

ReNew

January/February 2019

C A N A D A

The Infrastructure Magazine

+ Breaking Down the Top 100 Projects

+ Positive IONs

+ Smart Health

BUILDING BIG

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BOLD DESIGNS

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ReNew

CANADA

The Infrastructure Magazine

JANUARY/FEBRUARY 2019

SPECIAL INSERT



Top100 Projects 2019

Our thirteenth annual report on Canada's biggest infrastructure projects is inserted into the centre of this issue.

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

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THE FATE OF LONDON'S BRT

By Andrew Macklin

When the dust settled in the municipal election, it was expected that a clear picture of London's transit future would be painted. After all, the hard fought campaign saw many candidates place their support, or their opposition, of the planned \$500-million bus rapid transit plan at the forefront of their push to earn a spot on council. And for many voters, it was expected that the election would ultimately resemble a referendum on the issue.

As of right now, London remains the largest community in Canada that does not have any rapid transit in place or under development. The previous council, under then Mayor Matt Brown, had pushed forward with the plans for bus rapid transit that would reach all directions of the city. The system would run across two corridors with a north-and-east route that encompasses both post-secondary institutions and a south-and-west route that focuses on the bustling retail sectors. Both routes would run through a downtown hub that would link with other bus service and the nearby VIA Rail station.

The municipality had even garnered financial support for the initiative, securing \$170 million in provincial funding in January of 2018, and enough federal funding for transit allocated to them that would cover the remaining costs associated with the project.

All that stood in the way was the municipal vote, one that could re-open the debate and send the project to the start of construction, or back to the drawing board.

But the result of the election created the potential for a stalemate, one that could pose an even bigger problem. As the London Free Press pointed out in the hours following the final result, the 15-member council now sees seven staunch supporters of the plan, and seven stark objectors, with one councillor, Josh Morgan, expected to continue his declaration of a conflict of interest due to his employment at Western University. (Western would be one of the biggest benefactors of the BRT as currently planned)

Because of this, any potential vote to repeal the current plan for the BRT would be defeated at council, as a tie is an automatic defeat. So repealing the current plan for bus rapid transit in the city could be very difficult.

It's a deadlocked debate that is one changed mind away from a permanent solution. But until one councillor makes that debate-altering decision, or a change is made that negates their ward's disdain for the project, this will remain one of the most contentious infrastructure issues in the country. ♣

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The 2019 Top100 Projects report represents \$212.6 billion in large-scale development. Turn to page 10 to learn more.

Photo Credit: BBE Hydro Constructors

AN ARCTIC FIRST



In November, the federal government announced its first investment through the Arctic Energy Fund (AEF). The \$400-million fund was established to help improve energy security in the North by replacing or upgrading aging fossil fuel energy infrastructure.

The first investment will provide funding for the Inuvik Wind Generation project, and includes:

- **The installation of wind turbines;**
- **A grid controller;**
- **A large battery storage system to generate energy when the wind slows down;**
- **Construction of a five-kilometre access road from Dempster Highway to the project site; and**
- **Connections to the local electric grid.**

In addition to the \$30 million contribution from the federal government through the AEF, the Government of the Northwest Territories is providing \$10 million for the project.

**NEXT ISSUE: MARCH/APRIL
THE MANAGEMENT ISSUE**

Plugging In

Building Canada's electric car infrastructure.

Asset Framework

Building competency within asset management.

Combatting California

How do we implement residential renewables?

Credit: Government of Canada



**CHAMPLAIN
BRIDGE CORRIDOR
TO OPEN IN 2019**

The Government of Canada announced that the new Champlain Bridge Corridor project would not open on December 21, 2018 as originally mandated as part of the contract signed between the Government of Canada and the successful proponent.

During a technical briefing at the site, Signature on the St. Lawrence (SSL), the private consortium responsible for building and operating the new corridor, announced that despite the progress that has been made during the fall of 2018, the new Champlain Bridge would not be ready to open to traffic in December. The opening will take place no later than June 2019 and the official date will be confirmed.

SSL reported significant progress had been made on the bridge and indicated that the main structure of the bridge would be completed on schedule. They noted however, that some important weather-dependent permanent work, including waterproofing and paving, is unlikely to commence until early spring.

“The Government of Canada’s priority is to ensure the new toll-free Champlain Bridge is built to endure without ever compromising the safety of workers or the public,” said Minister of Infrastructure and Communities François-Philippe Champagne. “The construction update makes clear that significant progress has been made on this critically important project and that final work necessary to open the bridge to traffic will take place in the new year. I commend everyone who has contributed to this ambitious project. Your dedication and innovation is truly inspiring and I have no doubt it will continue as we set our sights on the opening of the new Champlain Bridge in 2019.”

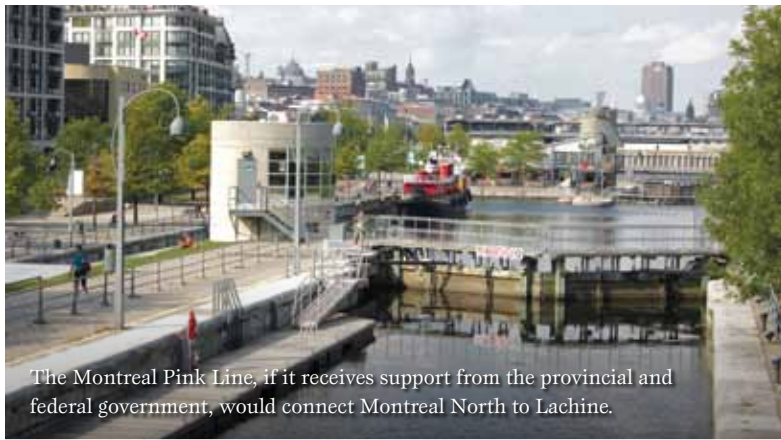
The new Champlain Bridge Corridor project is one of the largest infrastructure projects in North America. Throughout this project, the Government of Canada has maintained its objective of ensuring a high quality bridge that will meet the long-term needs of Canadians.

The Jacques Cartier and Champlain Bridges Incorporated (JCCBI), which is responsible for the operation and maintenance of the existing Champlain Bridge, also provided an update on the measures it is taking to ensure safe and uninterrupted service until the new bridge opens.

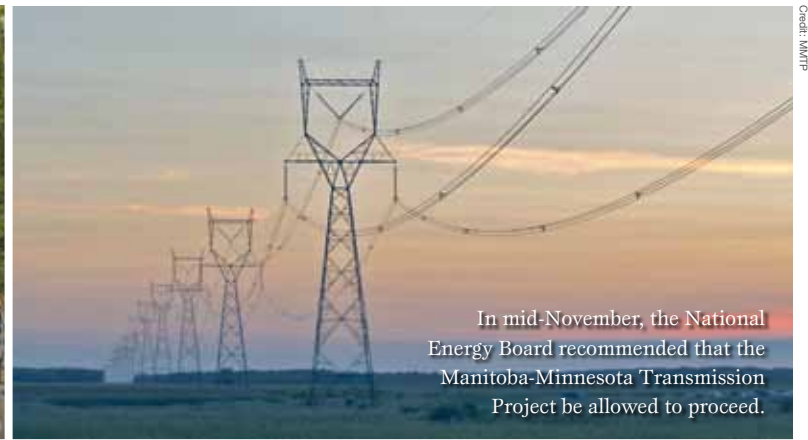
The Champlain Bridge is safe and continually being monitored. In recent years, The Jacques Cartier and Champlain Bridges Incorporated had implemented an effective reinforcement plan for the bridge. ♣

Advertising Deadline: January 18, 2019

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The Montreal Pink Line, if it receives support from the provincial and federal government, would connect Montreal North to Lachine.



