anglophone West School District's Director of Finance and Administration and a key leader in the district's sustainability efforts. "This award also sets a good example to the students that their school's impact on the environment matters."

By saving energy, in 2021, the school reduced greenhouse gas emissions (GHG) by 163 metric tonnes compared to the national median, equivalent to 50 cars less on the road. Tim Cross, Energy Manager with Service New Brunswick attributes the school's success to teamwork. "From the government who designed the school and provided the framework for an energy-efficient building to the school district, students and staff who proudly take care of it, everyone is working together to make a difference," Cross explained.

Equipped with heat recovery systems and state-of-the-art building management controls, Bliss Carman Middle School was built in 2009 with energy efficiency in mind. In 2018, the school district's facilities team shifted to incorporating energy management as part of their day-to-day operations, and with the help of the school's custodians, staff and students, they have been able to uphold their commitment to efficiency.

"Benchmarking energy consumption, setting improvement objectives, and monitoring has led to optimizing operations, implementing energy-efficient upgrades, and making smart choices like turning off lights and electronics when not in use have made this award-winning school a shining example of how energy management works," Cross said.

Anglophone West School District recently adopted an energy management policy and continues to work on reducing energy consumption district-wide. So far, it has one other ENERGY STAR Certified school in its midst and is working on getting more schools on board in the coming years.

Service New Brunswick (SNB) is responsible for the implementation and ongoing management of ENERGY STAR Portfolio Manager for all Government owned facilities including schools and hospitals. Compiling energy information in this tool also allows for GHG emission reporting, a mandate under New Brunswick's 2016 Climate Change Action Plan. Over 800 buildings are monitored including Horizon's Saint John Regional Hospital, which was recognized as the 2022 "Building of the Year – Hospital" category.

SNB's collaboration with schools, hospitals and other government departments brings people, technology and information together to use energy efficiently and supports the province in achieving its GHG reduction targets and mandate to transition to a low carbon economy.

Congratulations!



Manon Roy-Richardson
École Camille-Vautour
Saint-Antoine



Krista McGinn
St. Stephen Middle School
St. Stephen



Tracie McFee
Magnetic Hill School
Moncton



Greg Chambers
Kennebecasis Valley High School
Quispamsis



Amy Barrieau
Max Aitken Academy
Miramichi

APEGNB RECOGNIZES OUTSTANDING STEM EDUCATORS

APEGNB



STEM
TEACHER AWARD

We would like to recognize a few of these remarkable middle and high school teachers who have influenced the lives of New Brunswick's students and made STEM learning fun!

After a hiatus in the awards APEGNB has officially renewed their efforts to recognize these amazing educators. In 2022, five awards were given out to some very deserving New Brunswick teachers. Congratulations to all!

Six awards are available each year to educators in grades 6-12. Each recipient receives a commemorative plaque as well as \$2,000 to be used at their discretion for professional development, school equipment, resource materials, website development, teaching aids, or other tools to improve teaching and student learning.

For more information visit: www.apegnb.com/stemawards



WHAT IS A LIMITED LICENSE?

Maggie Stothart, P.Eng., FEC, and Chair of the Limited License Task Forces explains

A limited license is designed for an individual with the necessary skills, education, and experience to independently practice certain engineering or geoscience tasks within a clearly-defined and narrow scope that would be regulated by APEGNB.

Limited licenses present an opportunity to recognize those who have achieved a level of expertise and could be trusted to safely carry out specific engineering or geoscience work in a carefully limited scope.

This is not the first time APEGNB has explored this possibility. Previous iterations of a limited license were rejected by registrants in the past. In those instances, the full breadth of a concept of a limited license wasn't as well known or common. However, since then, Canada has seen the widespread adoption of similar limited licenses in jurisdictions comparable to the limited license being proposed by APEGNB.

In light of that, in the spring of 2021, APEGNB Council approved an independent study to thoroughly assess the landscape in New Brunswick versus the other regulatory bodies to see if there was a strong case to proceed with a more in-depth proposal to the membership. This proposal process would be deliberately transparent to registrants and stakeholders and would allow time and consideration to all registrants. The study revealed there were reasonable grounds to bring this concept forward once again and from there, the APEGNB Council struck a Task Force in December of 2021.

The Limited Licensure Task Force (LLTF) is comprised of volunteer members to consult with the greater APEGNB membership and stakeholders and design a proposal that would be deemed acceptable to members. The seven task force members are: Maggie Stothart, P.Eng., FEC (Chair), Shawn Amberman, P.Eng., Guida Bendrich, P.Eng., Tom MacNeil, P.Eng., Errol Persaud, P.Eng., Brent Smith, P.Eng. FEC, and Brian Sorensen, P.Eng.

While the LLTF is still working out details with its key stakeholders, what we do know is that allowing APEGNB to introduce a limited license is the best way to keep a very clear distinction between Professional Engineers / Geoscientists and those who apply for a limited license.

Those who earn a limited license must be specialists within that very specific area of practice and would be regulated accordingly by APEGNB. Other key takeaways are:

- Limited licensees will not be able to refer to themselves as professional engineers.
- Limited license applicants will require increased experience (between five and eight years of related experience) and relevant education (in most cases, a relevant degree or diploma) to apply.
- Limited license holders will be required to complete CPD and report annually before the license is renewed.

The final proposal will be further refined based on feedback that the LLTF continues to receive from members and other stakeholders and will eventually be presented to the APEGNB Council for approval. If approved, the ratification of the necessary by-law amendments will be put on a future AGM agenda. It is important to note that these changes do not require amendments to provincial legislation.

This proposal follows the best practices established by several jurisdictions, including Engineers Geoscientists Manitoba, Engineers Nova Scotia and Engineers and Geoscientists BC. It is designed to improve transferability between jurisdictions. Ultimately, the overarching motivation behind a APEGNB limited license is to serve the public interest - which APEGNB is mandated by law to do.

