

ReNew

July/August 2019

C A N A D A

The Infrastructure Magazine

- + Construction and Carbon
- + Smart about Stormwater
- + One on One with Monte McNaughton

A FUEL OF THE PAST

Building Nunavut's New Energy Future





© Infrastructure Canada.

BOLD DESIGNS

HOCHTIEF PPP Solutions North America and its sister company **Flatiron Construction** are proud to be delivering the **New Champlain Bridge Corridor Project** in Montreal, one of the largest infrastructure projects in North America. This signature project includes an iconic 3.4-kilometre cable-stayed bridge across the St. Lawrence River. The new Champlain Bridge provides additional capacity and increased safety on one of the busiest bridges in Canada.

HOCHTIEF provides equity for the development, investment and long-term asset management of public-private partnership projects. Flatiron operates across Canada and the U.S. and builds roads, bridges, rail, airports, dams, industrial, water and underground projects from common to complex, large-scale jobs. Globally, HOCHTIEF and its affiliates have successfully delivered more than 55 P3s and are currently responsible for 12 transport infrastructure long-term concessions.

www.hochtief-pppsolutions.com | www.flatironcorp.com

ReNew

CANADA

The Infrastructure Magazine

JULY/AUGUST 2019

POLITICS

8 Ontario's New Direction

ReNew Canada's Managing Editor *Andrew Macklin* sits down with Ontario Minister of Infrastructure *Monte McNaughton*.

ENVIRONMENT

10 Worth the Risk?

The challenges of balancing environmental risk in today's public-private partnerships.
By Frederic Gosselin

12 Smart About Stormwater

How cities can use infrastructure to reduce the environmental and financial impact of stormwater.
By Dianne Saxe

14 Construction and Carbon

Understanding the potential impacts of a national carbon tax on the construction industry.
By Mike Moffatt

ENERGY

16 In the Face of Climate Change

Exploring the need for climate change adaptation strategies for energy use across Canada.
By Shahrzad Simab

20 Getting Off the Diesel

An in-depth look at what is being done in Nunavut to reduce the territory's reliance on diesel-fuel power generation.
By Carroll McCormack

REDEVELOPMENT

24 Reimagining Mississauga's Waterfront

Looking at how the redevelopment of the Lakeview Generating Station property will transform Mississauga.
By Fabio Mazzocco and Brian Sutherland

2019 FEDERAL ELECTION

26 The Next Generation

Industry leaders from across Canada share their thoughts on what the next federal government should do to support infrastructure development.

TOP100 PROJECTS

28 Rebirth of a Power Station

Inside the recently completed John Hart Generating Station in British Columbia.
By Carroll McCormack

30 Top100 Projects Update

Pattullo Bridge EA, speeding up Springbank.

DEPARTMENTS

4 Editor's Note

Andrew Macklin discusses why Canada desperately needs a northern infrastructure strategy.

5 Front

The CIB makes its biggest investment.

18 Panorama

Avalanche Exploder

31 People & Events

Appointments, announcements, company news, and event reports.

34 Closing Shot

Todd Latham rants about Gapping Out..



8



14



12



24



20



THE NEED FOR A NORTHERN INFRASTRUCTURE PLAN

By Andrew Macklin

In late May, I was fortunate enough to attend a luncheon, hosted by the Canadian Council for Public-Private Partnerships, that featured a keynote presentation by Minister of Infrastructure and Communities Francois-Philippe Champagne.

The speech featured the Minister being his usual jovial and optimistic self, blending political rhetoric about the record investments in infrastructure with stories of how those investments are providing tangible benefits for people in communities from coast to coast.

Following the speech, a woman rose to ask a question. It began with a great deal of contextualization and commentary, but then it was refined to a single, straightforward question: when is the government going to develop a northern infrastructure strategy? The question caught the Minister somewhat by surprise, and he answered by talking about the difficulties of crafting such a strategy given all of the changes to the landscape in our northern communities.

Perhaps I missed it, but once his answer was complete, I didn't walk away with a sense that such a strategy was one that he was prepared to work on given its complexity.

And yet, that's the very reason why such a strategy is so necessary. And not several years from now when the complexity of the matter is better understood. Now, right now, before it's too late.

Climate change is wreaking havoc on the Canadian territories. And

while we have seen some smart, targeted investing from the current federal government, these measures only solve part of the problem. At the same time that we need to get these communities on to green energy solutions to stop polluting the air and worsening the impacts of climate change, changing frost-thaw patterns are increasing the need for more permanent roads. But it's tough to determine how deep the foundation of those roads must be dug in order to ensure long-term asset viability because warming temperatures are changing the depth of the permafrost on an annual basis. And I haven't even mentioned the need for long-term solutions for water and wastewater resources, updated infrastructure for healthcare and education, and access to the Internet.

Do the math on what that all adds up to from a dollars and cents perspective, and it only demonstrates why we so desperately need a territorial/northern infrastructure strategy in Canada.

I can appreciate that the federal government has a litany of infrastructure issues to solve and only so many dollars and resources to solve them with. But if the federal government doesn't take the lead, who else can we look to? You? Us?

The ball is in your court Infrastructure Canada. 🍀

Andrew Macklin is the managing editor of ReNew Canada.

andrew@actualmedia.ca

MANAGING EDITOR Andrew Macklin

GROUP PUBLISHER Todd Latham

PUBLISHER Nick Krukowski

ART DIRECTOR AND SENIOR DESIGNER Donna Endacott

ASSOCIATE EDITOR Simran Chattha

CONTENT AND MARKETING MANAGER Todd Westcott

CONTRIBUTORS Frederic Gosselin, Fabio Mazzocco, Carroll McCormack, Mike Moffatt, Dianne Saxe, Shahrzad Simab, Brian Sutherland

ADVERTISING Nick Krukowski
nick@actualmedia.ca

ADVISORS Nick Reid, James Sbrolla

actualmedia

ReNew Canada is published
six times a year by Actual Media Inc.

actualmedia.ca

147 Spadina Avenue, Unit 208, Toronto, ON M5V 2L7

Phone: 416-444-5842

Subscription/customer services: 416-444-5842, ext. 211

ReNew Canada subscriptions are
available for \$39.95/year or \$64.95/two years
and include the annual Top100 Projects report.

©2019 Actual Media Inc. All rights reserved.
The contents of this publication may not be
reproduced by any means in whole or in part, without
prior written consent from the publisher.

Printed in Canada

"ReNew Canada" and "ReThink. ReBuild. ReNew"
are Trademarks of Actual Media Inc.



Undeliverable mail return to:
147 Spadina Avenue, Unit 208
Toronto, ON M5V 2L7

Canadian Publications Mail Product Sales Agreement
40854046
ISSN 1715-6734

Join the conversation. Search "ReNew Canada" on LinkedIn.

For daily news and discussion, visit

@ReNewCanada

/ReNewCanada



Nunavut has been ravaged by the impacts of climate change, but the territory's dependence on diesel has only made the problem worse.

Turn to page 20 to learn more.

NEXT PHASE FOR MASSEY CROSSING



Rendering of previously-planned bridge.

The British Columbia Government has announced that work to develop options for a long-term solution for the George Massey Crossing is underway, with an RFP request for proposals issued to identify a technical team to support this phase.

The Ministry of Transportation and Infrastructure will work closely with the newly-formed Metro Vancouver Mayors' Task Force, Indigenous groups, TransLink, local municipalities, and other stakeholders to explore and evaluate crossing options.

Options will be based on consultation as well as the results of the independent technical review released in December 2018. The target completion for this phase of work is the end of November 2019.

From January through April 2019, the ministry collaborated with key Metro Vancouver and Indigenous leaders to identify shared principles, goals, and objectives. Through this process, it was determined that the crossing must be consistent with existing plans, provide improved safety, reliability and connectivity, and support the following project goals:

- Sustainability of communities.
- Increased use of sustainable modes of transportation (e.g., transit, cycling, walking, HOV).
- Enhanced regional goods movement and commerce.
- A healthy environment.

A final business case will be completed by fall 2020, as committed by the government in December 2018. 🍁

NEXT ISSUE: SEPTEMBER/OCTOBER

THE FUTURE CITIES ISSUE

Timber Tower

Advancing mass timber infrastructure.

A New Network

Building a modern utility framework.

Electrified Transport

The future of Canadian transportation.

Advertising Deadline: July 25, 2019

To reach our influential readers in print and online, contact nick@actualmedia.ca



CANADA INFRASTRUCTURE BANK UNVEILS ITS LARGEST INVESTMENT

At the end of May, the Canada Infrastructure Bank (CIB of the Bank) announced an investment of up to \$2 billion in financing in Ontario's GO Expansion – On Corridor project, the same day as the four prequalified teams were unveiled for the Request for Proposals.

Originally, the full \$13.5-billion GO Expansion was announced as being fully funded by the Government of Ontario. However, the CIB was contacted to see if there was an opportunity to remove some of that financing from the province and instead place it in the hands of the Bank and its private sector partners.

"We started discussions on this last summer, and as you can appreciate, these things take time," said CIB President and CEO Pierre Lavallée in an interview with ReNew Canada. "We got to know the project. We got involved in structuring discussions with Metrolinx and Infrastructure Ontario, [...] and were able to present an investment proposal to our Board of Directors who approved it."

The CIB's role in GO Expansion is a financing partner and advisor to Metrolinx and Infrastructure Ontario. Infrastructure Ontario and Metrolinx are the co-sponsors and are leading the competitive procurement process including announcing the preferred proponent.

CIB financing will be offered in the form of a standardized debt-financing package to all proponents during the request for proposals open period. CIB will finalize a credit agreement with the preferred proponent selected by Infrastructure Ontario and Metrolinx when the project reaches financial close.

"You should think about this as a loan that will be structured on concessional terms, and therefore will provide support to the project in a way that reduces the overall costs for Metrolinx and Infrastructure Ontario to deliver the project," said Lavallée. "Some of the specifics will be determined through the RFP process as the bidders consider their options on bringing together their own mosaic of financing. For each of the four bidding groups, they know that they can count on the Bank for up to \$2 billion on concessional terms."

The four prequalified teams for the RFP are:

EnTransit

- Applicant Lead: SNC-Lavalin Capital, Siemens Project Ventures, Keolis

MTR Kiewit Partners

- Applicant Lead: MTR, Kiewit

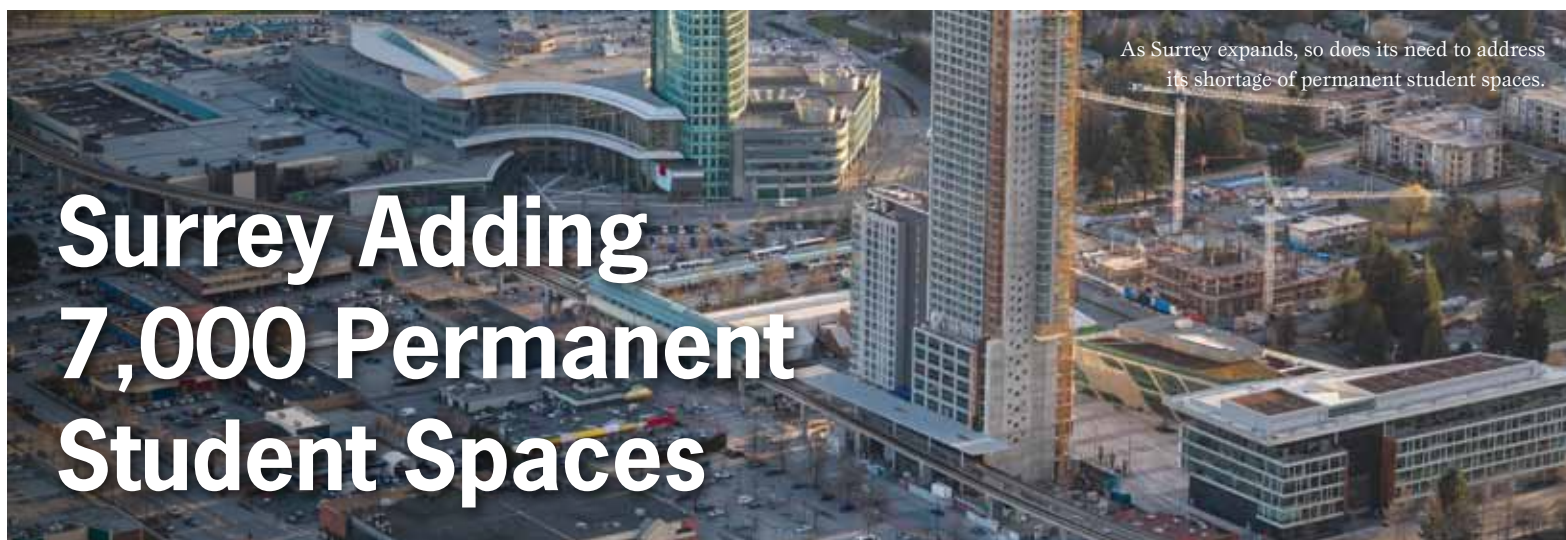
ONcore Transit

- Applicant Lead: ACS

ONxpress Transportation Partners

- Applicant Lead: Aecon Concessions, John Holland, Meridiam Infrastructure, Alstom Transport Canada

The GO Expansion project is scheduled for completion by the end of 2025. — Staff



As Surrey expands, so does its need to address its shortage of permanent student spaces.

Surrey Adding 7,000 Permanent Student Spaces

Two new Surrey schools—Grandview Heights Secondary and a Douglas-area elementary school—are now under construction and will provide more than 2,100 new student spaces by 2021.