Credit: MMTTP

In mid-November, the National Energy Board recommended that the Manitoba-Minnesota Transmission Project be allowed to proceed.



Will new voices at the municipal level force a resolution for how to replace the aging George Massey Tunnel in B.C.?

COMING SOON

The issues and projects impacting the industry in 2019. *Staff Report*

It's difficult to project what will happen in a year ahead when so much still seems up in the air, especially on the political front. Three provinces have new councils just settling in, three provinces are still sorting out infrastructure agendas following the election of new parties, and the federal election, which is wide open, lingering in the months ahead.

The good news is that there is still a pipeline of megaprojects in the works, as the ReNew Canada pipeline still exceeds the 100 projects featured in our annual report. All three levels of government, as well as the private sector, continue to have substantial short and medium term plans for significant investment in the portfolio, both for new and rehabilitated assets.

But with so much in flux, with funding and political support still to be established, what comes next is still very much up for debate.

We have identified 12 key projects,

issues, and conundrums that will be key to infrastructure development in Canada in the year ahead. These are presented in no particular order... except for the first one.

The 2019 federal election

There is no single issue that will have a greater impact on infrastructure development in Canada in 2019. The bilateral agreements have all been signed, so for the most part,

(NDP), neither one of which have provided a clear plan that indicates if spending would increase, or decrease, under their regime.

A Massey solution?

We still do not have a clear understanding of the new solution for replacing the George Massey Tunnel in B.C. The coalition NDP-Green government in B.C. has focused on other priorities, such as the \$1.377-billion

Could Winnipeg be an ideal candidate for an investment from the Canada Infrastructure Bank?

we know what to expect from the governing Liberals in terms of investment. But the same cannot be said for the Conservative Party of Canada (CPC) or the New Democratic Party

replacement of the Pattullo Bridge and funding for transit expansion, but this still remains a high priority for transportation infrastructure in the province. Richmond



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Photo Credit: Metrostar

Mayor Malcolm Brodie still support an investigation into twinning the tunnel, with new Delta Mayor George Harvie says that he will push for the shovel-ready bridge. Expect this issue to reach a boiling point in 2019.

What's next for Alberta?

Good question. The NDP face a tough test in the spring election thanks to the emergence of the United Conservative Party, leading by former federal Minister of National Defence Jason Kenney.

For the most part, the NDP have provided steady funding for infrastructure projects throughout the province, with several megaprojects getting off the ground with the help of provincial funding. But like every other province across Canada, the lack of funding commitments for certain key priorities, such as the East Perimeter Highway, could be used against them come campaign time.

At press time, Kenney had not yet unveiled his plan for infrastructure spending should the UCF get elected. But with a decent record of investment from their NDP counterparts, the plan will come under great scrutiny when it is released.

Downtown Relief Line

One of the great political footballs during the 2018 mayoral race in Toronto, the demonstrated need for a new subway to relieve overcrowding is paramount. Mayor Tory will need to push this forward, especially after City of Markham mayor Frank Scarpitti publicly stated in October that he would push for the Yonge Street Extension to be built immediately regardless of the status of the relief line. The environmental assessment was approved days before the municipal election, but the funding isn't yet in place.

This is, without question, the biggest transit priority in Canada's largest city.

Bank-able investments

In November, Canada Infrastructure Bank CEO Pierre Lavalley told the infrastructure community that his team is actively engaged in discussions on 10 infrastructure projects, representing (potentially) tens of billions of dollars in public sector infrastructure projects.

These investments could get some stalled projects off the ground, or perhaps present new initiatives that have not previously been publicly presented. Stay tuned.

Pipeline update?

In November of 2017, Infrastructure Ontario

released an update of its project pipeline, introducing several new megaprojects worth billions of dollars.

However, since the Progressive Conservatives took power in June of 2018, there has been little news on what the new pipeline looks like, and how much it will be altered from the priorities of the previous government.

With so many companies working on Ontario-based projects, the next update of the IO pipeline will be critical for understanding the priorities for business in the province in the years to come.

Plante's pink predicament

With the election of the Coalition Avenir Quebec in the provincial election, Montreal mayor Valerie Plante's plan for the Pink Line have taken a hint as new Premier Francois Legault has been vocal in stating that he and his party do not support the project.

But with the introduction of the Canada Infrastructure Bank, provincial funding isn't necessary in order to get an infrastructure megaproject off the ground. If Plante wants the project badly enough, if she thinks the Pink Line is absolutely necessary for the city, would she be willing to sacrifice some of the project's revenue in order to get it built?

Investigation closed?

This year, the inquiry into the Muskrat Falls project will be completed. The project, which now sits at \$12.7 billion, is nearly double the original approved budget.

The inquiry will shed light on where the project budget fell down, and what measures will be undertaken to provide future savings for ratepayers despite the need to cover the project costs. More importantly, it will provide valuable lessons for the entire industry on the planning pitfalls of large-scale hydroelectric projects.

Cross-border power

Twelve months ago, we pondered whether it would be the year that one or multiple cross-border power megaprojects would finally reach toe construction phase. That didn't happen, but certainly the Lake Erie Connector is close, and projects in Manitoba and Atlantic Canada look to be nearing the start line as well.

Could this, finally, be the year that one of these projects starts construction?

Will Winnipeg's woes continue?

Maybe we are reading too much into the

hype, but it feels like there are few cities in Canada whose difficulties in funding infrastructure projects have been more pronounced than in Winnipeg.

Brian Bowman won a convincing mandate for his second term in the city's top job, and he knows he has work to do on the infrastructure front. He faces an uphill battle in convincing Premier Brian Pallister and Minister of Infrastructure and Communities Francois-Philippe Champagne to provide more funding for the city, but without question he will have to make pressuring both a priority.

If he is unsuccessful in finding more revenue at the provincial and/or federal level, could Winnipeg be an ideal candidate for an investment from the Canada Infrastructure Bank?

Resource development

During the Liberal's reign in Ontario, the opposition was very critical of the government's inability to get a funding agreement in place to build the transportation assets necessary to open the Ring of Fire to development.

Now that the Progressive Conservatives are in power, will they step up to the plate and push forward to get a deal done? It will be worth keeping an eye on the 2019-20 budget announcement to see if the funding is in place.

Viva la VIA

The federal government announced in 2018 that it is providing \$1.3 billion to upgrade and modernize VIA Rail's vehicle fleet. This could drastically improve the quality of passenger rail service across the country.