Please ensure that you watch for further communication about this topic from APEGNB as we continue to move through this consultation process. I would encourage you that if you have any questions to send them to questions@apegnb.com or feel free to reach out directly to myself or any of my fellow Task Force members for further information.



FUNDING FOR INFRASTRUCTURE PROJECTS IN PROVINCE'S NORTHWEST

21 JULY 2022 | ENVIRONMENT AND LOCAL GOVERNMENT

CAMPBELLTON (GNB) – Ten projects in northwestern New Brunswick valued at more than \$1.6 million were announced today by the provincial and federal governments.

“The benefits of the Canada Community-Building Fund can be seen all over the province,” said Miramichi Bay-Neguac MLA Réjean Savoie. “Infrastructure projects such as the ones we are announcing today not only help the economy through job creation and increasing tourism, but they ensure many generations of New Brunswickers and visitors to our province can enjoy these areas.”

Savoie attended for Local Government and Local Governance Reform Minister Daniel Allain.

“Regardless of the weather or the season, residents of northwestern New Brunswick love to be outdoors,” said Madawaska-Restigouche MP René Arseneault. “Our region has some of the best fishing, mountain biking, hiking and skiing New Brunswick has to offer – and that is what we are investing in today. These upgrades will have immediate and lasting impacts on the quality of life in our corner of New Brunswick.”

Approved projects range in size and cost. Sugarloaf Provincial Park will receive more than \$196,000 to upgrade snow-making equipment and to replace the rope tow with a conveyor belt system. The Northwest Regional Service Commission will get more than \$194,000 to install a water drainage system to generate renewable energy. The Campbellton Curling Club will receive \$93,000 for ice plant equipment upgrades. Nearly \$334,000 will be spent on upgrading the Aroostook River Trail Bridge.

A list of all funded projects is available online.

The program, formerly known as the Gas Tax Fund, is a permanent source of federal funding for infrastructure investments. While 80 per cent of the funding is allocated to local governments, 20 per cent is available for projects benefiting the residents of local service districts.

The Department of Environment and Local Government conducted stakeholder engagement sessions to help determine infrastructure priorities for local service districts. While applications for projects were accepted under all 19 categories, preference was given to the following types of applications:

- improvements to existing infrastructure;
- low-cost recreation, sport, culture and tourism projects with regional benefits;
- projects that meet provincial priorities, such as energizing the private sector, creating vibrant and sustainable communities, and the environment;
- projects receiving additional financial support such as from donations, fundraising efforts, local tax contributions, or other funding programs; and
- projects benefiting multiple stakeholders.

Regional service commissions, water and wastewater commissions, community groups and other organizations offering services that benefit unincorporated areas were invited to apply for funding. More information on the Canada Community-Building Fund is available online.

There is about \$55 million available for New Brunswick's unincorporated areas. Projects must be completed by March 31, 2024.

DOMINION PARK UPGRADES AIM TO ATTRACT MORE VISITORS TO SAINT JOHN REGION

4 AUGUST 2022 | REGIONAL DEVELOPMENT COOPERATION

SAINT JOHN (GNB) – Funding from three levels of government will support the first phase of a revitalization plan for Dominion Park in Saint John.

These improvements will be carried out at the park's beach, along the Saint John River.

“Dominion Park has been a longtime favourite recreation destination for residents,” said Social Development Minister Dorothy Shephard. “The investment in upgrades we are announcing today will help the city take advantage of the tourism development opportunity the park presents, support the businesses that have invested here, and ultimately attract more locals and visitors to the park.”

Shephard spoke on behalf of Environment and Climate Change Minister Gary Crossman, who is also the minister responsible for the Regional Development Corporation.

Phase 1 of the three-phase plan includes construction of a flood-resistant structure with washrooms, staff facilities and a canteen; landscaping upgrades; change rooms; and a plaza to provide better accessibility to the beach.

“Over the last two years, tourism operators have shown tremendous resilience and determination to remain open by adapting their operations and creating new and innovative experiences to attract visitors,” said Saint John-Rothesay MP Wayne Long. “This investment will help Dominion Park, a place I spent a lot of time at as a youth, become an attractive destination and keep drawing visitors to the Saint John area, providing economic benefits throughout the region.”

Long attended for federal Official Languages Minister Ginette Petitpas Taylor, who is also minister responsible for the Atlantic Canada Opportunities Agency.

The provincial and federal governments are each providing \$185,000 while the City of Saint John has committed about \$1.1 million through its 2022 capital budget program, which includes funding from Infrastructure Canada through the Canada-Community Building Fund. “Saint John is a city that is growing in population, and loved for our abundance of nature, water and welcoming communities,” said Saint John Mayor Donna Reardon. “We are perfectly positioned along the beautiful Bay of Fundy and incredible Saint John River water system. Our partnership to revitalize Dominion Park Beach speaks to the commitment we all share to invest in our natural assets and ensure an enjoyable quality of life for everyone in Saint John. Today's announcement represents a first for our city, with our combined federal, provincial, municipal, corporate and community contributions representing the largest investment ever made to Dominion Park.”



FUNDING FOR INFRASTRUCTURE PROJECTS IN NORTHEASTERN NEW BRUNSWICK

29 AUGUST 2022 | ENVIRONMENT AND LOCAL GOVERNMENT

PAQUETVILLE (GNB) – Seventeen projects in northeastern New Brunswick valued at \$4.82 million were announced today by the provincial and federal governments.

“Infrastructure projects are important to all New Brunswickers, regardless of where you live,” said Miramichi Bay-Neguac MLA Réjean Savoie. “We are keeping residents safe by supporting fire department expansion and modernization efforts, and we are helping people remain active by ensuring trail systems and recreational facilities are first class.”

Savoie attended for Local Government and Local Governance Reform Minister Daniel Allain.

“Investments in recreational, community and cultural infrastructure are investments in strong and connected communities,” said Acadie-Bathurst MP Serge Cormier. “These 17 projects will continue to develop our landmark attractions, upgrade our infrastructure and strengthen our communities. These investments will make a meaningful, lasting difference for families and businesses across the northeast region.”