“We want every student to get the best educational experience possible, and that means learning in positive, engaging, and inspiring classrooms,” said Rob Fleming, Minister of Education. “These new schools are a great example of everyone working together to improve education for Surrey students and to reduce portables in this community.”

The provincial government has approved an additional \$32.6 million for the Grandview Heights Secondary school, for a total budget of up to \$93.2 million. The school will have capacity for 1,500 students.

The new Douglas-area elementary school, near Peace Arch border crossing, has a total budget of up to \$33.1 million and will have capacity for 605 students.

To continue to meet the demand for future classrooms in Surrey and to reduce portables at nearby schools, the Province is providing an additional \$3.6 million for the Surrey

School District. These funds will allow the district to complete the purchase of a site needed for a future school in the Sunnyside Heights neighbourhood. The district will provide an additional \$2.4 million in land capital.

In total, the provincial government is providing \$31.2 million, along with \$3.8 million in district land capital, for the property located at the corner of 20th Avenue and 165A Street in Surrey.

Sunnyside Heights is expected to add more than 5,000 homes in the next 10 years. With this property now secured, the Province will work with the Surrey School District on the best path forward for a new, approximately 630-seat elementary school.

The following projects in Surrey opened in September 2018, or have approved funding and are in design or construction phases:

- Salish Secondary (new school, opened 2018)
- Woodward Hill Elementary (addition, opened 2018)
- Panorama Park Elementary (addition, opens 2019)

- Pacific Heights Elementary (addition, opens 2020)
- Coyote Creek Elementary (addition, opens 2020)
- Frost Road Elementary (addition, opens 2020)
- Sullivan Elementary (addition, opens 2020)
- Douglas Area Elementary (new school, opens 2021)
- Edgewood Drive Elementary (new school, opens 2021)
- Grandview Heights Secondary (new school, opens 2021)
- Maddaugh Elementary (new school, opens 2021)
- Regent Road Elementary (new school, opens 2021)
- Sullivan Heights Secondary (addition, opens 2021)

While about 7,000 Surrey students are learning in portables, about 7,000 new student seats will be open by September 2021. In addition, 10 more projects with over 2,000 new student seats in Surrey are supported by the ministry’s capital plan. ♣



P3 Delivery for Cape Breton Healthcare Projects

The Government of Nova Scotia has announced that it will use a design-build-finance-maintain approach to build new community health centres and new long-term care facilities in North Sydney and New Waterford as part of the CBRM Health Care Redevelopment project.

This work will also include a new laundry centre in North Sydney.

A consulting firm will be hired in the next few weeks to lead the P3 process, similar to the QEII New Generation project. This will ensure government is ready to go to tender as quickly as possible once the planning of

these new facilities is complete.

While the facilities will be built using the design-build-finance-maintain approach, the expanded services will continue to be operated by the Nova Scotia Health Authority.

The new emergency department, critical care department, and cancer centre at the Cape Breton Regional Hospital announced last month will follow a traditional build approach. A request for proposal for design services for that part of the project was issued on March 27.

More details on the new facilities in North Sydney and New Waterford will be announced soon. ♣

PARSONS

Knowledge. Expertise. Resources.

**Providing Critical Infrastructure Solutions
for 75 Years**

Faro Mine Complex - Care and Maintenance Services,
and Interim Construction Management Services
Faro, Yukon

parsons.com

Parsons PLUS envision more



The south façade of the Ontario Legislative Building and Queen's Park in downtown Toronto, Ont.



ONTARIO'S NEW DIRECTION

The province's new focus for infrastructure development. *By Andrew Macklin*

It has been just over a year since Ontario Premier Doug Ford named his first cabinet, with Monte McNaughton assigned the portfolio of Minister of Infrastructure.

In the year that has passed the Minister, serving his third term in office representing the riding of Lambton–Kent–Middlesex, has actively engaged the industry in an effort to understand how best to deliver infrastructure of all kinds to all communities.

In an effort to better understand what he has learned from the industry in the past year, and to appreciate what lies ahead, we sat down with Minister McNaughton at his Toronto office.

In your first year, what have you seen as the biggest opportunity and the biggest challenge for getting infrastructure built in Ontario?

I would say that the first challenge, one that's ongoing, is the fiscal situation. We obviously inherited a large deficit [...], but thankfully, we have a Premier that likes building infrastructure, and has made it a top priority in our government. So that makes things exciting as Minister of Infrastructure.

I would say on the opportunity side, I knew from listening to people in the industry that we could improve the P3

model in the province, but also expand IOs (Infrastructure Ontario) consulting services outside of Ontario. I am very excited about that one, and am excited to have made that announcement at the Global Infrastructure Summit in Germany. I see that as a huge opportunity for Ontario. Not just for the fact that it's a for-profit model; it's going to return revenue to the government. But I also that it's going to open doors for Ontario companies to do business outside of our borders, which I think is the biggest benefit to expanding IOs services abroad.

I've noticed that you have spent a great deal of time putting on your protective equipment and touring active job sites across Ontario. Why has this been a priority for you?

That's the fun part of the job. Plus it's who I am. I grew up in a Home Hardware Building Centre. We had a motto not to sit in the office: we wanted to be out on the floor with our customers and our staff. I take that same view that we need [...] to get out of the Queen's Park bubble; listen to the experts on the ground. But I think most importantly, really to know how our infrastructure investments benefit families, small businesses, and farmers right across the province.

An example that will always stand out to me is the announcement when I was in MPP Daryl Kramp's riding (Hastings–Lennox–Addington) and we announced 49 projects, the first ones that we nominated to the federal government under the rural and northern stream. We stood in front of this bridge that got approved to be rehabilitated. But on the other side of the bridge were about 10-12 homes and families that lived there. For one year, that bridge had been decommissioned and closed. So all of those families showed up at the press conference, and some of them had tears in their eyes because I think they actually had no hope that the bridge was ever going to be open again.

That was a real-life example of how infrastructure really does benefit people's lives, not only from a health and safety perspective but just makes their lives easier.

The budget was the first real glimpse we got into your government's infrastructure priorities.

Transportation, health care, transit, and education seemed to take a front seat. Was that really reflective of what this government's priorities are?

I think your analysis is accurate. We're building things that matter to people. Our major focus is



Monte
McNaughton,
Minister of
Infrastructure.

across the north. The investment over five years will actually leverage over \$1 billion from the private sector. We're very excited about our broadband and cellular expansion.

You've noted on social media that you have an excellent relationship with federal Minister of Infrastructure and Communities Francois-Phillippe Champagne. What has that relationship stemmed from?

It goes back to the first federal-provincial-territorial meeting in Halifax. I was a fairly new minister and he was new to the portfolio as well. [...] At that meeting we formed a really strong relationship.

We both worked together to bring a proposal to all the provinces and territories to reduce the red tape and burdensome paperwork that the municipalities were facing from the previous ICIP/Building Canada program. And it has proven to be a success. [...] We're getting great feedback from municipalities. They're saying that it's simpler; it's easier to navigate through this one-window approach.

[...] Minister Champagne has said publicly that Ontario's priorities are the federal government's priorities and he is a man of his word. I think we are going to get a lot of things done working together.

You have already accomplished a lot in the first year of this four-year mandate, from an infrastructure perspective. When this term is finished, what do you hope to be able to look back and see was accomplished?

I hope that people say that, and they see that, I have done things differently. That I've hit the ground running, worked with the industry, and listened to the people of Ontario.

For me, it will be the P3 improvements. I'm a strong believer in the P3 model, in partnering with the private sector. That is how we are going to build infrastructure today and in the future.

I hope people say that we've allowed innovation to be part of the process when it comes to infrastructure. After 15 years of the former government, we heard clearly on day one that the process had become very prescriptive. We want the private sector to tell us the best practices from around the world.

At the end of the day, it's about innovation and competition; it's about us delivering value for taxpayer money.

Thanks to Minister McNaughton for taking the time to sit down with us. 🍀

Andrew Macklin is the managing editor of ReNew Canada.

on transit and transportation right across the province. I don't think that there is a mom or dad that drove home last night from work in the GTHA who wouldn't have liked to have been home with their kids sooner. Congestion takes people away from their families.

When you look from the economic standpoint, we all know of reports that congestion costs the economy billions of dollars per year. That's why our focus is on transit and transportation.

Your Ministry has made several investments for business cases for new and rehabilitated hospitals across Ontario. Is your focus more on expanding current capacity than completely replacing older facilities?

I think it's important that we have the right balance. There's going to be a heavy focus on maximizing the use of our existing assets, sweating the assets. But it is also about making the right infrastructure investment at the right time and in the right place.

I think for me one of the announcements that I'll remember forever is a hospital in my own riding, Sydenham Hospital in Wallaceburg. Back in 2005, that hospital was slated to be closed by the former government long before I ran for provincial politics. I joined with thousands of people in that community, and rallied to save the hospital. To be back a number of months ago to announce a planning grant to redevelop the hospital, and to build on to the existing hospital and demolish part of it, really is

how I view infrastructure investment.

Your government is making significant investments in transit across the province, yet additional transit projects remain unfunded. How can you support municipalities who are still trying to get their own primary or secondary transit priorities on track?

Certainly our government has our own priorities. [...] There will be an opportunity for all municipalities across the province to apply (for funding). I know there are a number of applications coming in for bus terminals, new and upgraded buses, and other projects as well. We'll be able to see what comes out of that. And I think there will be opportunities through the Canada Infrastructure Bank for certain projects going forward.

There has been several different theories passed around on who should fit the bill for, and control, the development of 5G infrastructure in Ontario. Where does your Ministry currently sit on this issue?

The conversation is definitely happening around 5G. We clearly understand the importance of getting there. We're working with Minister of Economic Development, Jobs and Trade Todd Smith, coming up with a strategy and plan. [...] Our Ministry has rolled out a \$350 million broadband plan. It's \$350 million that goes to support a regional project in eastern Ontario, a regional project in the southwest, as well as a number of projects



WORTH THE RISK?

How environmental factors impact funding of P3s. *By Frederic Gosselin*

Environmental risk considerations are present in all aspects of a public-private partnership (P3) project's life. While more of a focus in the project's design and construction phases, environmental risks also deserve consideration during operations and hand-back.

Historically, environmental considerations have been aimed at ensuring the project's construction leaves the environment in a "no-better, no-worse" position, although DBRS believes that new project designs have potential to have positive environmental impacts.

This commentary defines environmental risks and risk-sharing constructs specified in the project agreement (PA). It also details the environmental considerations at each stage of a P3s development and demonstrates the positive environmental impacts that new project designs can have.

Environmental risks are widespread, encompassing species at risk concerns,

aquatic and terrestrial animal habitat protection, fisheries windows, soil and groundwater preservation, and remediation. Environmental concerns can also encompass energy and materials conservation and may include green roof requirements, open spaces and courtyards, and geothermal heating and cooling.

In most project agreements (PAs), the contracted consortium (ProjectCo) is responsible for known environmental risks, with unknown risks remaining with the procurement authority. This construct is in place to ensure that ProjectCo can be reimbursed for monetary and delay compensation upon the discovery of an unknown environmental risk, but that it will make cost and time allowances in its bid to address environmental risks that have already been identified. The PA will also specify the protocols to follow once environmental risks are encountered. Environmental protections specified in most PAs include environmental assessments as

a precursor to any work commencing and ongoing environmental oversight during construction to ensure compliance.

Environmental Risk Considerations

Environmental risk should be approached with pragmatic scheduling and realistic budgeting assumptions in mind, which can decrease the likelihood of future setbacks. As much discovery as possible of the existing environmental risks during a project's design can save time and money during construction and operations. Realistic budgeting that entails rigorous quantity estimation and unit pricing can help to properly cost contaminated soils cleanup or habitat restoration.

Where the project is situated can also be an important consideration. Greenfield sites may be less likely to be contaminated but might have more species-at-risk and habitat protection concerns, whereas the opposite can be true in the case of brownfield sites. Vertical infrastructure may have fewer, or



Environmental risk can be accounted for when the risks are addressed with clear policies at each stage of the P3 process.

more straightforward environmental issues, as the project site is more likely to have a smaller footprint, with any contamination generally well known.

Developers should plan ahead to ensure that compliance with GreenRoads or LEED frameworks can be tracked and evidenced. In addition, the LEED framework engenders proper recycling of existing materials, and sometimes, incorporation into the new building structure. The intended use of the asset can also impact its design and can help developers to address appropriate environmental safeguards when designing a project.

Once a sound environmental plan has been developed, it is operationalized during the construction phase. The environmental plan should address a number of key areas. Proper standard operating procedures can help to avoid the release of pollutants and groundwater contaminants. All hazardous and deleterious materials should be dealt with in a prescribed fashion and Workplace Hazardous Materials Information System (WHMIS) protocols must be observed.

Education is key. Particularly the case with vertical infrastructure, several hundred workers can be on site at a given time. In order for the risk mitigation plan to be effective, there needs to be a process in place to educate workers about known and potential environmental risks, and steps to be taken upon the discovery or observance of an environmental risk in order to isolate and mitigate any impacts. All personnel working on the site need to know they are empowered to report and/or stop any procedure having a negative environmental impact.

lead and asbestos, once prevalent in building construction, can be properly removed and dealt with. These represent positive outcomes not only for medical practitioners, hospital staff, and patients, but for the environment as well.

P3s featuring the conversion of street lighting from traditional sodium lamps to LED lights lower future electricity usage. While upfront capital costs can be relatively high, the longevity of LED lights and the forecast savings can more than offset the initial cost, and cash-strapped municipalities can use a portion of the energy savings to fund the monthly service

Environmental risk should be approached with pragmatic scheduling and realistic budgeting assumptions in mind.