But will the upgraded fleet push rural travellers stuck in their cars to now turn to rail service to travel to urban centres from coast to coast? It's a financial gamble worth making, especially as urban commuters continue to adopt the transit option. And in corridors where high speed rail is being considered, it could provide the last piece of the business case to make those projects move forward.

There are no shortage of issues and trends impacting infrastructure development in Canada at any given time. To stay on top of it all, be sure to check in with us at renewcanada.net for your daily insights, project news, and answers to the questions we've posed in this article. ✿

—Staff



Brownie Awards 2018

REPROGRAM
REMEDiate
RENEW REINVEST
REBUILD REACH OUT
REPROGRAM REMEDiate
RENEW REINVEST
REBUILD REACH OUT
REPROGRAM REMEDiate
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REBUILD REACH OUT
REPROGRAM
REMEDiate

Recognizing Excellence in the Remediation and Redevelopment of Brownfield Sites Across Canada

All Photos: Josh Fee



BROWNFIELDER OF THE YEAR.



BEST OVERALL PROJECT AWARD



BEST LARGE PROJECT AWARD



REPROGRAM AWARD



RENEW AWARD



REINVEST AWARD



REACH OUT AWARD



Englobe's Tewfik Atia welcomes Keynote Speaker Jeff Westeinde to the stage.



Actual Media CEO Todd Latham returned as emcee for the 2018 Brownie Awards.



CBN Chair Grant Walsom opens the 2018 Brownie Awards.

The 2018 Brownie Award winners were recognized at a gala event in Toronto on November 21. Originally begun by the Canadian Urban Institute (CUI) in 2000, the awards are now presented by the Canadian Brownfields Network (CBN) in partnership with ReNew Canada's parent company, Actual Media. 44 nominations were received and 10 projects and individuals were recognized for their achievements:

REPROGRAM:

Legislation, Policy & Program Initiatives

WINNER: Excess Soils Bylaw Tool - Ontario

REMEDiate:

Sustainable Remediation and Technological Innovation

WINNER: Cates Landing - North Vancouver, BC

REINVEST: Financing, Risk Management and Partnerships

WINNER: The Bentway - Toronto, ON

REBUILD:

Redevelopment at the Local, Site Scale

WINNER: Pier Development - North Vancouver, BC

RENEW: Redevelopment at the Community Scale

WINNER: Greystone Village - Ottawa, ON

REACH OUT:

Communication, Marketing and Public Engagement

WINNER: Carcross-Tagish Management - Carcross, YT

BROWNFIELDER OF THE YEAR

WINNER: Chris De Sousa, Ryerson University - Toronto, ON

BEST SMALL PROJECT

WINNER: East Village Junction - Calgary, AB

BEST LARGE PROJECT

WINNER: Zibi - Ottawa/Gatineau

BEST OVERALL PROJECT

WINNER:
• ERASE CIP 2018 - Hamilton, ON
• Kingston Failed Tax Sale Properties - Kingston, ON

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For further information on the 2018 Brownie Award dinner, winners and finalists, visit brownieawards.ca

The \$1.377-billion Pattullo Bridge project in B.C. represents one of 23 new projects to be included in the 2019 report.



Top100
Canada's Biggest
Infrastructure Projects

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

Credit: City of Ottawa/TransLink



Credit: City of Ottawa/TransLink



The 2019 Top100 Projects report contains 30 transit projects, by far the most the sector has ever had in the annual report.

TOP100 PROJECTS REPORT

Breaking down over \$212 billion in infrastructure megaprojects. *By Andrew Macklin*

It is another record-breaking year for infrastructure megaproject development in Canada, as the Top100 Projects smashed through the \$200 billion barrier to reach over \$212.6 billion. That represents an increase of \$13.6 billion from the 2018 report, which came in at a hair over \$199 billion.

This year's report marks a changing of the guard in some ways, as the once-dominant energy portfolio gave way to a surge in transit, health care, and water-wastewater project development. The energy sector still leads our report in overall investment, bolstered by the six costliest projects on our list, but now sits fourth in number of projects at 15, trailing transit's 30, 22 building projects, and 18 in the transportation sector.

Ontario continues its dominance in the number of projects on our list, with

more than three times the next closest province (46 versus Quebec and B.C.'s 14). And Ontario now sits just a hair shy of breaking the \$100 billion barrier by itself, sitting at \$98 billion overall.

It was also a landmark year as far as report turnover is concerned. The 2019 edition features 23 projects that were not involved in the 2018 edition, including 14 projects that reached substantial completion. Seven additional projects were removed as a result of stalled procurement or cancellation, while two others failed to make the cut based on project value. The lowest-value project on our list now sits at \$340 million. As of right now, 13 of our 100 projects are set to reach substantial completion in the next 12 months.

Provincial/Territorial Breakdown British Columbia

One year ago, infrastructure megaproject development in B.C. took a hit when the then-new B.C.-Green minority government, led by NDP Leader John Horgan, decided to cancel the Request for Proposals for the \$3.5-billion George Massey Tunnel Replacement project. And while we still don't have a resolution for how that project will move forward, the B.C. Government has made significant investments in key infrastructure assets throughout the southern half of the province.

Two new transportation projects were

Building development, including hospital redevelopments like Toronto's CAMH 1C project, caused a shift in the focus of the 2019 report.



added to the 2019 report, led by the Pattullo Bridge replacement project. We've known for years that the bridge was well past its expected lifespan, and the provincial government has decided to act. Procurement of the \$1.377-billion project is moving quickly ahead, with construction to begin in 2019. The Vancouver Fraser Port Authority is moving ahead with its Centerm Expansion Project, which will increase capacity at the terminal by two-thirds from 900,000 twenty-foot equivalent container units (TEUs) to 1.5 million.

With more than \$3 billion in federal and provincial government funding secured, TransLink is now moving forward with two of its key transit priorities for the Greater Vancouver Area: the Millenium Line Broadway Extension and the Surrey LRT. Plans for the latter could change, as the new Mayor of Surrey Doug McCallum pushes for SkyTrain service instead, but some close-to-current iteration of these projects will move forward.

The province also possesses several key projects whose development took positive strides forward in 2018. Construction works on the \$10.7-billion Site C Clean Energy Project progressed, although it was determined that the original deadline for the river diversion would not be met. The project remains on its original schedule of completion in 2024. In Vancouver, work on the \$1.7-billion of upgrades to the Vancouver International Airport is in full swing, with multiple facets of the projects worked on simultaneously to meet the overall 2022 deadline.

Alberta

Much of the focus on Alberta infrastructure in recent years has been transit and transportation development in the major cities, but other key projects in the health care and water sectors are now complementing those developments.

In Calgary, three multi-billion-dollar projects continue to make headlines, as work continues on the Southwest Calgary Ring Road, Calgary Cancer Centre, and the development of the Green Line LRT. However, work has also begun on the multi-phase redevelopment of Crowchild Trail, which will further enhance the city's transportation network, and the Springbank Off-stream reservoir is nearing the start of construction.