Cormier attended for federal Intergovernmental Affairs, Infrastructure and Communities Minister Dominic LeBlanc.

Approved projects range in size and cost. The Tabusintac Regional Golf Club is getting almost \$495,000 to build a multi-purpose, energy-efficient clubhouse. The Miscou fire department is receiving about \$402,000 to expand the fire hall and create a new bay and training area. The Pointe-Sapin community centre is getting more than \$184,000 to replace siding on the facility and install a new steel roof. The Scottish Heritage Society is receiving about \$167,000 to make upgrades to Wilson’s Point Historic Site in Derby Junction.

A list of all funded projects is available online.

The Canada Community-Building Fund is a permanent source of federal funding for infrastructure investments. While 80 per cent of the funding is allocated to local governments, 20 per cent is available for projects benefiting the residents of local service districts.

The Department of Environment and Local Government conducted stakeholder engagement sessions to help determine infrastructure priorities for local service districts. While applications for projects were accepted under all 19 categories, preference was given to the following types of applications:

- improvements to existing infrastructure;
- low-cost recreation, sport, culture and tourism projects with regional benefits;
- projects that meet provincial priorities, such as energizing the private sector, creating vibrant and sustainable communities, and the environment;
- projects receiving additional financial support such as from donations, fundraising efforts, local tax contributions, or other funding programs; and
- projects benefiting multiple stakeholders.

Regional service commissions, water and wastewater commissions, community groups and other organizations offering services that benefit unincorporated areas were invited to apply for funding. More information on the Canada Community-Building Fund is available online.

There is about \$55 million available for New Brunswick’s unincorporated areas. Projects must be completed by March 31, 2024.

MONCTON RECEIVES A COMBINED \$22 MILLION FOR INFRASTRUCTURE UPGRADES

23 AUGUST 2022 | REGIONAL DEVELOPMENT CORPORATION

MONCTON (GNB) – Provincial, federal, and municipal officials today announced a combined \$22 million investment in infrastructure upgrades for Moncton.

The bulk of the money, \$21 million, is for the underground infrastructure of Moncton’s downtown core.

The remaining \$1 million is for a ventilation project at Forest Glen School that also includes upgrades to the building automation systems to improve energy efficiency.

“We are experiencing unprecedented growth in the Greater Moncton area,” said Moncton-South MLA Greg Turner. “These downtown upgrades will ensure we have reliable water and wastewater infrastructure that will support this growth and at the same time, mitigate the risks associated with climate change.”

Turner attended the announcement for Environment and Climate Change Minister Gary Crossman, who is also minister responsible for the Regional Development Corporation.

The downtown project involves the installation of a dedicated storm sewer system to provide sewer separation on Lutz, Robinson, and Westmorland streets. The streets will be fully reconstructed following the renewal of the underground infrastructure. The existing aerial lines, including communication and electricity, will be relocated underground which will improve reliability during ice storms.

“Investments in infrastructure are investments in strong and sustainable communities,” said federal Official Languages Minister Ginette Petitpas Taylor. “The upgrades to downtown Moncton wastewater systems and improvements to the ventilation system at Forest Glen School support a healthier community. These projects are important to helping local economies grow and communities thrive.”

Petitpas Taylor spoke on behalf of federal Intergovernmental Affairs, Infrastructure and Communities Minister Dominic LeBlanc.

The provincial government is investing \$7 million in the downtown project while the federal government is providing \$8.4 million, and the City of Moncton is contributing \$5.6 million.

“We have been working diligently to plan for continued growth within our downtown,” said deputy mayor Bryan Butler. “Having the proper infrastructure in place will allow us to push forward and further densify this part of the city. We thank both the federal and provincial governments for their continued support on projects that may not always be highly visible, but which play a crucial role in our city’s future.”



PROFESSIONAL GOVERNANCE ACT AMENDED

Posted on July 6, 2022 | Engineers and Geoscientists BC (EGBC)

On June 2, proposed amendments to the Professional Governance Act (PGA) were approved by the BC Legislature. The PGA governs Engineers and Geoscientists BC and several other regulators in the natural and built environment.

The changes are intended to improve oversight of the professions and draw from recommendations made in recent reviews of professional governance models in the health and legal professions.

This includes:

- the ability for regulatory bodies to address non-compliance with administrative requirements (e.g., information reporting) outside of complex and lengthy investigations;
- an updated definition of “firms” that clarifies regulated firms include those where the regulated practice is carried out for internal purposes;
- updated terminology to reinforce the regulatory role of organizations under this legislation, including changing the name “Council” to “Board” and “President” to “Chair”;
- ensuring that the Act does not affect Indigenous traditional knowledge or practices by clarifying that a person exercising the rights of an Indigenous people is not subject to the prohibition regarding reserved practice; and
- updates to declaration requirements based on feedback that the previously proposed requirement for registrants to submit declarations every time they were engaged to provide services was overly burdensome. The amendments will now require a regulation to be made for more specific instances where declarations add value.

The changes also allow more professions to be brought under the legislation in the future, including the Architectural Institute of BC, which will be brought under the PGA later this year.

The amendments also enable the creation of an annual fee paid by regulatory bodies to offset a small percentage of the budget of the Office of the Superintendent of Professional Governance (OSPG). Additional work is required by the OSPG to determine whether this authority will be used, and on what basis; the OSPG has committed to continued consultation with regulatory bodies on any potential funding models in advance of a new regulation being introduced.

Engineers and Geoscientists BC is now working to interpret and reflect these changes in its Bylaws and will continue to inform registrants as these changes come into force.

PEO CELEBRATES CENTENNIAL MILESTONE AMIDST MODERNIZATION EFFORTS TO ADVANCE ITS PUBLIC INTEREST MANDATE

Posted on June 14 2022 | Professional Engineers Ontario (PEO)

Toronto – Today (June 14, 2022), Professional Engineers Ontario (PEO) celebrates a century of serving the public interest through regulation of the practice of engineering in the province.