As the project transitions to operations, lands disturbed during the construction process should be restored as prescribed by the PA, after treatment of any contamination.

While environmental concerns may not be as front of mind during the operating phase, they nevertheless deserve due consideration. Proper disposal and handling of contaminants must be kept in mind, and as ProjectCo or its subcontractors may be using harmful chemicals in the performance of their duties, the need for a properly educated workforce continues. As in the construction phase, robust standard operating procedures can help ensure environmental protocols are observed.

P3 Projects can be Environmentally-Friendly

While the overarching goal in managing environmental risk is to do no harm, P3 projects can do even better, with positive environmental impacts when viewed on a net basis.

In recent years, several new P3 hospitals have replaced older, less energy-efficient buildings. Aside from containing state-of-the-art technology and the latest medical equipment, recent-generation P3 hospitals incorporate features such as natural lighting and green space while being designed to achieve smaller carbon footprints. They may also incorporate geothermal heating and cooling and generate a portion of their electricity using renewable energy. Upon demolition, hazardous substances such as

payments. As such, this is a welcome outcome for the environment and municipal and local governments.

The use of electric vehicles continues to grow, although for the time being, vehicles powered by fossil fuels are the norm. Notwithstanding, road projects can have positive environmental benefits as well. While it is true that road-widening projects and the construction of toll roads and toll lanes can engender higher usage and more vehicles on the road, alleviating traffic congestion and vehicle idling reduces harmful emissions.

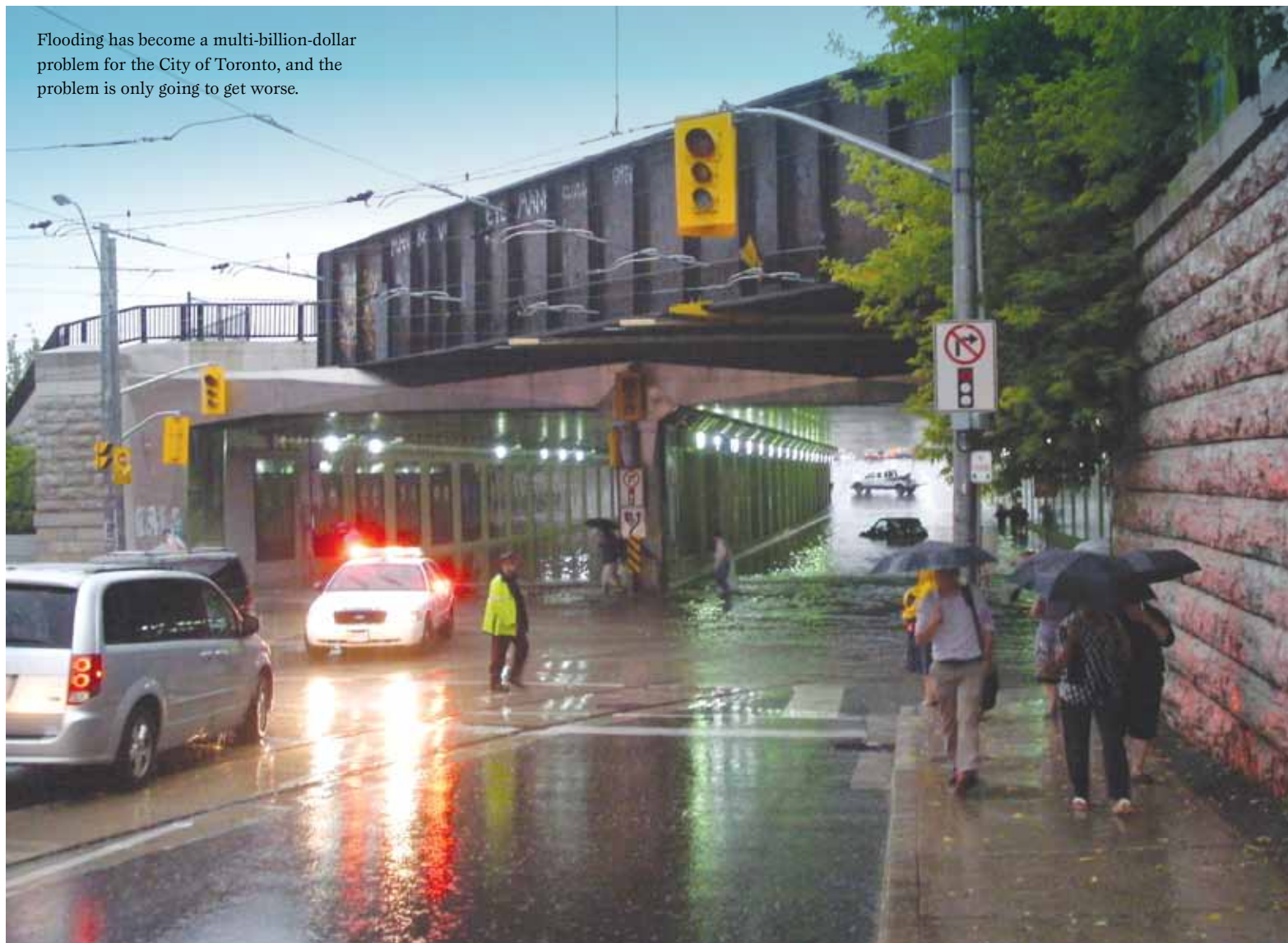
Given the strong environmental fabric incorporated into project agreements, P3 projects can support both development and conservation in a community. To achieve these goals requires clear policies that lay out environmental considerations at each stage of a P3 project.

With the degree of planning and oversight of an infrastructure project, developers are well placed to be sound environmental stewards. Infrastructure built with an emphasis on people and the environment can improve energy conservation, create better access to healthcare, and keep people moving while contributing to sustainable community growth. 🍁



Frederic Gosselin is the vice president, infrastructure finance at DBRS Limited.

Flooding has become a multi-billion-dollar problem for the City of Toronto, and the problem is only going to get worse.



SMART ABOUT STORMWATER

Cities have the tools needed to save billions. *By Dianne Saxe*

As climate change begins to gather speed, its impacts become more visible each year. It is not just about polar bears anymore. It isn't even just about how difficult we are making the future lives of our children and grandchildren.

Now climate change is affecting us.

Extreme weather did not start with climate change, but in Ontario and around the world, climate change increases the risk of storms and floods, extreme heat, and forest fires. In Ontario, insured losses from extreme weather are climbing fast. Even after adjusting for inflation and GDP, Ontario had an extraordinary \$1.3 billion in insured losses from catastrophic weather in 2018. Families and organizations probably suffered at least as much in uninsured financial losses, as well as impacts on mental health.

That's partly because Ontario is warming faster than the world average, and can expect to warm much more as each decade passes. Warmer average temperatures bring wilder, less predictable weather, including more

frequent and severe floods, wind damage, droughts, heatwaves and forest fires, and occasionally extreme cold. Much of Ontario is already getting wetter, especially in winter, and some of what used to fall as snow now comes as rain.

According to the Insurance Bureau of Canada, up to 10 per cent of Canadian properties may soon be too high-risk for private sector flood insurance. Perhaps half of those could continue to be insurable if protective measures are taken, but premiums will presumably have to climb.

Shelter from the storm(water)

For people in cities like Toronto, one of the most urgent and immediate threats will come from stormwater. Warmer air holds and drops more water. When that extra water falls on hard surfaces like roofs, roads, and parking lots, it runs off quickly and can cause flooding and water pollution. The engineered stormwater management systems underlying many urban areas—

the pipes that drain rainwater and melted snow away from city streets—cannot always accept the increased volumes of water that we are already experiencing, much less what is ahead due to population growth, urban sprawl, and climate change. The continuing destruction of wetlands and woodlands exacerbates this problem through the loss of natural reservoirs that hold stormwater (see Volume 4 of ECOs 2018 Environmental Protection Report, Back to Basics).

Torrential downpours already overwhelm Toronto's aging stormwater infrastructure and wastewater treatment plants, especially in the 23 per cent of the city serviced by combined sewers. For example, in July 2013, a billion litres of a filthy mix of stormwater and sewage—including garbage, debris, and human bodily wastes—flooded streets and basements, and washed into Toronto's rivers and Lake Ontario.

In total, 44 Ontario municipalities still operate combined sewers, which carry both sanitary sewage and stormwater in the same

pipe. Stormwater is often foul even when sewers are separated, as it typically carries road salt, petroleum products, metal and rubber fragments, fertilizers, pesticides, litter, and feces from wildlife, pets, and livestock.

Contaminated stormwater also erodes and pollutes local beaches, damages the habitat of aquatic species, and harms Ontario's tourism and recreational opportunities. This includes fishing, boating, and swimming. For example, Toronto beaches were too polluted for safe swimming 103 times in the summer of 2018. For the last 10 years, the Marie Curtis Park East Beach has been too polluted for safe use more than a third of summer days.

Practical solutions

Municipalities are obliged by law to do everything reasonable to keep pollution out of lakes and rivers. Their options to reduce flooding and pollution caused by stormwater and combined sewer overflows include:

1 Reducing the amount of stormwater that flows into storm sewers and combined sewers with:

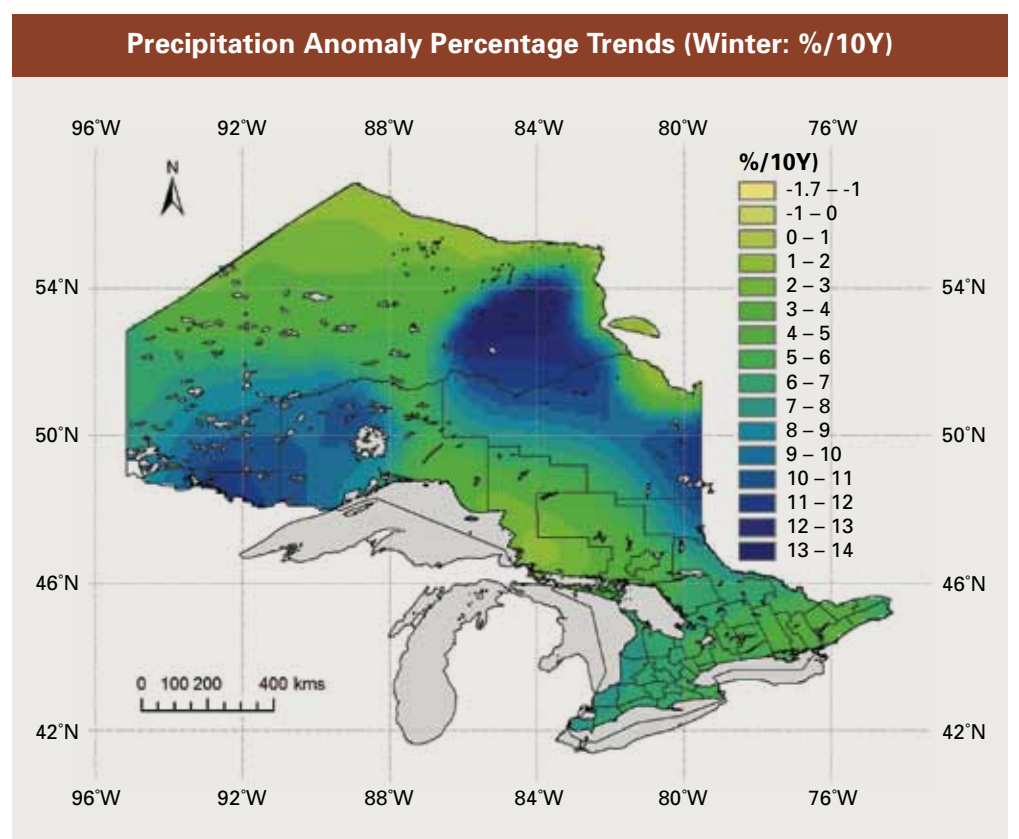
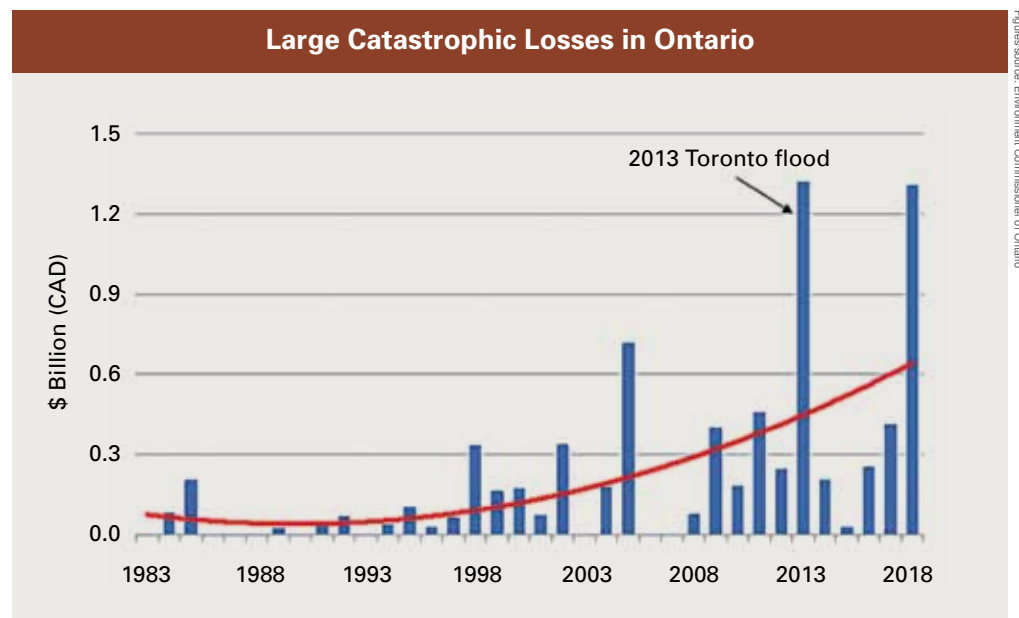
- Downspout and weeping tile disconnection programs.
- Green infrastructure to reduce surface runoff towards streams and sewers.
- Stormwater fees to give property owners a financial incentive to keep stormwater out of sewers and to provide the funds needed for stormwater infrastructure.