The City of Edmonton has three new projects on the 2019 report, as work continues to improve the city's health care and transportation sectors. After years of planning, the Yellowhead Trail Freeway Conversion project is moving to the construction phase in 2019, with work to begin in two sections of the roadway. The Edmonton Clinical Laboratory Hub, and the CapitalCare Norwood Project, with both enhance health care delivery, providing more efficient services and more beds for patients in need. And work continues on the \$1.8-billion Valley Line LRT project, with multiple secondary LRT projects progressing along in early design and study stages.

Elsewhere in Alberta, construction is continuing on the Grande Prairie Regional Hospital following a months-long delay after the original construction manager was

removed from the project following a dispute with the province over cost overruns related to changes to the facility. The hospital remains on schedule to open in 2019 despite the construction setback.

Saskatchewan

Saskatchewan's biggest infrastructure project in the province's history, the \$1.88-billion Regina Bypass, continues to progress at a record pace, with the year seeing several construction milestones reached in advance of the original deadline. The roadway also became home to Canada's second diverging diamond interchange, a new concept for efficient movement of vehicle traffic that is gaining in popularity.

The province contributes just three projects to this year's report, with the \$500 Regina Railyard Renewal project slowly progressing through the early stages of procurement, and the \$680-million Chinook Power Station, which reached a construction milestone in August when SaskPower announced that power had been successfully brought to the station.

Manitoba

The Bipole III Transmission project represented the largest project, in value, to reach substantial completion in 2018. The \$5.04-billion project went into service on July 4, and is now delivering power from Manitoba Hydro's northern stations to Winnipeg.

The \$8.7-billion Keeyask Generation Station progressed on schedule in 2018,

with an estimated 105,000 cubic metres of concrete poured as part of the project's infrastructure. The station continues to progress on schedule, with its first unit to go into service in the fall of 2020.

There is one new Manitoba-based project on the 2019 Top100 Projects report, the \$540-million Lake St. Martin channel project. This flood protection project includes the construction of two 230-kilometre long diversion channels, which will allow Lake St. Martin to drain into Lake Winnipeg during severe weather events.

Ontario

Ontario continues to be the driver of infrastructure megaprojects, bolstered by tens of billions of dollars of investment in new transit developments. Of the record 46 projects that the province has placed on this year's list almost half, 21 to be precise, are transit projects.

The primary driver of the transit expansion in Ontario continues to be the growth of rail service throughout the Greater Toronto Area and beyond, in an effort to grow from a commuter rail service to a regional rapid transit system. This investment is driven by a \$21.3-billion investment by the provincial government to improve the entire network, of which \$13.5-billion is earmarked specifically for GO Expansion. This year we increase the number of projects from the expansion from two to seven, including another project focused around Union Station.

There has also been an uptick in the number of buildings projects that are getting underway, with four new projects joining the 2019 list. The largest is the \$2.4-billion Sick Kids Hospital redevelopment, the funding for which was announced by the previous government in the spring. Joining Sick Kids is two other Toronto-based hospital projects, as work has gotten underway on both the \$1.2-billion West Park Healthcare Centre as well as the \$498.2-million Michael Garron Hospital. And just a few blocks down the road from the Sick Kids development, the \$956.4-million Toronto Courthouse project, which will amalgamate courts from around the city into one larger facility, located just steps away from Toronto City Hall.

We are also seeing an uptick in water, wastewater, and flood protection projects on our list, with 11 appearing in this year's report and two others just missing. In Ontario, the \$2-billion Don River and Central Waterfront Wet Weather Flow System & Connected Projects has been added to our list. The multi-phase project, which will take 25 years to complete, is aimed at improving water quality in Toronto's Lower

Don River, Taylor-Massey Creek, and the Inner Harbour. The Port Lands project in Toronto, Woodward Wastewater Treatment Plant project in Hamilton, and the Hanlan Watermain Project in Pell Region also return to this year's list, as strong investment continues in the sector.

Quebec

Quebec is the most balanced province on this year's report, with 15 projects spread almost exactly across four primary sectors: four each in the energy, buildings, and transit sectors, along with three transportation projects.

Transit has been the most prominent infrastructure class in discussion in 2018, as the Réseau express métropolitain became the first project to ever receive funding from the Canada Infrastructure Bank. The \$3.9-billion Montreal Blue Line extension was a late addition, as progress with procurement and clearly signalled government interest at all three levels vaulted the project onto the report. The line represented the second-highest project debut on the 2019 edition of the report.

Work on the \$6.5-billion Romaine Complex continues to progress on time and on schedule, as are the \$1.6-billion renovations at the Beauharnois Generating Station and the \$732-million rehabilitation of the Robert-Bourassa generating units. The same can be said for progress in the buildings sector in Quebec, as both of its significant health care projects, the \$3.63-billion Centre hospitalier de l'Université de Montréal (CHUM) and research centre and the \$1.97-billion Quebec City University Hospital center - Laval University both continue to make positive progress towards completion in 2020.

On the transportation file, massive highway projects are focusing on the province's north, opening up the area for further resource development as part of Plan Nord. In July of 2018, the provincial and federal governments confirmed their \$468-million commitment to fund upgrades to Route 389, a 570-kilometre stretch of roadway linking Baie-Comeau to the Labrador border.

Atlantic Canada

The \$12.7-billion Muskrat Falls Project continues as the dominant megaproject development on the east coast, but Nova Scotia is also on the radar with some large-scale developments on its own.

The Government of Nova Scotia's

announcement to pursue a portion of the QEII Redevelopment as a public-private partnership put that project on the map, literally, with an estimated project cost now set at \$2 billion when factoring in the P3. Previously, the government had announced minor contracts associated with the overall development, including work on renovating the Dartmouth General Hospital and the rehabilitation of the Hants Community Hospital in Windsor. The P3, set as a DBFM project, will cover the Halifax Infirmity Site, which will consolidate health care delivery in Halifax. The RFQ for the project was released in the fall of 2018.

With the completion of the Maritime Link, the Muskrat Falls Project is now the only Top100 project from Newfoundland and Labrador. The energization of the transmission assets was the biggest accomplishment on the project in 2018, although extensive concrete work was also done, works that was vital to the project's overall progression.

Neither Prince Edward Island nor New Brunswick have a large enough infrastructure project underway that could be considered for the 2019 report.

Northern Canada

Substantial completion of the Stanton Territorial Hospital was the biggest infrastructure megaproject news in the north for 2018 (see story on page 16), and it represents one of the 23 projects removed from the 2019 report's consideration.

The only project from the north that remains on our list is the \$903.5-million Giant Mine Remediation Project. The construction manager for the project was named in early 2018, and Phase 1 of the work is underway. That phase is scheduled for completion in 2020, and Phase 2 work on the site will begin shortly thereafter.

In total, over 250 public sector infrastructure projects, with a current or estimated value of \$300 million or higher, were considered for this year's Top100 Projects report. ✪

Andrew Macklin is the editor of ReNew Canada.



If you have any questions about the report, I would encourage you to contact us at any time.