“This is a proud moment for PEO,” said President Nick Colucci, P.Eng., FEC. “As we pause to reflect on this wonderful accomplishment, we recognize the need to continuously evolve as a regulator to ensure we effectively fulfil our legislative mandate for the next 100 years.”

To this end, PEO has initiated major transformation initiatives to become a more modern, enlightened and responsive regulator. Work began in 2018 with an independent review of PEO’s regulatory performance, which has subsequently led to several noteworthy achievements, including:

- A high-level action plan to address the recommendations from the review;
- A two-year Governance Roadmap to enhance governance effectiveness;
- The introduction of the digital National Professional Practice Exam as part of the licensing process, allowing for a flexibly written, psychometrically sound examination of licence applicants;
- An anti-racism and anti-discrimination review that addressed any concerns of PEO as a regulator, employer and organization and the subsequent adoption of the Anti-Discrimination and Equity Code that codifies PEO’s fairness, human rights and public interest obligations;
- A gender audit of PEO’s licensing process and internal operations; and
- The implementation in January 2023 of a mandatory continuing professional development program for all PEO licence holders.

“We are unwavering in our commitment to enhancing all our public protection activities including our licensing, complaints and discipline processes, establishing performance guidelines and standards, and taking action against unlicensed individuals who illegally describe themselves as engineers,” added Colucci.

“PEO’s regulatory mandate helps to make Ontario a better, safer place in which to live, and I look forward to continuing the transformative path we’ve embarked on as we begin our next century.”

ENGINEERS CANADA WINS TRADEMARK DECISION*Posted on July 28, 2022 | Engineers Canada*

In June, the Trademarks Opposition Board ruled in favour of Engineers Canada's opposition to an application that would have seen the term 'engineering' used inaccurately. The decision held that the proposed trademark, "Engineering tomorrow. Together", by ThyssenKrupp AG risked misleading consumers, creating public confusion, and misrepresenting the ENGINEERING mark.

ThyssenKrupp AG, a company based in Germany, sought to register the mark in Canada in respect of a long list of their services, including personnel management consultancy services and financial asset management services.

The Hearing Officer focused on Engineers Canada's assertion that the mark would be deceptively misdescriptive because ThyssenKrupp AG is not licensed to practice engineering in Canada nor are any Canadian engineering professionals involved in the provision of the services. This would mislead consumers.

Further, many services fall within categories which can involve engineers and engineering. In fact, for many of the services listed in the application (e.g. "building construction", "providing computer training", "architecture; town planning; structural engineering; mining engineering"), the connection to engineering is either express or readily apparent. For other services, there was sufficient evidence to at least meet the initial evidential burden of showing that the applicant's services are ones that a consumer may expect to involve engineers or engineering.

The Hearing Officer also determined that the word "engineering" so dominates the mark as a whole that it renders it deceptively misdescriptive. "Engineering" is the first word of the mark and focal point of the mark and without it the remainder of the mark would make little sense.

The decision is an important win in Engineers Canada's ongoing work to preserve and protect the engineering brand in Canada and to avoid circumstances where the public may be misled by third parties inappropriately using these trademarked terms.

On behalf of the provincial engineering regulators, Engineers Canada holds and administers a portfolio of more than 40 intellectual properties that include official marks, registered trademarks, and registered certification marks. To ensure these trademarks are adequately used and protected, Engineers Canada monitors trademark applications and investigates companies and individuals for legitimacy of the work they do and who they employ.

Engineering is a trusted profession and one that the public relies on for their safety. The oversight of the engineering brand and official marks by Engineers Canada helps to avoid circumstances where the public may be misled by third parties. This case is an example of Engineers Canada exerting ownership of these marks to maintain the trust and integrity of the public in the engineering profession.

British Columbia Geoscientist, Dr. C.D. ('Lyn') Anglin, Ph.D., P.Geo, FGC, receives 2022 Canadian Professional Geoscientist Award*Posted on July 7, 2022 | Geoscientists Canada*

Geoscientists Canada is pleased to announce the recipient of the 2022 Canadian Professional Geoscientist Award – Dr. C.D. ('Lyn') Anglin, Ph.D., P.Geo, FGC, of Vancouver, BC

The Canadian Professional Geoscientist Award recognizes the achievements of an individual who has made an outstanding contribution to the development and practice of professional geoscience and who has advanced public recognition of the profession in Canada in their capacity as a registered professional geoscientist. The award, which consists of a labradorite and marble sculpture made by a Canadian geoscientist artist, is given to a person in mid-to-late career.

To be eligible for the award, a nominee must meet specified criteria, which include: a solid career as a professional geoscientist, an outstanding record of voluntary service to the community, and service to Geoscientists Canada or to one of the provincial or territorial professional associations that regulate geoscience practise in Canada.

This year's recipient of Geoscientists Canada's highest honour, Dr. 'Lyn' Anglin has exhibited selfless dedication to the profession of geoscience and has made significant and long-standing contributions to the mineral exploration industry, the wider earth sciences community, Engineers and Geoscientists BC (EGBC), and the people of British Columbia. Her expertise is well respected across the industry and at all levels of government. Her leadership and dedication to the profession are consistently recognized, including being named one of the "100 Global Influential Women in Mining" by the UK's Women in Mining Group. She is uniquely adept as a communicator and is a devoted steward of the geoscience profession and the ways in which the profession can support responsible resource development for the benefit of local economies. She is committed to the advancement of women in Earth science and is passionate about engaging the public, particularly First Nations communities, on the role of geoscience in the well-being of all Canadians.

Dr. Anglin holds a Ph.D. (1992) in Geology from Carleton University, Ottawa, a M.Sc. in Earth Science (Geology) (1987) from Memorial University of Newfoundland and Labrador, and a B.Sc. (1982) from Queen's University Kingston, Ontario. She is a registered professional geoscientist with Engineers and Geoscientists British Columbia (EGBC).