2 Reducing sanitary flows that mix with stormwater in combined sewers with water conservation programs

3 Keeping stormwater and groundwater from mixing with sanitary sewage by:

- Replacing combined sewers with separate pipes for stormwater and sanitary waste.
- Improving leak detection and repair to reduce groundwater infiltration of combined sewers.

Toronto is taking some, but not all, of these steps. For example, Toronto has refused to charge stormwater fees, even in areas serviced by combined sewers. Such charges allow municipalities to collect the true cost of providing each piece of land with stormwater and sewage service, and use the money for this purpose. Kitchener and Mississauga are two of many successful examples. Instead, Toronto's current funding system allows nearly a free ride to parking lots, warehouses, and other impervious land uses that dump large



stormwater costs onto the public purse.

Toronto could also do much more with green infrastructure, which it can now count as “infrastructure” in its asset management plan. Rain gardens, bioswales, and other absorbent surfaces can clean stormwater runoff and reduce its speed and volume while cooling the air. Toronto's Green Roof Bylaw is a good start, requiring certain buildings to retain at least five millimetres of precipitation, but pales in comparison to the amount of rain the city can expect to receive. In August 2018, some areas of Toronto received 130 millimetres of precipitation in a single storm, almost all of which flooded swiftly into the sewers.

The big picture

Climate change presents all cities with

enormous challenges and opportunities. We must simultaneously slash our dependence on fossil fuels that cause climate pollution (mitigation), and get ready for what's ahead (adaptation). Fortunately, there is a lot that cities can do. Getting smarter about stormwater by using proven tools and technologies can save millions for cities and the people who live there. 🍁

This article originally appeared in the March/April 2019 edition of ReNew Canada's sister publication, Water Canada.



Dianne Saxe is the former Environmental Commissioner of Ontario.

CONSTRUCTION AND CARBON

Research conducted by the Smart Prosperity Institute shows that the construction industry will experience few negative impacts with the introduction of carbon pricing.

Increasing industry jobs while decreasing emissions.

By Mike P. Moffatt

Canada's Building Trades Unions came to the Smart Prosperity Institute with a simple question: "Our members are worried about what rising carbon taxes will do to the construction industry and mean for their jobs. Can you tell our members what they can expect – the good, the bad, and the ugly?"

Turns out, they need not have worried. Rising carbon prices would mean an extra 19,000 jobs for their members in the year 2025, and set off a wave of carbon tax-induced business, government, and consumer construction worth nearly 20 billion dollars.

Here's how the Smart Prosperity Institute went about answering that question. We compared a "business-as-usual" scenario, where carbon policies were left untouched from 2018, to one where existing carbon prices were turned up to 11 over time. This higher carbon price scenario modelled what is needed for Canada to meet its Paris target of GHG emissions 30 per cent below 2005 levels by 2030. We chose to examine the economic effects in the year 2025, as it gives consumers and businesses enough time to respond to the higher carbon prices.

What we found was a significant economic shift. In both scenarios, the economy grew significantly over 2015 levels (a GDP

increase of \$531 billion in the base case, and \$528 billion in the high carbon price scenario). Every sector of the economy grew in both scenarios over that 10-year period, though some sectors, notably transportation and natural resources, had faster rates of growth under the status quo, whereas services, manufacturing, and construction grow at faster rates under the high carbon price scenario.

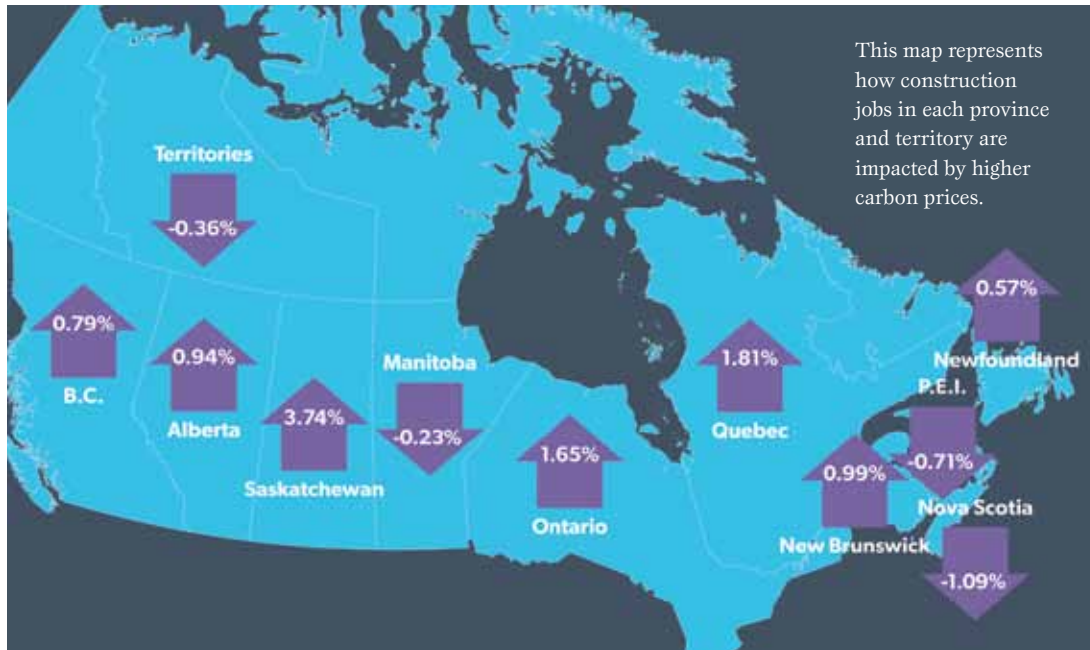
Construction is a big winner from rising carbon taxes, because of how consumers, business, and governments respond to rising prices. As fossil fuels (and the electricity generated from fossil fuels) become more expensive, the payback period for new buildings and retrofits falls, making them more worthwhile investments. Businesses respond to these rising operating expenditures by increasing their capital expenditures, much of which depend on construction.

Electricity generated from coal becomes particularly cost prohibitive under this scenario. Coal represents a significant portion of electricity generation in three provinces: Saskatchewan, Alberta, and Nova Scotia. Our model predicts that in each of these provinces, investments are made in new electricity generation, which has a lower carbon footprint, such as renewables like solar and wind, small-scale nuclear, or

Higher carbon prices will lead to a boom of new construction projects, beyond simply installing wind turbines and solar panels.

even natural gas. Furthermore, our model projects \$4.7 billion in carbon capture and storage investments in the 2025 high carbon price scenario (relative to just \$0.5 billion in the 2025 baseline scenario). Given Saskatchewan's reliance on coal power and the oil and gas industry (which would be a primary customer for carbon capture and storage projects), it is not surprising to see that province's construction industry gain proportionally more jobs from higher carbon prices than any other province.

Source: Smart Prosperity Institute



for LEED certification.

Higher carbon prices will lead to a boom of new construction projects, beyond simply installing wind turbines and solar panels (though we see a great deal of that as well). Smart organizations will realize that they can improve their bottom line by making capital expenditures to reduce rising operating costs. Government is not immune to these forces, so while they are building new power facilities to replace coal and other high-emission electricity generating facilities, they will also be ensuring their portfolio of offices are as energy-efficient as possible.

In a world of higher carbon prices, companies, governments and individuals would reduce greenhouse gas emissions while spurring a wave of new construction investments and jobs. 🍁

In dollar terms, the biggest source of new carbon-price-induced investments is in buildings, both new builds and retrofits. In a world of rising carbon prices, businesses and households can save significant money by ensuring where they work and live are as energy efficient as possible. We expect this holds true for governments as well, particularly when various levels of government collect

those carbon prices. Expect to see significant government investments in ensuring their own buildings are energy efficient, which will mostly involve upgrades to heating, ventilation, and air conditioning systems, but in some extreme cases lead to entire buildings getting rebuilt. Furthermore, expect additional attention to be paid to energy efficiency when new buildings are built, with increased demand



Mike Moffat is the senior director of policy and innovation at Smart Prosperity Institute.

Imagine it. Delivered.

AECOM is committed to enhance the places where we work and live while creating and sustaining a world in which we all flourish. We apply creative vision, technical expertise, interdisciplinary insight and local experience to address complex challenges in new and better ways.

www.aecom.ca

Moving to renewables energy is an important piece of the climate adaptation strategy, but a cross-sector approach is needed to build resiliency within regions.

IN THE FACE OF CLIMATE CHANGE

Building a collaborative adaptation framework for resiliency. *By Shahrzad Simab*

Have you noticed a change in extreme weather events lately? Well, you're not alone. Severe weather events have been on the rise in recent years, in both frequency and impact. Over time, the electricity sector has seen first hand the challenges posed by extreme weather, which has sharpened our senses to the reality of climate change. The October 2018 report by the Intergovernmental Panel on Climate Change has driven this point home, setting off global alarm bells to limit global temperature rise to 1.5 degrees Celsius by 2030.

In March 2019, the Canadian government released 'Canada's Changing Climate Report,' which unnervingly shows Canada's climate to be warming two-to-three times faster than the global average, with average temperatures possibly rising by 6.3 degrees by the year 2100. Thus, there is much more work to be done if we are to avoid the worst outcomes. When climate adaptation is paired with climate mitigation, and as our understanding of the consequences of climate change grows, the need to adapt to the vulnerabilities of climate change becomes undeniable. The electricity sector in Canada has made significant strides in both aspects, including a 30 per cent reduction in GHG emissions since 2005. But to effectively address this issue, we need all sectors and all Canadians to do their fair share and work towards a low carbon future.

Sectorial resiliency

Electricity is the lifeblood of the Canadian economy, and electricity companies understand the unique role the sector plays. The Canadian Electricity Association (CEA) stands alongside Canadian utilities to help

prepare Canadians for the effects of climate change. With funding from Natural Resources Canada (NRCan), CEA has undertaken a three-year project to develop climate adaptation planning guidelines for electricity companies in Canada. The guidelines are recommended processes for utilities to follow when creating tailored company-specific adaptation plans. Given the diverse geography and structure of the electricity sector in Canada, a series of workshops are also being delivered across the country to work hands-on with utilities in interpreting and applying the proposed guidelines.

Although most electricity companies have been proactive in monitoring and planning for climate change and extreme weather, we have been encouraged by the interest from our members in expanding their scope and deepening their knowledge on climate adaptation. CEA members recognize the challenges as well as the opportunities that arise when a solid understanding of climate science is paired with a strategic approach to managing the impending risks related to climate change.

While climate adaptation plans for industries are not yet government mandated, investors, and insurers are increasingly interested in assessing the risks posed by a company's exposure to climate change. As providers of a critical service, a resilient electricity sector is essential to all other sector's ability to adapt. This spurs us, and our members, to be able to confidently serve Canadians, no matter what climate change throws our way. From responding to power outages promptly, to identifying critical and vulnerable assets and operations and investing in the right infrastructure

and technology, climate adaptation for the electricity sector is a multi-faceted battle for which utilities are training and preparing.

Cross-sectorial resiliency

While the electricity sector is making progress in attaining its climate adaptation planning objectives, it is equally important that other economic sectors in Canada also work together with fluid communication and collaboration to build resiliency within regions and not just within sectors. From telecommunications, to transportation, to food systems, each sector is interdependent. This relationship may be thought of as a puzzle board, with each sector/organization being a piece of the puzzle. If one piece of the puzzle is damaged or the color is faded, the whole picture is negatively impacted. Building competencies and resiliency within each sector is crucial to ensuring each respective sector does its part in better preparing society for a climate that is potentially far different than the one we now live in. And while it is important for every sector to be competent, secure, and strong within its own domain, each sector is only as strong as the next sector it is mutually dependent on. A puzzle can only retain its shape when its neighbors support each piece, and the same is true for our economy in the face of great change.

It is essential to engage with other stakeholders and to understand how one's own place in the puzzle is in large part defined by the other participants. Equally important is communicating these efforts openly in order to share experiences and best practices. As recent weather events are increasingly showing us, we no longer

have the luxury of putting off the creation of robust climate adaptation protocols and plans. Communication and cross sharing of resources and knowledge across sectors, businesses, and organizations will be crucial to strengthening these climate adaptation plans, to withstand the physical, political, economic, and social tests as we enter into a new era of increased climate uncertainty.

Individual resiliency

Undoubtedly, organizations and industries have a responsibility to their constituents to ensure that their operations are protected, however individuals must also be conscientious of their own vulnerabilities. The electricity sector in particular is ranked as one of the world's most critical industries, given its essential role in the machinery of a modern society. Undeniably, transportation, telecommunications, lighting, computing, refrigeration, and dozens of other applications are utterly reliant on an uninterrupted flow of electricity.

While utilities make appropriate investments to further protect infrastructure and prepare for emergencies, individuals must also have plans in place to adapt to

weather events where electricity may be impacted. Extended periods of power outages have serious consequences on vulnerable populations. Knowing where to go to stay cool or keep warm if the power goes out can mean the difference between life and death. Being considerate of the needs of the elderly and those who may require additional assistance will be invaluable as extreme heat, storms, and other severe weather events pose increasing risks to our power systems. The 2018 summer heat wave in Quebec that tragically killed 90 people was a stark reminder of the need to help those who may suffer harsher consequences depending on their situation and demographics.