E-mail our editor Andrew Macklin at andrew@actualmedia.ca



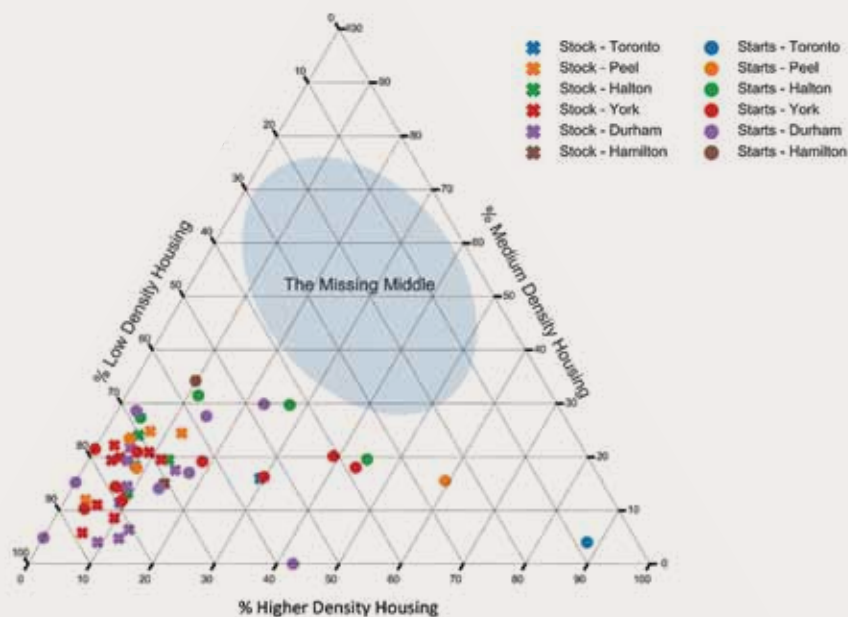
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The "Missing Middle" in New Homes



Dwelling Mix Of Census Subdivisions in The GTHA



MISSING MIDDLE MAY HELP SOLVE GTHA'S UNBALANCED HOUSING STOCK

While the intensification objectives which were encouraged in Ontario's landmark Places to Grow (P2G) legislation have resulted in more multi-unit projects, most of the residential stock in the Greater Toronto and Hamilton Area (GTHA) is comprised of low-rise housing and clusters of high-rise towers. It is a polarized housing market where much of the new supply in Toronto and other urban municipalities is characterized by high-rise development.

A new research report by CANCEA – “The GTHA's Unbalanced Housing Stock: Benchmarking Ontario's New LPAT System” – confirms that there is a lack of “missing middle” housing but provides further analysis which concludes that if current trends continue, the region's housing supply will be insufficient to meet the population growth targets envisioned in the *P2G Act*.

The impetus for the research was RCCAO's concern that, with more control being given to municipal governments through the new Local Planning Appeal Tribunal to approve new developments, there could be a continuation of the trend of high-rise buildings to the detriment of ground-oriented housing. Missing middle housing includes

townhomes, stacked townhomes and mid-rise buildings which can accommodate a range of family and household types. Even though this question will take time to properly answer, our labour-management construction alliance thought that it was worthwhile to benchmark the current situation and emerging trends in relation to the P2G 2041 population targets.

Findings include:

- 1 The risk to P2G represents about 7,200 dwellings per year that will not be built, with an annual average loss of \$1.95 billion in GDP accruing directly from residential construction activity.
- 2 Only 15% of GTHA households live in medium-density housing (“the missing middle”). The consequence is an inadequate supply of appropriate housing types for a range of household sizes and budgets.
- 3 Municipalities can better optimize infrastructure investments by ensuring that community growth planning be based on a long-term and strategic analysis of our future housing requirements.



Excavators unearthed a corduroy road over 200 years old.

All Photos: The Region of Waterloo

POSITIVE IONS

The Waterloo Region Light Rail Transit corridor is a magnet for people and businesses. *By Carroll McCormick*

In anticipation of the spring 2019 opening of the Region of Waterloo’s 19-kilometre light rail transit (LRT) line, businesses and residents have been flocking to the transit corridor for several years. It is poised to become the third LRT, and the third longest, after the ones in Edmonton and Calgary, to go into service in Canada.

Stage 1, valued at \$868 million, runs from Conestoga Mall Transit Terminal to Fairview Park Mall Transit Terminal, with 19 stations, including ones in downtown Kitchener, at Grand River Hospital, UpTown Waterloo, both universities, and Waterloo Park, according to the Region of Waterloo document *The ION Story*.

It also includes a 17-kilometre adapted bus rapid transit route from Fairview Park Mall to the Ainslie Street Terminal in Cambridge, with four stops along Hespeler Road, according to *The ION Story*; it will be phased out once the LRT begins service. “The ION bus connection as part of Stage 1 ION will help increase ridership between Kitchener and Cambridge. This will help secure funding for Stage 2,” says TJ Flynn, manager of community relations, ION Rapid Transit.

Plans also include a transit hub, connecting ION with cycling and walking routes and longer-distance transit such as GO Transit and VIA Rail.

Planning has begun on a Stage 2 to build a 17-kilometre, eight-station service between

Cambridge and Kitchener. Construction is expected to begin around 2026.

The timeline for ION—Greek for ‘going’—as the line is called, began in 1976 with a proposal to create a central transit corridor in the Waterloo Region. Planning heated up after the turn of the century, and construction began on the ION LRT in 2014. Region of Waterloo Council awarded the contract to GrandLinq to design, build, finance, operate, and maintain ION’s Stage 1 LRT.

The Region of Waterloo has around 575,000 residents, with 200,000 more expected to move into the area over the next 20 years, *The ION Story* reports. It notes that without ION, the Region would require 500 new lane kilometres of roads to support this growth, at a cost of \$1.4 billion. ION will limit new road construction by about 40 per cent.

“ION helps attract development in core areas, limiting development outside the core. The Region has a very strong sense of protecting the farmland and green spaces that exist outside the downtown cores” Flynn says.

The Region’s Planning Department adds, “This highly integrated approach to transportation and land use policy, and the permanence of ION, will help to focus development along the corridor with a greater mix of housing, jobs, retail and leisure choices all within close proximity to enhanced transit.”

The Region’s monitoring of the impact of the project shows that the transit corridor became a powerful draw well before contractors deployed the first excavators. The Planning Department provides examples: “\$2.3 billion has been invested in new buildings in the ION corridor since ION was announced in 2011; over 11,000 more residents are living in the Central Transit Corridor (CTC) than in 2011; about 3,000 units have been issued new building permits in the just past two years (2016, 2017), and over 8,500 units since 2011; in 2017 alone, residential building permits in the Central Transit Corridor represented a third of all residential units in the Region, and were worth almost \$100 million.

“We are comfortable saying that ION has had a strong influence on investment in the Central Transit Corridor, the area roughly 800 metres from the ION stations. Local developers openly attribute their choice to build new residential units, or their decision, such as Google’s, to locate their businesses in the ION corridor, based on the Region’s commitment to build this light rail transit system.”

This growth has been fostered and managed by what the Region refers to as a Community Building Strategy (CBS), “... one of the first strategies of its kind in North America,” notes *The ION Story*.

The CBS, Planning explains, “... identified

the current and future station area characteristics to help inform decisions about what type of development should be encouraged at each location and short- and long-term opportunities and challenges around the station areas.”