Dr. Anglin is a well-respected member of numerous professional committees, task forces, and commissions, where she has served the profession locally, provincially, nationally, and internationally. She also served as a Director on the Board of Geoscientists Canada as the EGBC representative. Dr. Anglin is also a member of the Board of Women In Mining BC, the Board of the Society of Economic Geologists Foundation, and is a member of Genome BC's Extractive Resource Industries Advisory Committee.

Announcing the 2022 Canadian Professional Geoscientist Award recipient, the President of Geoscientists Canada, Yuri Kinakin, P.Geo., commented: "Dr. Anglin has been involved in a wide range of complex geoscience issues throughout her career and has made significant contributions to the profession of geoscience through her volunteer service and leadership. Of particular note has been her extensive and interdisciplinary efforts on remediation and recovery at Mount Polley. She exemplifies the qualities identified for recipients of the Canadian Professional Geoscientist Award. Congratulations, 'Lyn.'"

ENGINEERING REGULATORS REITERATE LICENSURE REQUIREMENTS FOR THOSE USING “SOFTWARE ENGINEER” AND OTHER IT TITLES

POSTED ON AUGUST 25, 2022 | ENGINEERS CANADA

Engineers Canada and the 12 engineering regulators across Canada have co-signed a statement reiterating that the use of titles such as “software engineer”, “computer engineer”, and similar titles that prefix “engineer” within IT-related disciplines and practices are restricted to those who are licensed as an engineer.

“As the development of software and computer technology grows exponentially, it is more important than ever that the public know whether the people creating those technologies have the skills, expertise, and obligations of an engineer,” says Gerard McDonald, MBA, P.Eng., ICD.D, Chief Executive Officer of Engineers Canada. “The title ‘engineer’ is a protected term and can only be used by individuals licensed by one of Canada’s engineering regulators.”

The practice of engineering refers to activities that require the application of engineering principles and concern the safeguarding of life, health, property, economic interests, the public welfare or the environment. The regulation of the practice of engineering holds individuals accountable for the work they do and ensures that engineers provide services in a safe, ethical, and professional manner for public safety. Inaccurate uses of the protected title “engineer” can be misinterpreted and may mislead the public.

“In Canada, the title of ‘engineer’ is protected and for good reason. As a society, we do not allow someone to call themselves a medical doctor if they are not licensed to practice medicine,” says Jay Nagendran P.Eng., FCAE, ICD.D, FEC, FGC (Hon.) Registrar & CEO & Registrar of the Association of Professional Engineers and Geoscientists of Alberta. “In this same way, we do not risk the public’s safety by allowing people to claim they are engineers if they are not licensed. The public trusts engineers and holds them in high esteem, which is why we, as the engineering regulators, must protect the title.”

The joint statement demonstrates the commitment of all engineering regulators to use their communication and enforcement abilities to ensure individuals do not misrepresent themselves as engineers. At its core, the statement is a demonstration of the unity of all engineering regulators in Canada on ensuring the title engineer is used appropriately and in service of their public protection mandates.

When regulators learn of an improper use of the engineering title they will approach the individual or company to inform them of the prohibited use. Fines or other enforcement measures may be used.



Council Nominations are now open!

ARE YOU INTERESTED IN BECOMING INVOLVED WITH APEGNB? NOW IS THE TIME TO CONSIDER PUTTING YOUR NAME FORWARD.

Council nominations are currently open for four positions:

- Northeast
- Saint John
- Vice-president
- At-Large (1)

Information and Terms of Reference are posted on the APEGNB website or you may contact

Lia Daborn, CEO, APEGNB at lia@apegnb.com.

www.apegnb.com



Ray taking his first ride in his recumbent bike. *Photo submitted*

SEA, AIR AND LAND: A RETIREMENT ADVENTURE

SUBMITTED BY RAY ST-LAURENT, P.ENG.

Ray is a retired mechanical engineer who spends his days dreaming of new goals and milestones to complete and imagining his next big adventure.

When retirement struck, I had just completed building a carbon composite aircraft. My goal for it was to visit (and land in) all provinces in Canada.

As a safety feature on the aircraft, there was a satellite tracker/communicator that allowed for live viewing by browser. The device also allowed two way texting, which was useful for in-air plan changes or if I ever needed to communicate with a rescue crew.

In 2013, I reached that goal, however I felt I needed more goals to complete. By 2017 I had visited all the continental US states, Bahamas, and France (actually Saint-Pierre, off Newfoundland). Sadly, those adventures were cut short when a freak engine failure turned my plane into a glider, then rubble after landing in rough terrain in northern Ontario.

However, I was already considering projects in other modes of transportation. Sit-in kayaks had always intrigued me, but I wanted it to be easily transportable and be able to carry it inside my car. Online, I discovered a design that I could modify to fit in the trunk my old Tercel. The kayak is fabricated of an aluminum tube skeleton with four inflatable sponsons, all enclosed by a polyester reinforced vinyl skin. I just had to learn how to bond the vinyl using glue and heat and pressure.

After folding the boat into three sections, including a two-piece paddle, it fit easily in the trunk. That kayak performed so well I built another for my wife - they both fit in the car!

As for my on-land invention, it was inspired by my wife who regularly cycled. It had been decades since I was on a bicycle

and when I did go, I always experienced lower back pain. Recumbent bicycles, with their laid-back seating, claimed to not have this problem and their reduced drag also appealed to my engineering sensibilities. Once again, I took to the internet and found plans to build a practical bike that would suit my needs. This project allowed me to broaden my knowledge and the reconstruction would require me learn how to do arc weld, which was something I always wanted to learn how to do.

Living just outside Fredericton, to reach the cycling trails required a descending ride down a substantial hill. The 10% grade return climb up however, was another matter. This time around, my performance goals for the bike, and myself, was to be able to climb that grade.

After falling within one second of my first attempt to ride, I learned you cannot use weight shifting on the pedals when trying to balance at low speeds. Uphill starts were especially difficult and dangerous in traffic.