Keeping flashlights with extra batteries, non-perishable food items and water, and pre-charged portable phone chargers are just a few items from the list of things households should keep on hand as extreme weather events occur more frequently. Events such as that of the 2013 ice storm, which resulted in 300,000 Toronto Hydro customers to lose power for 13 days, may increase in frequency. And while utilities continue to invest in hardening the grid, and line workers put their lives at risk to restore

power, individuals must also be ready to protect themselves. Taking time to educate one's self on how to prepare for unexpected power outages builds individual resiliency and could make a significant difference when climate-related catastrophes occur.

Electricity is quite literally the battery that keeps the world running. And while electricity companies fully understand the significance of their role in society, the natural world is changing at a speed at which it is difficult for organizations to compete. The electricity sector is ready to take on the challenge of adapting to climate change, but it must be a joint effort with other sectors and all consumers. When it comes to our power, we can't afford not to roll up our sleeves, but together we can strengthen our armour against impacts of climate change. After all, puzzle boards come together much quicker when it's a team effort. ♣



Shahrzad Simab is a senior advisor at the Canadian Electricity Association.

TheCanningtonGroup

**Environmental Contracting
and Demolition Services
ON THE FLY!**

*Contact us to learn more about
the Cannington difference.*

(905) 841-1848 | www.thecanningtongroup.ca

Area	0.492 ha
Cut	17364.1 m ³
Fill	-0.1 m ³
Volume	17364 m ³



Send us your best infrastructure image,
and you may see it featured here.
Email editor Andrew Macklin at
andrew@actualmedia.ca for details.

Credit: Tranbco

**SHARING YOUR VISION.
BUILDING SUCCESS.**





Panorama

Avalanche Exploder

Installation of an O'Belx unit, which uses a gas mixture to produce a controlled avalanche, on Highway 16 in B.C. —Staff



- **BUILDINGS**
- **CIVIL INFRASTRUCTURE**
- **HEAVY INDUSTRIAL**

We are more than builders. We are solution providers who are passionate about our partners' success and delivering Canada's top infrastructure projects.

Watch us build at [PCL.com](https://www.pcl.com)



GETTING OFF THE DIESEL



Plans are afoot to reduce Nunavut's utter reliance on diesel. *By Carroll McCormick*

With near-insignificant but inspiring exceptions, every watt of electricity generated in Nunavut for residences, businesses and the mining industry comes from diesel generators. In the past few years, however, momentum has been building to offset some of that diesel with solar, wind, and hydropower. Has the time for alternate sources of energy arrived?

There have already been attempts to set up alternative sources of energy. The most ambitious of them, it would seem, was a plan floated by the territory's sole utility, the Quilliq Energy Corporation (QEC). According to QEC it had, as of 2018, 15,000 customers, 25 generators with an installed capacity of 76,900 kW, and burned 55 million litres of diesel fuel a year.

The idea was to build a hydro dam on a river about 85 kilometres from Iqaluit.

In 2012 the Nunatsiak News reported that QEC was hoping to set up a P3 deal to build a dam, at a cost of \$150 to \$200 million. But by 2016, according to a 2016 CBC report, QEC had abandoned the plan after spending \$10

million for studies and engineering work; the price tag for the project, CBC reported, had already risen to some \$300-\$500 million. Perhaps, looking east to the cost overruns of Muskrat Falls in Newfoundland, and west to Keeyask Generating Station (GS) in Manitoba and Site C Clean Energy Project in British Columbia, Nunavut dodged a missile by QEC shelving the dam plan.

There have been attempts to bring in wind turbines; e.g., two windmills, as the Nunatsiak News called them, to Kugluktuk (formerly Coppermine) a little hamlet of around 1,500 people near the Northwest Territories border.

They reportedly cost \$650,000, operated from 1998 to 2000, and saved around \$42,000 worth of diesel before the one was struck by lightning and the other failed due, it was supposed, to a lack of maintenance.

Several factors are in play now that make the game look very different this time around: changing QEC policies, extensive research on alternatives to diesel, inspiring examples in, for example, Alaska and the Northwest Territories, better technology, investor

interest and concerns about diesel and greenhouse gas emissions area top the list.

The three contenders (readers of a 2019 Canadian Geothermal Energy Association feasibility study for Nunavut would surely conclude that the geothermal potential is simply not in the running) are solar, wind, and imported hydropower.

The imported hydropower plan, which reportedly pre-dates the creation of Nunavut 20 years ago, is to run a transmission line from Manitoba into Nunavut up the west coast of Hudson Bay. Called the Kivalliq Hydro-Fibre Link, it would begin in Northern Manitoba—nominally in Gillam, although Manitoba Power says the tie in location has not been determined; it could be Churchill—and run north some 900 kilometres to power five communities along the route to Agnico Eagle's new Meliadine gold mine, where the big-ticket energy draw is.

The current cost estimate is \$1.2 billion for a 230-kilovolt (KV) line, which would also include a broadband cable. The Kivalliq Inuit Association (KIA) is leading the project in partnership with U.S.-based Anbaric



Agnico Eagle's Meliadine site, located near Rankin Inlet, in the Kivallik district of Nunavut. The region currently depends solely on diesel for energy. Clean energy alternative solutions are being explored for the near and long-term.



Malek Tawashy, CEO Northern Energy Capital (left) with Blain Chislett of Sakku Investments Corporation, at a meteorological tower in Rankin Inlet.

Credit: NEC

Development Partners. There are financial backers, but other than rumours that the recently created Canada Infrastructure Bank might be interested, possible financial arrangements are not available.

The five communities—Arviat, Whale Cove, Rankin Inlet, Chesterfield, and Baker Lake—consume some 25,455,000 litres of diesel a year for lighting and heating. Meliadine, which opened this year, is

Kiggavik uranium mine, with industrial capacity to spare. According to Mélissa Desrocher, director of government relations and external communications at Agnico Eagle, the average load along the power line for the five communities is 4.6 MW and a forecasted 24 MW for Meliadine.

The BBA study presented a 10-year timeline, beginning with technical studies and agreements in 2015, and the Link ready

Strategic Investments in Northern Economic Development program of the Canadian Northern Economic Development Agency to top up \$2.45 million in planning to review and update past feasibility work.

Solar and wind are the two other realistic—yes, realistic—energy alternatives, with the potential and flexibility to serve more of Nunavut's 25 communities than those along the proposed Link corridor.

There is already installed solar power in Nunavut, albeit still modest in its output. For example, Calgary-based SkyFire Energy Solar Energy Systems did a 14-kilowatt (kW) solar installation on an arena in Kugaaruk about two years ago, and another one, around two kW in size, on the roof of a housing authority building in Baker Lake.

Nuvitik Communications reported in August 2016 on 10 kW worth of solar panels installed on a recreational complex in Kugluktuk, in partnership with Toronto-based project developer NRstor. They produced 1,680 kilowatt-hours (kWh) in the first month, offsetting around \$2,000 in diesel fuel; the annual savings in energy costs were expected to come to \$9,000, according to Nuvitik Communications.

NRstor is also working with Arviat to

For both wind and solar,
private companies believe that there
is investment potential in the north.

expected to require 45 million litres a year of diesel. The diesel savings and avoided GHG emissions for Meliadine and the five communities are enormous.

A 2015 scoping study prepared for KIA by Quebec-based BBA estimated that the line could provide 80-100 megawatts (MW) of power—enough to power the five communities, Meliadine, and AREVA's

for use by 2024-2025; there is no information on the Link to indicate just where along a timeline the project might currently be. "The Hydro-Fibre Link is a long-term project. It will take a long time," said Iqaluit-based Dr. Martha Lenio, Arctic Renewables Specialist with World Wildlife Fund Canada.

This February KIA announced having received a \$1.6-million grant from the

develop a combined wind, solar and energy storage project. According to NRstor, the project will prevent over 160,000 tonnes of CO₂ emissions and save 30 million litres of diesel in the next 20 years.

Other communities that have installed solar panels include Clyde River and Iqaluit.

Wind power is also coming to Nunavut, thanks, in part, to improvements, such as heated blades, that make the turbines more suitable for northern climates. And for both wind and solar, private companies believe there is investment potential in the North.

Take Northern Energy Capital, a design and development company with a number of investors. “We are set up to deliver renewable energy projects in northern Canada, in partnership with indigenous organizations. We take projects from first concepts, through feasibility, and work with utilities to develop integration studies,” said Malek Tawashy, CEO Northern Energy Capital.

Northern Energy Capital is working with Inuit organizations in the Kivalliq region to build a two MW wind farm in Rankin Inlet. The wind farm could be commercially operational as early as 2021; it will provide energy to over 500 homes and reduce CO₂ emissions from diesel by 30 per cent over the life of the project. Northern Energy Capital also has a two MW wind turbine project in development in Baker Lake, which, the company notes, is proposed to be commercially operational after Rankin Inlet. These two projects are the first utility-scale developments in Nunavut to displace diesel on a utility-scale, according to Northern Energy Capital.

Agnico Eagle has signed a memorandum of understanding with Sakku Investments Corporation & Northern Energy Capital to develop a 12 MW, Inuit-owned, wind turbine project. It has the potential to save 8.7 million litres a year of diesel and reduce GHG emissions by 24,200 tonnes annually. The feasibility study is complete and Agnico Eagle was expecting a decision in the late spring of 2019 on a funding application to the Clean Energy for Rural & Remote Communities.

QEC has a 2016 study called Potential for Wind Energy in Nunavut Communities, prepared by Whitehorse-based JP Pinard Consulting. Upbeat about the wind potential in many communities, the authors opine that Iqaluit is the best location for a first project using large turbines. The capital costs could run from around \$35 million to \$69 million, with a return on equity of 14.5 per cent or more.

The study introduces various wind turbines specially built to operate in the North, storage systems, and technical information. In addition to wind-related data, it digs into height restrictions near

airports and how navigational aids and even radar can restrict the location and maximum height of wind turbines.

Cost estimates are presented for wind turbines and storage systems, crane services, ocean transport and even the cost of building roads to transport components. The study presents the results of simulation studies for several communities as well. For example, an Enercon E70 2.3 MW wind turbine, with a battery storage system, would cost \$20.1 million, displace 32.2 per cent of the diesel generation, have an ROI of 7.1 per cent and a discounted payback of 17.6 years. The leveled cost of energy would be \$0.19/kWh.

Among its 12 conclusions, it suggests that QEC would be justified in moving forward in considering wind energy development.

But likely the most comprehensive analysis of the potential of wind and solar ever done for Nunavut are three studies prepared by World Wildlife Fund Canada and project partner Waterloo Institute for Sustainable Energy.

The three studies are an embarrassment of research riches, but one opening paragraph captures their flavor: “[...] the results of these Phase II feasibility analyses exceeded expectations. Our research revealed that an initial investment in a mix of renewable energy in remote northern communities can lead to immense carbon dioxide emissions reductions, with renewable energy penetration averages reaching 80 per cent in some communities, and far greater than expected operations and maintenance (O&M) savings over the next 20 years, to the tune of \$30 million in one community alone.”

And with legislation changes last fall that now allows QEC to purchase power from Independent Power Producers, the work of these past few years has critical financial traction to move forward. “This will allow larger projects to be built,” Dr. Lenio said.

Still, the economic feasibility of renewable energy projects depends on what QEC will pay. “Everything is in a holding pattern

The current cost estimate (for the Kivalliq Hydro-Fibre Link) is \$1.2 billion, which would also include a broadband cable.

The first two—Renewable Energy Deployment in Canadian Arctic: Phase I and Phase II—go into great detail on the solar and wind potential in Nunavut communities. They present chapter and verse on things such as wind and solar data, communities’ ranked potential for reducing CO₂ emissions, and the maximum feasible renewable energy penetration per community, cost comparisons of renewable energy systems to diesel operating and maintenance costs, storage media and the state of the diesel generators owned by QEC, many of which are overdue for replacement. (\$233 million is being put towards replacing and rebuilding aging power plants in 13 Nunavut communities by 2025-26, according to a 2018 Nunavut News article.) They also select the most promising candidates for simulation studies.

The third study—Renewable Energy in Nunavut Scoping Analysis—Final Report—will be made public this summer. Of it, Dr. Lenio said, “We expanded our study out to all 25 communities, updated the cost of batteries, the cost of electricity, and included offsetting heating loads. We have included the carbon tax. Diesel for electricity use is exempt from the carbon tax, but home heating fuel is not.”

until QEC produces its Power Purchasing Agreement for Independent Power Producers, where it says what it will pay for electricity. As for the economic feasibility for one community or another, that depends on what QEC will pay independent producers. In the [Phase II] report they assumed that QEC would pay 60 cents/kWh, but after publishing, we learned QEC would only pay for the displaced cost of diesel, or about 30 cents/kWh,” Dr. Lenio said.

But she is optimistic. “We are trying to work with communities in whatever way we can. We are trying to enable them so the projects can move forward. We are working to host an energy forum in November 2019 to work on how to move these projects forward.

“What I feel is that there is a huge hunger up here, especially to use solar, and reduce diesel consumption. When something clicks with people here, they run with it.” ❁



Carroll McCormick is a freelance writer based in Montreal, Quebec.

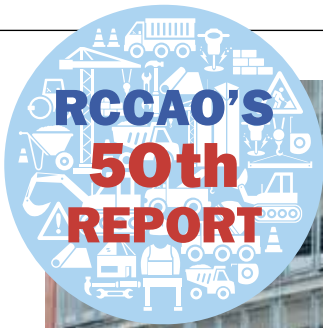


Photo: RCCAO



A parking lot east of Spadina Ave. on Adelaide St. W. in Toronto.