An excellent interactive map showing the corridor and development highlights can be found at bit.ly/2PABIPH.

Construction projects typically offer residents knothole views into excavation pits or frustrating detours. Waterloo Region residents, however, were treated to an early and unusual piece of infrastructure when, in March 2016, excavators uncovered a section of corduroy road that had lain undisturbed for some 200 years about two metres below King Street. A corduroy road is built by laying down logs laid at right angles to the road to create a solid, if not quite flat, surface. It gets its name from the lines, or cords in corduroy fabric.

“An archeological assessment estimated the road was built between 1790 and 1816 by local Mennonites, then buried around 1840,” notes The ION Story.

“It was one of our first pieces of infrastructure in the region. After it was



One of the trains that will be used on the ION LRT.

uncovered during ION construction, the road was left exposed for a number of weeks and became a mini-tourist attraction,” Flynn says.

A decision to give away pieces of the corduroy road generated incredible interest, Flynn says. “We had residents and visitors who lined up before midnight to get a piece of the corduroy road. We started giving the pieces away at seven in the morning and they were all gone in twenty-eight minutes.

This was a unique moment for us: creating something for the future and looking back into development over the past centuries.” ❁



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

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The Stanton Territorial Hospital at different stages of its construction.



NORTHERN HEALTH

A new hospital in Yellowknife will serve a growing population.

By Carroll McCormick

Area residents and hospital staff alike will benefit from the Stanton Territorial Hospital Renewal Project. The new facility is twice the size of the existing hospital and is outfitted to reflect changing standards of service delivery. Care was also taken to reflect the Indigenous cultures of the Northwest Territories in its design.

The 26,000 square-metre hospital, for which a first patient day is scheduled for the end of May 2019, will have 100 single acute care in-patient rooms. As a territorial facility, it will deliver health care for up to a population of 60,000 for the next three decades.

“[The additional beds] allow for expansion as demand increases and ensures that all patients have their own private rooms, which is not the case at current Stanton. Single in-patient rooms lead to better health outcomes, a reduction in hospital infection control rates, a reduction in length of patient stay, and increased patient confidentiality and privacy,” said Gloria Badari, executive director of the Stanton Hospital renewal.

The old, 13,300 square-metre hospital was built in 1988 and has 67 acute care inpatient beds. “The existing hospital would be incapable of handling and providing for a diversity of clinical and diagnostic needs for [these] forecasted growth and population growth models,” Badari says.

The Government of the Northwest Territories (GNWT) selected Boreal Health Partnership as the P3 partner. It is responsible for the financing, design, building, and maintenance of the new hospital.

The P3 model, according to the GNWT, reduced the project risk by guaranteeing a fixed construction price, a guaranteed completion date, and the assumption of risks such as inflation in construction costs and

erecting the structural steel in April 2016. By the beginning of the 2016/17-winter season, the contractor was ready to begin finishing work inside the building.

The Stanton Renewal Project describes some of the challenges in carrying out a project of this scope in Northern Canada. “Lead times and cost of shipping are significantly higher in the NWT. Part of the project was fast-tracked, and we started to build before completion of design; delivery dates versus required on site dates needed to be closely managed to ensure adequate lead time. The more difficult challenge was scheduling of installers, replacement parts, and commissioning.”

While construction materials were sourced from across Canada, e.g., much of the plumbing installations were prefabricated in Ontario, local suppliers were used where available and commercially viable, the Stanton Renewal Project notes.

This investment in local businesses and labour as of September 2018 is valued at \$55.5 million in local and northern labour, \$30.3 million in services from local and northern suppliers, and \$7.5 million in

the hospital, for example, there will be sense of place themes that reflect the northern land and animals.

“The architects and designers at Kasian facilitated two engagement sessions with a panel of regional NWT representatives to ensure the building accurately reflected the cultural needs of our population. The first session in 2016 was to seek feedback on the proposed interior design of the building and the design of the therapeutic gardens. The panel offered recommendations based on their regional knowledge and cultural beliefs,” Badari explains.

One outcome is that each floor represents a distinct Northern landscape, with a corresponding animal; e.g., Barrenlands and the Caribou on Level 0; Lakes and the Arctic Char on Level 3 and; Arctic and the Seal on Level 5.

“These recognizable symbols, colour schemes, focal images, and local artwork throughout the hospital will assist with patient navigation and ensure that Northerners feel connected to their home when visiting the new facility,” Badari says.

There will also be a therapeutic garden with a ceremonial fire pit, amphitheater, and playground for children with Northern flora and fauna.

“The new hospital,” says Glen Abernethy, Minister of Health and Social Services, NWT, “will provide high-quality health care, services and programs, in a culturally inclusive way, that will meet the needs of Northerners for decades to come.” ❁

“The existing hospital would be incapable of [...] providing for a diversity of clinical and diagnostic needs.” — Gloria Badari

weather-related delays to the contractor.

“Through the P3 approach, the GNWT is able to provide a more modern health care facility to NWT residents and Nunavut residents of the Kitikmeot region at an estimated savings of at least 20 per cent when compared to delivering this project and operating this facility through traditional delivery method,” Badari says.

The P3 choice also meant that the hospital would open up to two years sooner than had a traditional procurement and construction method been used. It also comes with a 30-year maintenance warrantee.

The Capital Project budget is \$350 million, which includes \$290 million for construction and \$60 million for Northwest Territories Health and Social Services Authority costs. The total value of the contract with BHP is \$751 million over the 35-year term of the contract. This the annual service payment that will be paid to BHP after the hospital goes into service, which on average, will be \$18 million per year.

The Bird-Clark Stanton Joint Venture (BCSJV) broke ground in October 2015. It completed the site clearing, rock blasting and the footing over the winter, and began

goods from local and northern suppliers.

Staff working at the hospital will enjoy many improvements over the old one, such as surgical booms, which support operating room equipment, mobile staff communication devices, clinical cameras, and integrated bedside terminals, as well as a new nurse call and patient wandering systems. There will also be heightened access control measures and public wi-fi.

The new hospital also includes improvements such as a larger emergency department and intensive care unit, two more dialysis chairs, operating rooms twice as large as in the old facility, and an in-patient rehabilitation gym, which the old facility did not have. A psychiatry unit will be able to better serve mental health clients. There will be more high-observation, airborne isolation, and high-acuity rooms throughout the hospital.