I felt this needed an electric assist so I added a throttle controlled front wheel. Now, with an all-wheel drive hybrid (pedal at the back and on-demand electric at the front) it allows for a safe start regardless of the grade. And a bonus is that there is zero back pain!

At this point in my retirement and my never-ending quest for adventure I wondered if technology had advanced sufficiently to be worthwhile to attempt building an electric aircraft. The idea of building an electric plane was new and exciting for me.

The Earthstar eGull seemed the most promising design. It is an ultralight aircraft powered by a modified powertrain repurposed from a Zero electric motorcycle. I picked up the aircraft kit in Wisconsin, loaded it on top of the roof of my car, which extended beyond both ends of the car, and drove back to New Brunswick.



Aircraft kit on roof of his vehicle. *Photo submitted*



After the first landing. *Photo submitted*

The plane is constructed of a steel tubing skeleton, fibreglass shell, aluminum, with polyester reinforced urethane fabric skin on the wing and tail surfaces. Having painted a plane before with mediocre results, it was a no-brainer to use the vinyl wrap instead. This was much easier to work with and gave off no toxic fumes.

The plane took one year to build until its first flight, however, the powertrain took another two and a half years of tweaking and testing to reach a stage where I could trust it to complete a flight without the motor threatening to stop, and to be able to recharge without incident.

One of my goals with this aircraft was to fly from my base near Fredericton to Woodstock airport and back without recharging. I ended up using 80% of my battery power to get to Woodstock. I had to stop there to recharge and the trip home only used 40% of that charge.

I am still working through my goals as it relates to my electric plane. Some of the benefits I see of electric flight is the cost of flying, no "stink" of traditional fuel, and less noise and vibration as opposed to a gasoline engine. While the plane still does make noise, it comes from the propeller cutting through the air, not from the engine.

I believe it is the only electric plane in the area. There are always more goals to be met and adventures around the corner.

I am not slowing down yet!

A man and a woman are looking at a small robot on a table. The man is on the left, wearing a light blue hoodie, and the woman is on the right, wearing a light blue plaid shirt. They are both smiling and looking at the robot. The background is a blurred indoor setting.

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AMBITIOUS CLIMATE TARGETS NEED BOLD ENERGY INNOVATION

COMMENTARY: Michelle Robichaud, President, Atlantica Centre for Energy



With the ingenuity and innovation continually demonstrated in Atlantic Canada, and our urgent need for solutions, can we lead the way in forging a clean future?

It seems we don't hear the word energy without climate change alongside it. In the face of the unmistakable consequences of climate change, society expects actions toward our clean energy future.

Canada's goal of reaching net-zero emissions by 2050 is ambitious and important. There are less than eight years to reach the 2030 greenhouse gas reduction target of cutting emissions by 40 to 45 per cent below the 2005 benchmark. As of 2021, the average emissions reduction among the provinces was only nine per cent.

Atlantic Canada is leading the way; Nova Scotia and New Brunswick have both already reduced their total emissions by 36 and 37 percent (2020). Significant additional reduction in GHG emissions will come from closing nine fossil fuel generating facilities on the electricity grid by 2030. With no currently available non-emitting baseload electricity alternative, it presents quite a difficult challenge.

Some might think this power can be replaced with wind and solar. However, it's not possible to just shut down baseload generating electricity plants in a northern climate with the energy storage technology capabilities available today (i.e., batteries).

In addition to replacing baseload power, the demand for clean electricity will grow as our population does, as we transition more homes and businesses of off fossil fuels for heating, and as we electrify more vehicles.

This is the area that will rely heavily on industry innovation; Maritime utilities simply do not have the clean electricity

generation capacity to meet the peak demand let alone the additional pressure of increasing electrification. Simply put, we need to produce more clean electricity.

Canada's 2030 Emission Reduction Plan: Canada's Next Steps to Clean Air and Strong Economy states:

"...continued and enhanced support for the deployment of commercially ready renewable energy technologies will support grid decarbonization in the near term. Looking out to 2050, investments in emerging technologies such as geothermal, tidal, SMRs, carbon capture and storage, and electricity storage will allow Canada to be a world leader in these new technologies."

With the ingenuity and innovation continually demonstrated in Atlantic Canada, and our urgent need for solutions, can we lead the way in forging a clean future?

One innovation happening in the region is the development of next generation nuclear reactors, called advanced Small Modular Reactors (aSMR). This is a strategic opportunity for the region, where New Brunswick in particular, can be a global leader.

These aSMRs can be a convenient form of non-emitting generation, which takes advantage of New Brunswick's nuclear expertise and can become an economic driver as a regional supply chain is developed.

Another exciting energy concept is hydrogen. The Atlantic Hydrogen Alliance is working to support hydrogen innovation and promote opportunities associate with this clean fuel. Hydrogen is expected to have major implications for energy storage, heating, transportation fuels (especially for long haul marine and road transportation), and oil refining.

Although hydrogen is a “clean” fuel with water being the only by product, the process of creating hydrogen may not be. Most hydrogen today is produced from fossil fuels such as natural gas. Without capturing the emissions, it defeats the purpose of burning clean hydrogen as fuel.

Atlantic Canada is well positioned for wind and tidal and other innovative renewable energy solutions to generate hydrogen. As we consider export potential from the east coast, it may be a very strategic prospect.

And, the region continues to explore innovations in carbon capture, utilization, storage and sequestration (CCUS), biomass, biofuels, synthetic fuels, geothermal and renewable natural gas. There are lots of reasons to be optimistic.

Atlantic Canada is also looking at a potential Atlantic Loop to increase electricity transmission capacity from Québec through New Brunswick and into Nova Scotia, and from Newfoundland and Labrador to Nova Scotia. It is important to recognize that the four Atlantic provinces and Québec are already interconnected and have a long history of trading electricity.