The Cumberland Parkade on Cumberland St. in Toronto's Yorkville community.

Photo: RCCAO



A refurbished parking garage in London, England: Peckham Levels.



The Garage at Northwestern University in Evanston, Illinois: new shared space.

THE EVOLUTION OF HIGH-RISE PARKING REGULATIONS

Parking standards have had an enormous impact on built form, travel behaviour, housing affordability, and stormwater capacity. That's the focus of the 50th independent report commissioned by the Residential and Civil Construction Alliance of Ontario (RCCAO). Authored by the Ryerson Urban Analytics Institute, it is called "How Parking Regulations Need to Evolve for High-Rise Buildings."

The report finds that Toronto's minimum parking standards have not been meaningfully revised in the past three decades. In addition, substantial changes in technology and services have occurred, necessitating a review of fundamental planning concepts and related parking standards. The expected innovations in mobility, such as autonomous vehicles, will also influence commuting patterns and how much parking space will be required in the future.

A case is made for above-ground parking as a practical solution to the challenges that below-grade parking presents: firstly, a high-water table is detrimental when there are severe rainfall events, especially when stormwater

capacity is limited or pipes are aging. Secondly, the cost of constructing below-grade parking has increased rapidly over the past decade, often between \$80,000 and \$100,000 per space in downtown Toronto. Minimum parking requirements thus increase development costs, which has a ripple effect on housing costs and overall affordability.

RECOMMENDATIONS:

- ① Undertake a review and overhaul minimum parking standards to reflect the significant changes over the last three decades in travel behaviour, technology, and services.
- ② Examine and encourage innovative above-ground parking options so that these structures can be repurposed for other potential uses in the future, such as retail and residential.
- ③ Consider implementing more flexible parking standards rather than formula-based rigid parking requirements.

While this report is focused on the City of Toronto, there are applications across many of Canada's urban centres.



RESIDENTIAL AND
CIVIL
CONSTRUCTION
ALLIANCE OF
ONTARIO

Constructing Ontario's Future

Download this report
and more at
rccao.com



@_RCCAO

p: 905-760-7777

e: media@rccao.com

REINVIGORATING MISSISSAUGA'S WATERFRONT



An aerial rendering of the new development that will emerge on the former site of the Lakeview Generating Station.

A new community emerges on the former Lakeview Generating Station lands.

By Fabio Mazzocco and Brian Sutherland

For 43 years, the future Lakeview Village lands in Mississauga were home to the Lakeview Generating Station, a coal-fired power plant that provided electricity—and pollution—to the region and blocked access to the Lake Ontario waterfront. The generating station was shut down in 2005 as the Government of Ontario moved towards more environmentally-friendly sources of energy. In a striking symbol of the transformation to follow, the Four Sisters—the plant's iconic smokestacks that could be seen from Burlington to downtown Toronto—were demolished in 2006.

When the plant was shut down, late Mississauga councillor Jim Tovey spearheaded a bold vision for the site, Inspiration Lakeview. The plan called to remediate the former brownfield site, open the waterfront to the people of Mississauga, and to create a vibrant, complete community on the shores of Lake Ontario.

Lakeview Community Partners Limited (LCPL) purchased the 177-acre site from Ontario Power Generation (OPG) in 2018 to build upon the groundwork laid by Councillor Tovey. Once completed, Lakeview Village will be a sustainable mixed-use

development with potential for as many as 10,000 residential units, 825,000 square feet available for employment, 130,000 square feet of retail, an innovation corridor, a public square, a brand-new conservation area, and more than three kilometers of uninterrupted lakefront trails. As a part of the purchase, 67 acres of waterfront land will be remediated and transferred back to the city for citizens and visitors to enjoy.

Remediation is one of the main challenges when transforming a former industrial brownfield site into a livable community. OPG began the process of cleaning up the site, and when Lakeview Community Partners acquired the property a lot of progress had already been made. Initial soil samples showed minimal amounts of contaminants.

The uniqueness of the site cannot be overstated—a large blank canvas on Lake Ontario, within easy commuting distance to downtown Toronto. Given the history of the site, there is a huge responsibility to create a sustainable, green community that will stand the test of time and create a model for future waterfront developments. That responsibility largely falls to Lakeview Community Partners, but it must be done in

collaboration with all levels of government. It takes a true public-private partnership for these environmental initiatives to take hold.

That partnership has already begun with the construction of the Jim Tovey Lakeview Conservation Area. The 64-acre coastal wetland directly to the east of the site will be partially built on newly-created land in Lake Ontario. More than 200,000 tonnes of concrete from the foundation of the old power plant will be used to build the outer footings. Whether it is climate change initiatives, waste management, or transit, Lakeview will require buy-in and support from the municipal, provincial, and federal governments.

LCPL is currently exploring several green initiatives to reduce the environmental footprint of the development. Given the proximity to a Peel Region wastewater treatment plant, district energy may make sense. The system would take effluent water from the plant and harness the energy to heat and cool the development.

Also, in a development of this scale, vacuum waste collection maybe a viable solution. In essence, a series of pneumatic tubes collects waste and transports refuse to a central location where it can be sorted and disposed



Excavators work to remove the remaining concrete from the site.

What the site looked like once all of the infrastructure of the former coal-power generating station was removed.

of. This would majorly decrease the number of garbage trucks required to service the community, significantly reducing emissions and truck traffic. It would also change the way people think about their waste, promoting recycling, and reducing the amount of garbage generated within the development.

The key to a sustainable, modern development is transit. Lakeview Village currently sits between two GO Train commuter stations. LCPL is working with the city on options to transport residents from the development to those stations, whether that's city buses, bus rapid transit, light rail, or innovative shuttles. Another benefit with opening up the waterfront is an additional three kilometers of a newly-constructed uninterrupted segment of the Great Lakes Waterfront Trail that will be a conduit of active transportation connecting from Burlington to Toronto, allowing people to travel efficiently without a car. How people move in and out of the development is an area where Lakeview Community Partners is relying on leadership and collaboration with various levels of government.

While government buy-in is necessary, density is also a requirement for a development of this size. Waterfront parks and retail need a critical mass to be viable; transit solutions don't work if there isn't

adequate ridership. District energy doesn't make sense if there aren't enough homes to heat and cool. These green endeavors require a critical mass of users, as well as enough people to make them economically viable. However, the need for critical mass needs to be balanced with the availability of services and a pedestrian scaled public realm. As an entirely new community is being created on Mississauga's waterfront, people require transit, utilities, garbage collection, and all of the other services provided by local government. These needs highlight the importance of finding the correct balance of density and public support. As Councillor Jim Tovey used to say, the development needs to earn the sky.

As LCPL moves through the planning process, the question of density is one of the many considerations. How much density is required to reach a critical mass of people that will ensure the success of the retail, environmental, transportation, and cultural facets of Lakeview? Where are the optimal locations to place density on the site? What is the most responsible housing mix to create that density? Lakeview Village will mainly be a mid-rise community, with some higher elements and urban townhomes. There will be homes for the missing middle—affordable units for working people, seniors, and

families. Density will be clustered around green features, creating natural paths down to the lake while maintaining and enhancing views of the water. The development will bring a whole new population to the area, and it's important that it is done in a responsible way.

Creating a vibrant complete community destination and a model for future waterfront developments, requires a balance of private and public investment to ensure the former brownfield site is ready for new residents. It also requires that transit is available and that the community is built in a sustainable way that will stand the test of time. Remediating the former site of a coal fired power plant will give acres of prime waterfront back to the citizens of Mississauga, and that's something that is worth investing in. 🌱



Fabio Mazzocco is the president of land development at Argo Development Corporation. Brian Sutherland is the director of development for Argo Development Corporation.

Credit: Government of Canada



Polling throughout the spring showed Scheer's Conservatives with a four-to-six per cent lead in the race to take power following the October 24th election.

Credit: Government of Canada



THE NEXT GOVERNMENT

Industry leaders share their priorities for the next federal government.

By Andrew Macklin

In the past decade, Canada has seen record investment in infrastructure from the federal government. But despite annual commitments of billions of dollars from both the current government, led by Prime Minister Justin Trudeau, and the previous government, led by Prime Minister Stephen Harper, there still remains a significant infrastructure gap in this country.

But what exactly is the most pressing need for federal investment? Where can the next federal government place its focus

to best help infrastructure development in this country?

Rather than put forth our own opinion, ReNew Canada asked key industry stakeholders from across the country what they thought. We asked each of the stakeholders the same question:

From your perspective, what policy, program or initiative could the next federal government institute in order to have the greatest impact on the development of public sector infrastructure in Canada?

Here's what they told us.



"We recommend the federal government invest in city and city-region infrastructure plans instead of funding of individual projects. This was highlighted in the Canadian Global Cities Council's Planning for an Urban Future: Our Call for a National Urban Strategy report. Investing in a plan can have benefits by accounting for maintenance, reducing political risks and shortening time for intergovernmental approvals."

Jan De Silva, President & CEO, Toronto Region Board of Trade.



Mary Van Buren,
President,
Canadian
Construction
Association

"Local infrastructure is critical to the quality of life of Canadians and the competitiveness of our country. We rely on power generation, roadways and transit, water management and hospitals, but this infrastructure is now aging and in need of serious and sustained investment.

The federal government responded by committing \$180 billion to public infrastructure over the next 12 years, but a longer-term strategy is needed to strengthen Canada's economic growth.

The Canadian Construction Association is urging the government to develop a 25-year plan that spells out the commitments of all levels of government and provides for a consistent and transparent yearly allocation of infrastructure funding."



"The federal government should support the creation of the First Nations Infrastructure Institute to help communities plan, assess procurement options, and ultimately deliver infrastructure projects across communities on an opt-in basis. Building this centre of excellence would give First Nations greater control over infrastructure in their own communities and build capacity and experience to overcome the largest per capita infrastructure deficit in this country."

Mark Romoff, President and CEO, The Canadian Council for Public-Private Partnerships



"Canada has proven itself as a global leader in the realm of city building. To remain leaders, we must continue to invest wisely in our urban future and develop a collective vision to ensure that our cities are low-carbon, inclusive and resilient. There is an enormous opportunity for federal, provincial, municipal, and private sectors across Canada to align to create a national urban agenda—one that will be a model for future cities globally."

Geoff Cape, CEO of Evergreen, and one of the founding partners of Future Cities Canada



Matti Siemiatycki,
Interim Director,
School of
Cities,
University
of Toronto

“The federal government should sponsor a national infrastructure training academy to enhance the capacity of public sector leaders to manage large infrastructure projects. Participants from all levels of government would gain insights on delivering projects on time and on budget, developing effective asset management plans, and successfully engaging with community stakeholders. Through such a program the federal government can use its resources to improve public sector project planning and delivery skills across the country and ensure that infrastructure money is well spent.”



JP Gladu,
President and
Chief Executive
Officer, Canadian
Council for
Aboriginal Business
(CCAB)

“The federal government has a landmark opportunity to turn the page and create sustainable economic opportunities for Indigenous peoples, simply by mandating a five per cent share of existing procurement dollars for Aboriginal businesses by 2024.

CCAB’s recent research report, *Industry and Inclusion: An Analysis of Indigenous Potential in Federal Supply Chains*, found that there is surplus Aboriginal business capacity to meet the needs of government and that a five per cent target is “realistic and achievable” without increasing procurement costs, decreasing quality, or lengthening contract timelines. Furthermore, Aboriginal companies have the capacity to supply over 24 per cent of the goods and services purchased by the federal government.”



Beth McMahon,
CEO of the
Canadian Institute
of Planners

“Funding and policy development to support investment in transit infrastructure is critical. As 28 per cent of greenhouse gas emissions can be attributed to transport, continued investment in public transportation, as well as research and development for improved transportation of goods, would have a profound impact on emissions, while benefitting public health and spurring economic development. This focus would further help Canada meet its commitments to the Paris Agreement and the United Nations Sustainable Development Goals.”

Andrew Macklin is the managing editor of ReNew Canada.



Stay tuned to ReNew Canada as we provide you with industry-focused coverage of the 2019 federal election right up to Election Day. Visit renewcanada.net, or follow us on [Twitter @ReNewCanada](https://twitter.com/ReNewCanada) for updates.

Comtech



Supporting Project Owners to deliver infrastructure initiatives with comprehensive Program & Project Management, Project Controls and Engineering Services.

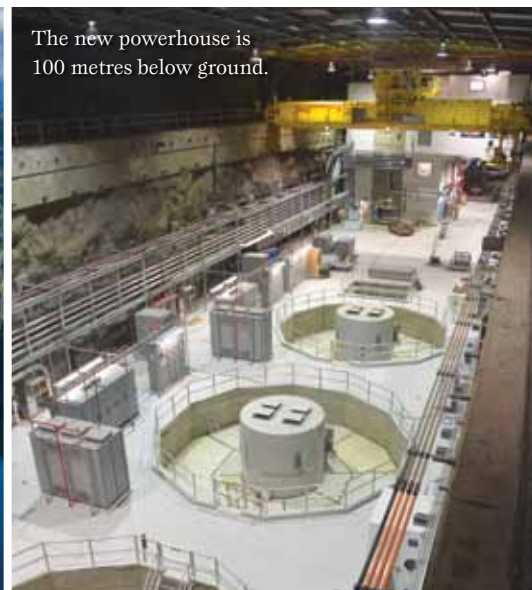


Comtech is a proud Platinum Badge recipient for Renew Canada's Top 100 Projects Report for our delivery services on eighteen (18) of Canada's Top 100 infrastructure projects.