While the facility brings with it overdue updates to how health care is delivered, including an increased focus on ambulatory care, infection control and spatial standards, much attention was paid to the cultural and spiritual side of people in the region. Inside

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

The Canadian subcontractor and designer team

Here is the list of the key companies involved in the design-build elements of the Stanton Territorial Hospital:

- **Kasian Architecture, Vancouver**
- **Crossey Engineering, Toronto**
- **Bird Construction Canada (project managed from Vancouver)**
- **Clark Builders, Yellowknife and Edmonton**
- **Kelson Mechanical, Toronto**
- **Western Pacific Electrical, Vancouver**

Traffic Efficiency

The \$1.88-billion Regina Bypass includes a Diverging Diamond interchange, just the second built in Canada. —Staff



Credit: Graham

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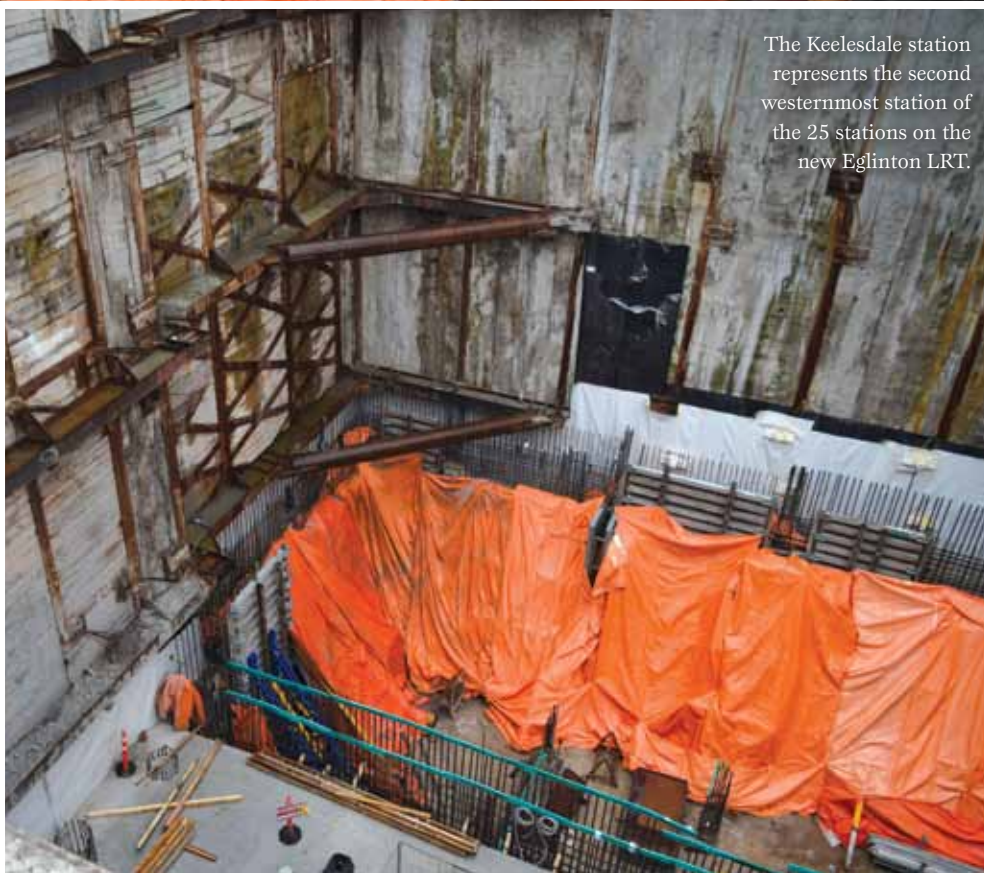




At street level at the corner of Keele and Eglinton.



A thin staircase leads workers down into the depths of Keelesdale station.



The Keelesdale station represents the second westernmost station of the 25 stations on the new Eglinton LRT.

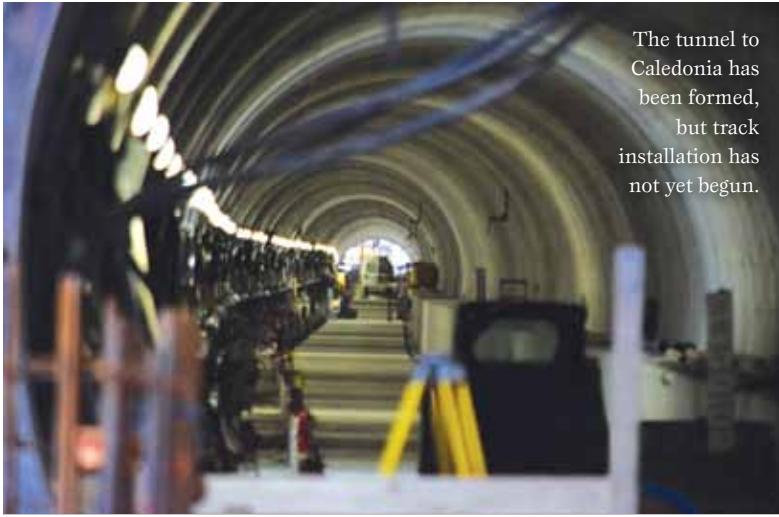
INSIDE KEELESDALE

Exploring the construction of an Eglinton LRT station.

By Andrew Macklin

The \$9.1-billion Eglinton LRT project (#5 on the 2019 Top100 Projects list) is the largest transit project in Canadian history. The \$9.1-billion DBFM project will run on a 19-kilometre corridor along Eglinton Ave. from Weston Road to Kennedy Road, with an 10-kilometre underground section. The line includes more than 20 stops and links to the Yonge-University subway line, the regional GO Transit network, the Union-Pearson Express, and more than 50 bus routes.

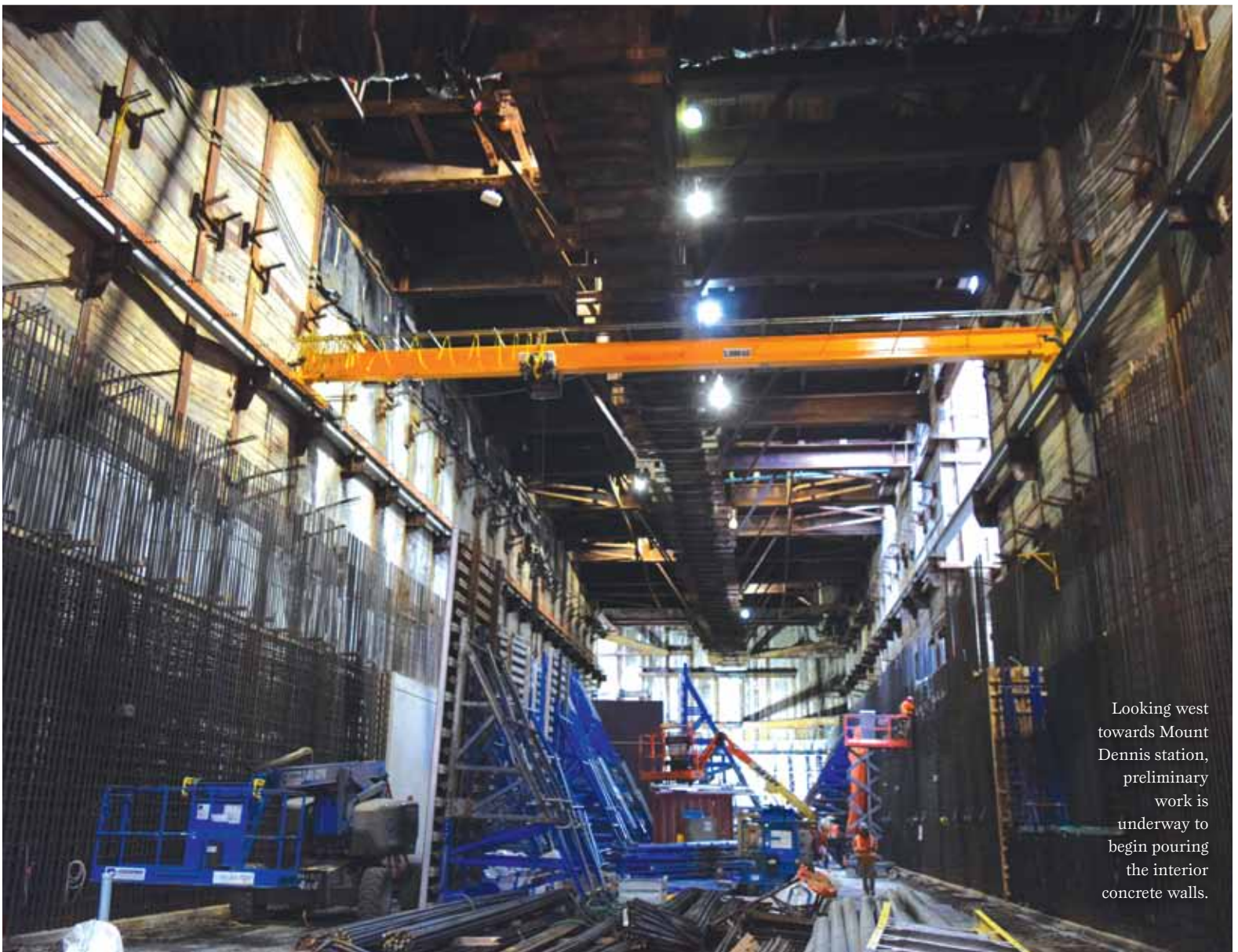
In November of 2018, Metrolinx invited ReNew Canada to tour the construction progress at Keelesdale station, which represents the second station from west to east along the corridor, and the first station on the west end to run underground. 🌱