If the Atlantic Loop is our saving grace, the earliest it could be online is somewhere between 2030-2035 with a conservative estimated cost of five billion dollars.

With the first 2030 target looming, industry, governments and utilities must work faster to meet these ambitious goals. This is an incredibly short amount of time for the planning, approval, and construction necessary to complete the associated projects, and some emerging technologies do not yet have a regulatory framework. Plus, there are federal and provincial policies still being developed to help further reduce emissions.

At the Atlantica Centre for Energy, our job is to keep an eye on what’s happening in the world of energy, policy, economics and consumer behaviour. As we piece together all this information, here are some high-level observations.

Industry must continue to innovate. Atlantic Canada can take the world stage by innovating and using its strengths to an advantage.

Industry should consider partnerships. Bringing in expertise from Indigenous communities and being open to investment from the private sector and government provide opportunities to tap into additional funding and support.

Everyone needs to communicate more. Atlantic Canada is small but we have seen opportunities lost from not including government or others in its developments. Provincial and federal agencies are looking for lighthouse projects. These projects frame policies and help speed up the testing of regulations.

Don’t forget to celebrate; don’t keep your “wins” to yourself. Let the world know what you are doing and celebrate milestones publicly. It may also serve to attract talent and spur business growth opportunities that will help get us to Net Zero 2050.

The Atlantica Centre for Energy is Atlantic Canada’s proactive voice for energy. We provide a unique meeting ground for industry, government, the education and research sectors, and the community at large to foster partnerships and proactively engage in energy-related issues. We are dedicated to increasing energy literacy for Atlantic Canadians, while also helping the region realize opportunities associated with the energy sector.



HAVE SOMETHING TO SHARE?

If you have a project update, story or idea of what you would like us to feature in a future issue of *ENGEOActions*, write to us @ LAUREN@APEGNB.COM



Field trip participants with an example of an asbestos ore at the entrance of the Centre Historique de la Mine King.

UNB EARTH SCIENCES: SEG SUMMER 2022 FIELD TRIP TO MONTRÉAL AND QUÉBEC CITY

Submitted by Fazilat Yousefi, Alan Fernando Cardenas Vera and David Richard Lentz

Photos submitted

During the first week of August, two undergraduate and six graduate Earth Sciences and Economic Geology students from the University of New Brunswick attended a field trip planned by the Society of Economic Geologists (SEG) UNB Student Chapter.

The students along with faculty supervisor, Dr. David Lentz, travelled to the Montréal and Québec City vicinities. The trip focused on observing the geology, ore deposits, mineral resources, remediation, and mine closure aspects associated to the currently abandoned St. Lawrence Columbian Metals Corporation Mine, part of the Oka Carbonatite Complex, and with special focus on the Centre Historique de la Mine King, part of the Thetford Mines ophiolitic complex.

The Île Bizard intrusion and associated igneous breccias (diatreme) and the Oka Carbonatite Complex were visited. It was possible to observe a variety of strongly silica-undersaturated rocks intruding the carbonatitic complex, associated with the production of niobium oxide concentrate, also containing rare earths and thorium, from 1961 to 1976.

From Montréal to Québec City, the group visited Thetford Mines (asbestos) to examine the ophiolite outcrops exposing the highly deformed crustal section consisting of dunitic, pyroxenitic, and gabbroic cumulates, crosscut by mafic to ultramafic dikes. The extrusive sequence, although variable, correspond to boninitic lava flows and felsic pyroclastic rocks. The most common mineral type of asbestos found at Thetford Mines is chrysotile, occurring as long and thin white fibers. This visit included the Centre Historique de la Mine King, a site where the group had the possibility to have a closer look at the mining equipment used for the hard work of several generations in the asbestos mining industry, which are part of the historical restored mining buildings. Large deposits of asbestos, also referred as “white gold” were discovered around the 1870s which coincided with a growing marketability for the mineral. This was due to its remarkable characteristics, such as resistance to heat and fire, and excellent thermal, electrical, and acoustic insulation properties.

Since that moment, Thetford Mines and nearby towns became one of the largest asbestos producing regions in the world.

Mining operations started as an open-pit but later transitioned to both open-pit and underground operations. At its peak in the mid 1970s, around 3500 people were directly employed in the mines. However, there were growing concerns as to the health hazards associated with asbestos and increasingly strict regulations caused demand to fall. As such, this resulted in the sequential closure of those mines led to the asbestos mining industry in Canada shutting down completely in 2012.

Considering the approximately 800 million tonnes of asbestos tailings in the area, a new opportunity for extracting magnesium from these tailings arose with an option for remediation, and safely repurposing the tailings. As a result, the region's economy was invigorated through a relatively low-cost production of a highly demanded metal of importance in aluminum alloying, magnesium die-casting, desulfurization of steel, titanium production, and synthesis of special magnesium chemicals. At this time, there is currently a strong interest in using mine tailings for CO2 sequestration (carbon capture & storage), an opportunity under research in many parts of the world, including in the Thetford Mines region.



View at tailings and waste dumps - Thetford Mines area



Restored headframe of the King Mine.

ACKNOWLEDGEMENTS

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#ENGINEERINGLIFE: WHAT THE JAMES WEBB SPACE TELESCOPE MEANS TO ENGINEERS

“This article originally appeared in Engineering Matters, the newsletter of Engineers Canada. It is part of the #EngineeringLife series, presented in partnership with TD Insurance. Read more at engineerscanada.ca/engineeringlife”

The dawn of a new era in engineering, and specifically astronomy, has begun as the world got its first look at images from the James Webb Space Telescope, a partnership between NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA).

“Seeing the vastness of space, pushes the imagination to push things further and to go explore,” said Andrew Gadsden, PhD, P.Eng., Associate Professor in the Department of Mechanical Engineering at McMaster University, Intelligent and Cognitive Engineering (ICE) Lab. “And with modern engineering we can see we have the luxury to explore many places at the same time.”