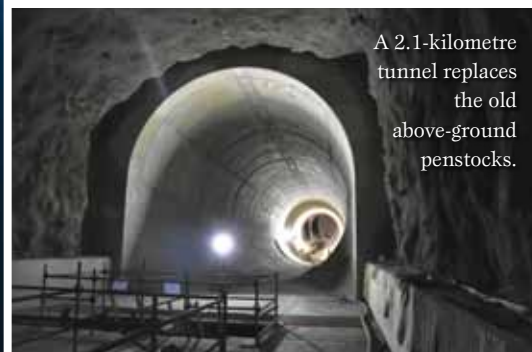
teamcomtech.com



The John Hart Dam and John Hart Reservoir, with the new water intake works and low-level outlet facility.



The new powerhouse is 100 metres below ground.



A 2.1-kilometre tunnel replaces the old above-ground penstocks.

REBIRTH OF A POWER STATION

BC Hydro has finished replacing its John Hart Generating Station.

By Carroll McCormick

After 13 years of work, nearly all traces of BC Hydro's 72-year-old John Hart Generating Station are gone. In its place is a station with a nameplate capacity of 138 MW that provides 10 per cent more power than the old one, and is entirely underground. The three project drivers were to maintain power generation reliability, be seismically strong, and protect downstream salmon habitat from flow reductions from the powerhouse.

The original generating station became operational in 1947, tapping the waters of Vancouver Island's Campbell River to provide around 11 per cent of Vancouver Island's power. The powerhouse was constructed above ground, as were the three huge penstocks that moved water 1.8 kilometres to the powerhouse.

The facility was aging, and unlikely to withstand a low to moderate earthquake. BC Hydro launched a replacement project in 2007, with a \$1.093-billion budget. Partly for visual reasons, partly to make the facility earthquake-resistant, a decision was made to go underground. This also had visual benefits.

"We were originally going to replace the penstocks with steel penstocks with ring girders, spiraled into the soil to provide a good foundation. However, as the surface area is all soil, it would liquefy during a large earthquake and damage the penstocks as well as the concrete and earthfall intake dam. So we decided, for earthquake reasons, to move underground to where the dense bedrock is located," explained Stephen Watson, the John Hart project communication lead with BC Hydro.

While the economics of going underground could seem counterintuitive, from a cost standpoint, this was not the case with the single 2.1-kilometre, 8.1-metre diameter tunnel that would replace the old penstocks. Watson explained: "Our contractor could work through five metres of rock tunnel length, at over eight metres in diameter, per blast per day. That saves a lot of concrete foundation work and other coordination if they were above ground. It is actually more economic in this case to go underground."

Where the old facility had six generators the new one has three, supplied by General Electric. The project included building a

new water intake at the John Hart Spillway Dam and a new water bypass facility within the generating station. BC Hydro points out that 95 per cent of the lower Campbell River comes out of the John Hart Generating Station. A new water bypass will ensure that if there is a need to shut down the facility for any reason, water flow can be maintained, via the bypass facility, for fish and fish habitat.

About \$700 million of the project cost was a contract between BC Hydro and InPower BC (SNC Lavalin). Aecon was also part of the joint venture.

Even though the project ran to over 3.5 million person hours of work, Watson reported that there was not a single lost-time accident. It was, he said, "A tremendous achievement." As well, he added, "The project did not have one water quality incident and this is a big success given the domestic water supply for 35,000 people comes from the John Hart Reservoir, and the Campbell River is often referred to as the Salmon Capital of the World." The project also stayed on schedule and within budget, with final touch-ups to be completed this summer.

One would expect surprises in a project of this complexity. Watson describes one that was successfully overcome. “When drilling and blasting for the main access tunnel (truck access) to the powerhouse, in May 2015, we came across an old buried glacial channel of loose rock instead of solid rock. It required a quick redesign of the tunnel. Our contractor probed around and found a way to go around the loose rock and stay within solid rock. This procurement model allowed the project to adapt to the conditions – offering flexibility that in other structures could have resulted in significant cost or schedule overruns.”

There were several community success stories. For example, BC Hydro worked closely with First Nations under an Impact Benefit Agreement. Beneficial elements range, Watson said, from “[...] excess rock going to the two Campbell River bands for re-purposing, to joint ventures on earthworks, rock hauling, and electrical work, to environmental initiatives. Our contractor really stepped to the plate as well. About 110 self-identified First Nations worked on the project, or at any given time, represented about 10 per cent of the workforce.” Looking to the future, Watson added, “This success also well sets us up for three large proposed dam safety projects on the Campbell River system that may start in 2023/2024.”

Building the tunnel underground meant there would be no surface structures: The land formerly occupied by the old penstocks will eventually be returned to forest and better blend in with the surrounding Elk Falls Provincial Park.

And in what Watson refers to as a project legacy, the need to close the road across the John Hart Dam led to the construction of a permanent, 80-spot parking lot and a suspension bridge at Elk Falls. Illustrating one of the benefits to the community, not to mention that Vancouver Island has a new generating station to keep its lights lit, Watson said, “The Elk Falls Day Use Area had annual visitors climb from about 75,000 visitors a year to about 200,000. The suspension bridge, which opened in 2015, is a free attraction that has increased tourism.”

This all sounds pretty sweet, considering Watson’s observation that, “In some cases people would be hard pressed to know there’s a hydroelectric facility there from a physical point of view.” 🌲

Carroll McCormick is a freelance writer based in Montreal, Quebec.



**FER-PAL.
HELPING
YOUR COMMUNITY
HELP YOU.**

FER-PAL has been working in the background since 1986 helping to provide communities like yours with clean water using technologies that are sustainable and eco-friendly.

**Learn more about us
and our projects at
youtube.com/user/ferpalinfrastructure**

Stay ahead of the curve with FER-PAL

[f](https://www.facebook.com/ferpalinfrastructure) [in](https://www.linkedin.com/company/ferpalinfrastructure) [t](https://twitter.com/ferpalinfrastructure) [You Tube](https://www.youtube.com/user/ferpalinfrastructure)

e: info@ferpalinfrastructure.com **ferpalinfrastructure.com**



Top100

Canada's Biggest
Infrastructure Projects

KEY PLAYERS AND OWNERS DINNER

CELEBRATING THE BIGGEST
INFRASTRUCTURE
PROJECTS IN CANADA

SEE YOU
NEXT YEAR!

FEB. 18, 2020

Plan your presence at the
2020 Top100 Projects
Dinner by contacting
Nick Krukowski
416-444-5842 ext. 101
nick@actualmedia.ca

**TOP100PROJECTS.CA/
CELEBRATE**

Credit: B.C. Ministry of Transportation



Top100
Canada's Biggest
Infrastructure Projects

For additional details
on this year's
Top100 report, visit
top100projects.ca

Pattullo Bridge Replacement Project
Project Value: \$1.377 billion
2019 Top100 Project Rank: #44

EA Certificate Granted for the Pattullo Bridge Replacement

An environmental assessment certificate has been granted to the B.C. Ministry of Transportation and Infrastructure for the \$1.377-billion Pattullo Bridge Replacement Project.

The ministry proposes a four-lane bridge to replace the existing Pattullo Bridge. The new bridge would cross the Fraser River and be constructed about 100 metres upstream of, and roughly parallel to, the existing bridge location that connects the City of Surrey and the City of New Westminster.

Having considered the Environmental Assessment Office's (EAO) Assessment Report and the recommendation of the executive director of the EAO to issue a certificate, the ministers of environment and climate change strategy and municipal affairs and housing are confident that construction,

demolition, and operational activities would be conducted in a way that ensures that no significant adverse effects are likely to occur.

In addition to the 20 conditions that are part of the project's environmental assessment certificate, design requirements are specified in the certified project description, which are legally binding requirements that the ministry must meet to maintain compliance with the certificate. The conditions were developed following consultation and input from Indigenous groups, government agencies, communities, and the public.

The ministry is also required to obtain other federal, provincial, and local government permits or approvals, including a project and environmental review permit from the Vancouver Fraser Port Authority, in order to proceed with construction of the project.

Key conditions for the project require the development of the following plans:

- Indigenous group monitoring plan to ensure opportunities for members of representative Indigenous groups to participate in monitoring activities.
- Construction and demolition environmental management plans.
- Fish and fish habitat monitoring and mitigation plan.
- Fish and wildlife habitat offsetting plan;
- Cultural and archaeological resources management plan.
- Indigenous cultural recognition plan.

The EAO and Ministry of Transportation and Infrastructure provided funding to facilitate participation in the environmental assessment process.

Credit: Government of Alberta



Springbank Off-stream Reservoir
Project Value: \$432 million
2019 Top100 Projects Rank: #94

Alberta Looks to Advance Springbank Construction Timeline

The Government of Alberta has announced the hiring of Martin Ignasiak to assess opportunities to expedite construction of the \$432-million Springbank Off-Stream Reservoir.

Ignasiak, a partner at the law firm of Osler, Hoskin & Harcourt LLP, has extensive experience developing and executing strategies to obtain regulatory approvals for large-scale projects.

As an independent expert, Ignasiak will work to assess the project's status and advise the government about immediate action to move the project forward, while

respecting the regulatory approval processes and the ongoing consultations required with important stakeholders.

"We need an independent expert to evaluate the Springbank Reservoir project and determine what can be done to move this project forward," said Ric McIver, Minister of Transportation. "We are confident that Mr. Ignasiak will help us move quickly to protect the safety and economic security of Calgary and those living in other communities downstream of the Elbow River."

The Springbank Reservoir is part of

the government's overall flood-mitigation strategy for southern Alberta. Ineffective flood mitigation risks billions of dollars in lost economic activity and property damage.

Once constructed, the Springbank Off-Stream Reservoir will work in tandem with the Glenmore Reservoir in Calgary to accommodate water volumes equivalent to the southern Alberta floods of 2013. The project is under review by the Canadian Environmental Assessment Agency, Alberta Environment and Parks, and the Natural Resources Conservation Board.

APPOINTED



Sandra Martel

The Government of Canada has announced the appointment of **Sandra Martel** as chief executive officer (CEO) of Jacques Cartier and Champlain Bridges Incorporated (JCCBI).

Martel has been with JCCBI since 2006 in various roles. Following the departure of the former CEO, she agreed to act as interim CEO; at the time she was a senior director, a position she had accepted in 2012. She has over 23 years of experience in the field of civil engineering, including working in research and development at Université de Sherbrooke and in the areas of project management and business development at Expertech and Bell Canada.

JCCBI, a Crown Corporation that operates at arm's length from the government, reports to Parliament through the Minister of Infrastructure and Communities.

JCCBI owns and operates four federal transportation corridors in the Montreal area:

- The Champlain Bridge and the Estacade.
- The Jacques Cartier Bridge.
- The Melocheville tunnel.
- The Honoré Mercier Bridge (federal portion).
- The Bonaventure Expressway (federal portion).



Craig Forrest

Arup has announced the appointment of **Craig Forrest** to lead their Canadian operations. Forrest works out of Arup's Toronto office, and oversees the company's Montreal office as well.

Forrest brings more than 24 years of experience in helping clients invest in major infrastructure projects in energy, aviation, water, transport, and cities. For the past five years, Forrest has served as the global leader for Arup's Business and Investor Advisory services, providing strategic business, financial, economic, regulatory, and asset management advice. Forrest joined Arup in 2007 as the commercial director for the Infrastructure of Europe Group.

Forrest will work closely with **Andrew McAlpine**, the previous Canada leader who remains at Arup as a principal.

To support Arup's recent growth in other practice areas, the Toronto office also welcomed **Melissa Burton** as the consulting practice leader in Canada. Burton is Canadian and joins the Toronto office from New York. Also as a leader with Arup's Advanced Technology and Research team, she brings with her a wealth of technical

knowledge, client relationships, and business leadership to develop innovative solutions to complex problems.



Aïda Nciri

Aïda Nciri has joined the QUEST network as the new senior lead for projects and advisory services.

Aïda holds a PhD from the University of Calgary where she specialized in energy and environmental systems. Her dissertation analyzed low-carbon policies developed by the three levels of governments and their impacts on distributed generation, and district energy systems in particular, in Alberta. Her previous work experience includes roles with Energy Efficiency Alberta and the Calgary Climate Hub.

Nciri will be located in the organization's Calgary office.



Kieran Hawe

EllisDon has announced several new appointments to its senior level management.

Kieran Hawe has been appointed as chief operating officer and executive vice-president, construction operations. He will be responsible for EllisDon's core Buildings, Civil and Industrial divisions, across Canada and abroad, an operation currently with annual revenues in excess of \$4 billion.

Hawe joined EllisDon in 2000 and has over 20 years' experience in commercial, institutional, and residential construction on major projects in Canada, the United States, Germany, Ireland, and Singapore. Hawe previously was executive vice-president, buildings division, where he was overseeing every area across Canada.

Joey Comeau has been appointed as chief operating officer and executive vice-president, capital division. He will be responsible for diversification into new sectors including private sector equity partnerships and real estate development, as well as new geographic markets while continuing to pursue opportunities in

infrastructure through public-private-partnerships.

Comeau has over 15 years' experience in investing across a diverse set of asset classes including transportation, healthcare, justice, civil, and real estate. Since joining the company in 2014, he has been directly involved in closing 20 projects with a total capital value over \$11.5 billion.

Expanding upon her role as chief strategy officer, **Jody Becker** has been appointed as senior vice-president, services. With overall responsibility for the growth of EllisDon as a high-performance building operator, maintenance provider, and technology integrator, Becker will oversee the operations of facilities services, energy and digital services, project management, furniture, equipment and design, and sustainable building solutions. As part of her leadership of project management, she will also continue to oversee EllisDon's growing operations in the Middle East.

David McFarlane has been appointed to senior vice-president, buildings division, Western Canada, responsible for overseeing the Vancouver, Edmonton, and Calgary area offices.

McFarlane started his career with EllisDon in 1996 as a co-op student and has held many positions including various field operations positions and director of construction management in Toronto in early 2004.

With McFarlane stepping into his new role, **Craig Enns** has taken over as vice-president and area manager for British Columbia.

In 2005 Enns completed a professional Internship with EllisDon's Construction Sciences group while he worked toward his engineering degree at Queen's University. After spending some time as a structural consultant, he rejoined the company in 2008 as a project manager to help build and grow the British Columbia office.



Send your news
and events to

andrew@actualmedia.ca



ReNew Canada's Todd Latham moderates the panel discussion on What's Broken in Asset Management.



The 2019 CNAM Board of Directors.



Attendees pose during the annual Tereo Awards Gala, recognizing outstanding achievement in asset management.

CNAM ANNUAL CONFERENCE KELOWNA, B.C.

The 13th Annual Canadian Network of Asset Managers Conference theme was Keeping the Pace – Continuing Our Success on the Asset Management Journey and what a pace it was! With public infrastructure engineering and financial management practices now entrenched in almost every facet of community development and municipal governance, the challenge is how to stay on top of the growth and innovation that is taking place across the industry. CNAM helps practitioners do that

every year. Over 400 delegates enjoyed the beautiful Okanagan city of Kelowna this past May and conference organizers made sure the excellent wine and golf the region is known for was included on the agenda.

Also included on the packed program was a panel on What's Broken with Asset Management, which was moderated by ReNew Canada's **Todd Latham** and featured some expletives and a group sing-along (you had to be there). There were many fascinating presentations, workshops

and spontaneous hallway idea sharing. Of the many networking opportunities included in the conference programming, the highlight was the annual Tereo Awards Gala where **Wally Wells** won the Pioneer Award and where both the City of Selkirk and the Federation of Canadian Municipalities won for their work to advance asset management at the local and national level. Plans are already underway for CNAM 2020 in St. John's, Nfld. from May 11-14.

For more information, visit cnam.ca.



Catherine Clark hosted an episode of The Sixth Estate as part of the Hackathon.



Clark with KPMG Global Head of Infrastructure Richard Threlfall.



CCPPP HOSTS MINISTER CHAMPAGNE TORONTO, ONT.

KPMG 2030 MOBILITY HACKATHON

What will the new mobility ecosystem look like? That was the key question that drove conversation at KPMG's 2030 Mobility Hackathon.

A wide array of industry stakeholders took part in the Toronto discussion, focused on developing practical solutions for taking advantage of the opportunities the new mobility will present, as well as manage the risks of the transforming industry.

At this stage, there are more questions than answers. Collaboration will be key, but are the needed collaborators willing to make the adjustment? For example, part of the mobility ecosystem is vehicles as a public service. Can the automotive industry make the necessary evolution to embrace the need to design and function with the public, and not the individual, first and foremost?

There is also a significant amount of work that needs to be done in order to connect communities in

preparation for the future mobility. How can you integrate connected vehicles when connectivity doesn't exist? Without investment in the infrastructure of mobility, a costly expense, some communities will be at a global disadvantage.

It's difficult to plan for that investment when it is impossible to predict just how quickly key mechanisms like 5G and autonomous vehicles will emerge. It is believe that 5G is only 12-18 months away, but the regulation and installation of the technology could be a long and difficult process. And will the speed of AV integration take 40 years, like the switch from horse and carriage to motor vehicle, or four years because of the rapid rate of technology adoption that we currently experience.

For more information on the KPMG Hackathon, visit home.kpmg and search Mobility 2030.

The Canadian Council for Public-Private Partnerships (CCPPP) hosted federal Minister of Infrastructure and Communities Francois-Phillippe Champagne for an industry luncheon that discussed focused on the progress of nation-building in the context of long-term infrastructure.

During the conversation, Champagne stressed that there has never been a better time to partner together to build infrastructure in Canada. And not just with government partners within our borders, and the companies that thrive designing and building in Canada, but also with other countries. After all, Canada is the only G7 nation that has trade agreements with all of the other G7 countries, which can open doors for Canadian companies to work with international partners.

He stressed that labour is a chokepoint for infrastructure development. He suggested that there is a need to plan in order to have the support for getting people involved in building the assets from the record investments. That can be a difficult task, as Canadians do not have the kind of relationship with its critical infrastructure that can be found in other countries, nor has enough of a drive towards getting students involved in the infrastructure workforce.

For more information on the Canadian Council for Public-Private Partnerships, visit pppcouncil.ca.

Photos: ReNew Canada



Manulife
Financial's
Bruce
Anderson



Nicholas
Hahn of
the Canada
Infrastructure
Bank.



RBC Capital
Market's
Vickie
Turnbull

CANADIAN DESIGN BUILD SUMMIT NIAGARA REGION, ONT.

An intimate group of industry professionals gathered in the heart of Ontario's wine country for the inaugural Canadian Design Build Summit, hosted by Spire Connect.

One of the key discussions at the event looked at how to align interests across multiple stakeholder groups. The discussion involved **Vickie Turnbull** from RBC Capital Markets, **Nicholas Hahn** from the Canada Infrastructure Bank (CIB or Bank), and **Bruce Anderson** from Manulife Financial.

Turnbull discussed how the introduction of user pay models can help to pay down the cost of a project, allowing things like transit,

toll transportation, energy, and water/wastewater to get built regardless of the presence of government funding.

This could be the case in regards to the proposed Quayside project on the Toronto waterfront. The project will need a transit system in order to thrive, but the Ford government has not viewed this as a current priority. So how do you pay for it? Tax incremental Financing is an option, as are development charges. Anderson noted that the certainty of the revenues reduces the risk, which would, in turn, reduce the cost of financing.

But there is also a potential role to play for the Canada Infrastructure Bank. The advantage of the Bank is that it reduces the necessary government contribution to get a project off the ground by bringing more private sector capital to the table. With more skin in the game, there is a significantly less chance that the asset owner will walk away from the project. And in addition, the Bank can give a financial commitment pre-procurement, an asset that could improve the ability to secure financing for the remaining project cost.

For more information about the Canadian Design Build Summit, visit spireconnect.ca.



Canadian
Environmental &
Engineering Executives
Conference

OCTOBER 2-4, 2019
Terminal City Club
Vancouver, B.C.



2018 CE3C COHORT



KEY CONFERENCE TOPICS

MERGERS &
ACQUISITIONS

GOVERNMENT
ENGAGEMENT

CLIENT'S
PERSPECTIVE

CULTIVATING
LEADERS

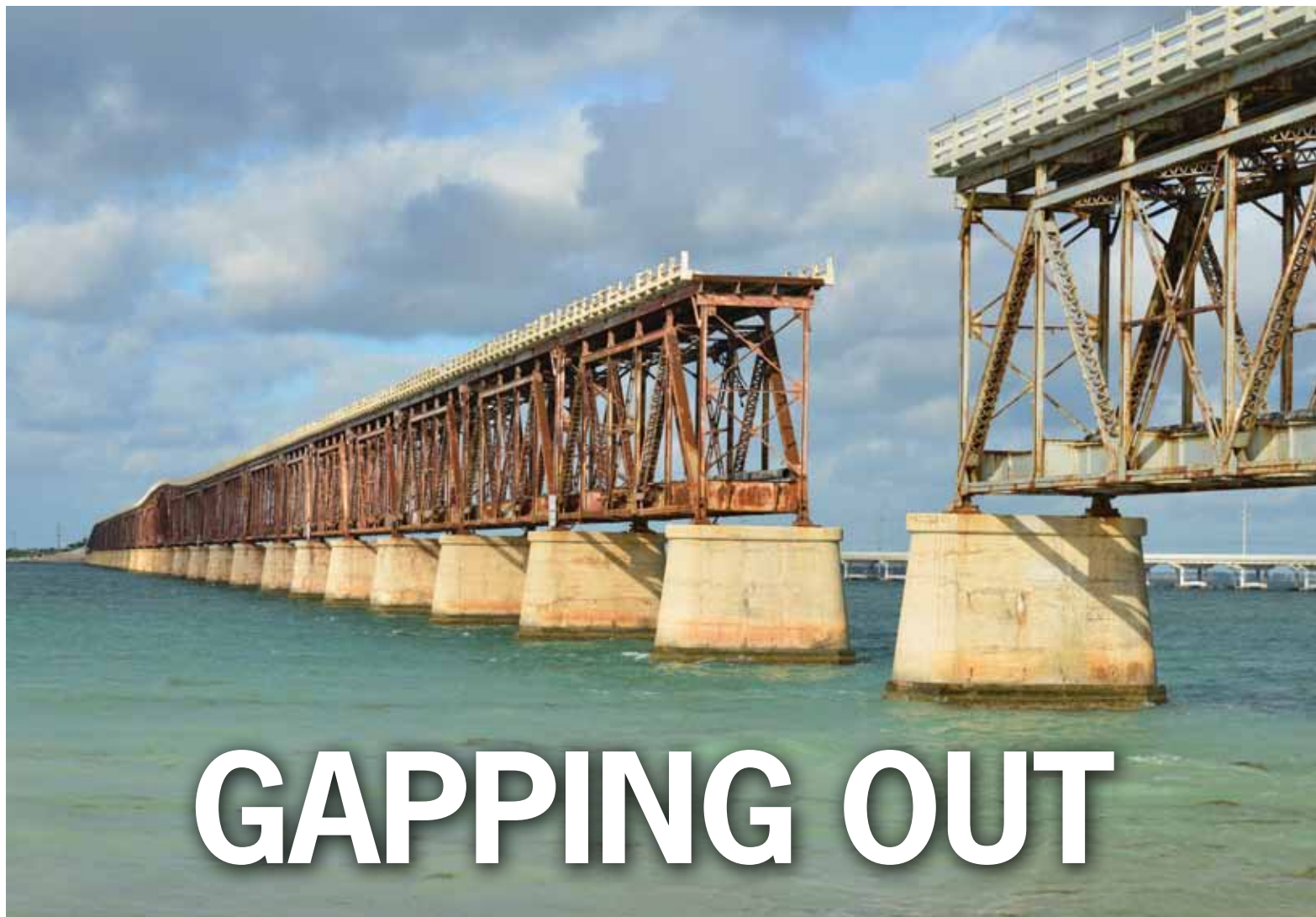
GOVERNANCE
ROUNDTABLE

CE3C is an exclusive event for corporate executives in the consulting and engineering community to meet, network, and discuss key issues facing the sectors they operate in and serve.

As the only Canadian conference specifically tailored for environment and engineering executives, we invite you to join the 2019 CE3C cohort and be part of this premier gathering of leadership teams from across Canada.

EARLY REGISTRATION
AND HOTEL DISCOUNTS
AVAILABLE

CE3C.CA



GAPPING OUT

Identifying attention deficit disorders of infrastructure. *By Todd Latham*

Tired, overwhelmed and distracted at work? You're not alone—seems that many of us are gapping out. Here are a few 'gaps' that I see and hear about these days.

The Infrastructure Gap

It's about money, it's about political will, and it's about time. The last two are wrapped in one when you look at the bureaucratic inertia that overcomes government when they ignore consensus and science and just freeze. Instead of trying to bridge the gap and take action, they paper over it with discussion papers. Most people think the infrastructure gap is about lack of funds, but there is also a widening gap between some elected officials' will and their capability. We don't need any more stupidly built, fall-down bridges in Saskatchewan or knuckle-dragging EA reform in Ontario, thank you very much. We need elected champions who listen to industry, apply facts to policy, and get things done without costly mistakes or delays.

The Public Ignorance, I-Don't-Give-a-S*! Gap

Close cousins to political gaps are the public gaps: reacting to what we see versus what we know—thinking about taxes saved versus taxes well spent. The planet is catastrophically changing in front of our eyes but the public is shrugging in the face of it. You can pile up all the facts and scream until you're blue in the face about climate change, but let's face it, some people just don't care. Or, if they do, they've convinced themselves that they're right and everyone else is wrong to justify their inaction. Or, perhaps worse, they're acknowledging these issues but are too apathetic to do anything about it.

The Valuation Gap

We undervalue our time and ourselves. We work too many hours, attend too many meetings, and spend too much time commuting and doing mindless things on our phones, which means our quality time is a small fraction of the weekly total. In the daily grind it might be easy to be convinced that our time is worthless, that any pittance we can get for the extra hours we put in—financial or intellectual—must be worth it. Why

do we not put higher value on ourselves? If you ranked all regulated professions by annual membership/licensing costs where do you think they would stand? For example, have engineers diluted their profession by charging some of the lowest fees in Canada? Are public works managers and directors paid based on the level of service they ensure for citizens? It seems there is a perceived rank of importance by consumers that places engineering and public works professions on a lower status as lawyers and accountants for example—many whom are paid many multiples more per year. If we want more compensation—in time and money, let's better explain and demonstrate our value.

I was going to write a proper closing to this, but I gapped out. ♣



Todd is the founder of ReNew Canada and was going to write about eliminating provinces, elevating municipalities to the highest order of government and obligating the federal government to spend five

per cent of annual GDP on infrastructure, but...



exponential possibilities.



EXP has the right blend of expertise and experience to
understand, innovate, partner, and deliver.

exp • com





Question today
Imagine tomorrow
Create for the future

WSP is proud to partner with our clients to deliver innovative and sustainable engineering solutions.

As a future-focused organization, we design and deliver projects that shape societies and connect communities, creating places where our friends, families and neighbours can thrive.

**WSP—big, bold, ambitious thinking
that inspires and influences.**



wsp.com