The CSA has contributed two important elements, built by Honeywell, to the Webb telescope: the Fine Guidance Sensor (FGS), which allows the telescope to point at and focus on objects of interest; and the Near-Infrared Imager and Slitless Spectrograph (NIRISS), a scientific instrument that helps study many astronomical objects, from exoplanets to distant galaxies. In exchange, Canada receives a share of Webb's observation time, making Canadian scientists some of the first to study data collected by the most advanced space telescope ever built. The telescope's first images and spectroscopic data were released during a televised broadcast on Tuesday, July 12, 2022, from NASA's Goddard Space Flight Center in Maryland. It gave an indication of the telescope's immense capabilities for engineering and science overall.

Gadsden said he has always been interested in space and went into engineering to have firsthand influence on that area. Growing up, he had a telescope and would look up at Mars and Jupiter.

“I remember the first time [using the telescope] and it was so inspiring for me,” he said. “Much different than reading about it in a book or online as many do now. And I soon realized engineering is a good way to explore.”

The James Webb Space Telescope

Initial images captured by the Webb telescope included a landscape of ‘mountains’ and ‘valleys’ speckled with glittering stars, which is actually the edge of a nearby, young, star-forming region called NGC 3324 in the Carina Nebula. The images were captured in infrared light by the Webb telescope, revealing for the first time previously invisible areas of star birth.

The Webb telescope is an impressive example of when science meets engineering. The Hubble telescope—primarily designed and built in the 1970s and 1980s and launched in early 1990—inspired millions of people to explore and think about life beyond Earth. Compared with Hubble, Webb has about seven-times more light collecting capability, which means more light correlates to being able to look further back in time. At its final destination, Webb will be deployed 1.5 million kilometres from Earth in a frigid environment at -223 degrees Celsius. It will be able to look back in time to the formation of the first galaxies in the early universe and will provide data for researchers and scientists to explore new theories in cosmology, astrophysics, and astrobiology for decades to come.

“Think about how much data Hubble had for scientists and how that will happen again. Decades of information coming on black holes, exoplanets [planets outside the Solar System] and more because of the infrared, looking through gas clouds and that you've never really seen that way before,” Gadsden said, noting that Hubble offered incredible visual renderings of what our eyes can see, but Webb can look through things that may have blocked visual light.

And, if the amount of information that Webb will send back to Earth were not amazing enough, Gadsden also noted that getting the telescope into space on a rocket was an impressive feat of engineering as well. ”

"The panels used to collect the infrared light were designed to fold up based on origami—quite the engineering and artistic accomplishment," Gadsden explained. "The unfolding process is extremely complex and took about two weeks to complete. When deployed fully, Webb's mirrors look like a honeycomb.

Engineers' reactions

Gadsden is not the only one impressed by the first images that Webb sent back, and by the engineering that went into the telescope's design. Engineers Canada asked engineers across social media for their reactions to the telescope's first images and what it means for the future of space observation and exploration.

"I remain amazed at how we are even capable of creating a device and completing all the steps necessary to place it in a position to return this data and resulting images. So much design, testing and planning to get this right when any significant failure would have been a disaster. Much congratulations to the many engineering, technology, and project management team[s] that made the ensuing discoveries possible," commented Rodney Michalko, P.Eng., CEM, CMVP, on LinkedIn.

Professional engineer Blake M. also commented on LinkedIn, "How could you ever understand the complexities of the universe standing on the ground of the earth. Seeing anything from new perspectives gives new insights. Enabling those visions to become realities is just what we do!"

"How small and insignificant we are, but the fact that we can create these images means that maybe we are not so insignificant. If we are able to put multiple equidistant telescopes at Lagrange points, what sort of resolution will we get of the SagA* black hole when they work together? Amazing to see a galaxy that is only 300 million years old - so close to the Big Bang!," Pemberton Cyrus, Head of the Department of Industrial Engineering at Dalhousie University, added, also on LinkedIn.

Doug George, P.Eng., President/CEO of Diffraction Limited also shared his thoughts, saying, "It's just the beginning. Webb took less than a day to make this image, and it is way deeper than what Hubble could do in weeks. Imagine what we'll get when Webb is able to stare at this field for much longer. Webb and Hubble are complementary observatories; there are things Hubble can do that Webb can't, such as take images in blue and UV, but Webb was designed to image much deeper into the cosmos. We may be able to see the formation of the first galaxies."

Inspiring the next generation

Much like Hubble sparked an interest in space in the 1990s, the Webb telescope will likely do the same for this generation. Gadsden and Margot Bélanger, P.Eng., agreed that this new development in space exploration will definitely inspire students from grade school to university.

With a background in civil engineering, Bélanger is an outreach coordinator for elementary schools, promoting engineering to Grade 8 students, as funded through Engineers and Geoscientists New Brunswick and the Université de Moncton Engineering Faculty. She was the moderator of a live Q&A earlier in 2022 for students participating in Engineers Canada's Future City Experience: Living on the Moon, which challenged students in grades 6 through 8 to design a future city on the moon.

"The awe I see in [students'] faces is incredible. Some of them, their eyes just light up," she said of sharing advances in engineering with the students, including pictures of the Mars rover or details on the International Space Station. "Some of them are really captivated by everything space and those are the students who will typically gear toward space and engineering, and others still will often focus more on research."

Another tool now to engage students is the Webb telescope and what it can and will do in space. It may serve as the spark that intrigues youth about the many paths of engineering that could be their passion and career in the future, Bélanger says.

"Space plays a big part in stirring up students' interest; there are no limits, and they can let their imagination go about anything, including about what we can discover and how it can help us live better on Earth," Bélanger said. "Maybe in the future the James Webb Space Telescope will inspire projects and new discoveries that will inspire students to pursue studies in science and engineering."

Engineering Life is an occasional series that explores the human side of engineering through stories and insights in the lives of engineers. This series is supported by affinity program partner TD Insurance, a trusted partner dedicated to helping engineers and geoscientists get access to preferred insurance rates on car, home, condo and tenant coverage.





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