The tunnel to Caledonia has been formed, but track installation has not yet begun.



Looking down towards the station platform level, and the tunnels leading east to Caledonia station.



Looking west towards Mount Dennis station, preliminary work is underway to begin pouring the interior concrete walls.





The Emerging Global Trend of Vertical Farming

Indoor vertical farming is not a new concept; however, it has only become commercially viable with the recent advancements in clean technology and energy efficient building design. In just the last few years, vertical farming projects around the world have begun food production with national leadership from Sweden, Japan, Taiwan, France, India, Iraq, USA and more. This emerging trend calls for collaboration across the building, agriculture, and clean-tech sectors, presenting new business opportunities and climate change mitigation strategies.

Background

According to Ernst van den Ende, a world authority on plant pathology, planet earth must produce “more food in the next four decades than all farmers in history have harvested over the past 8,000 years.” Our current industrial agricultural practices already use more than a third of our ice-free land, 30% of all freshwater, and produces half of the world’s GHG emissions; one solution that promises to help solve this problem is indoor vertical farming.



Vertical farming requires 10-20 times less land and 70-95% less water than rural agriculture. Indoor growing can eliminate the need to use pesticides, herbicides, and insecticides and has the potential for locally sourced year-round crop production.

Establishing Canada's Leadership

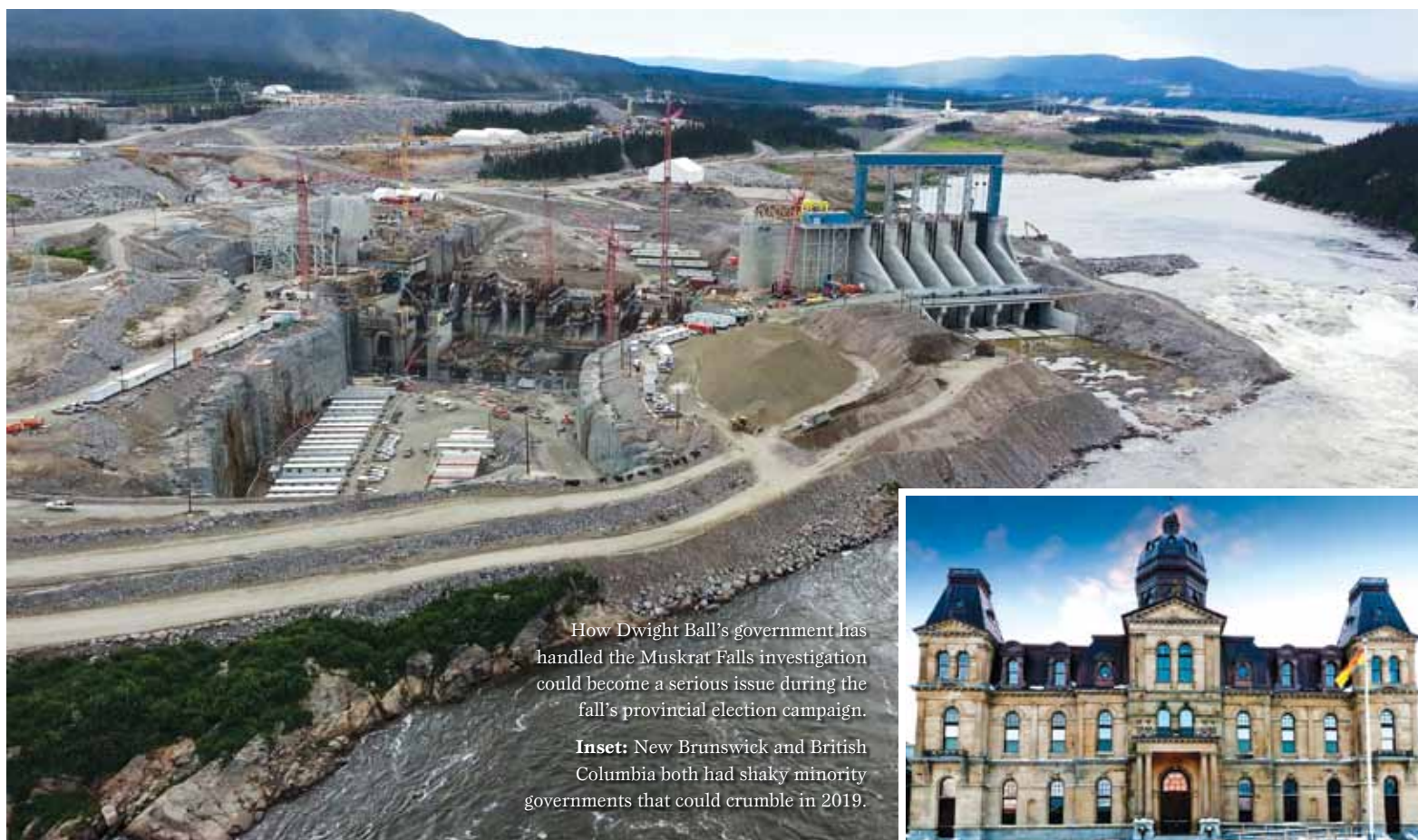
On Friday, October 19th, 2018, **WSP Canada**, on behalf of **Centennial College** and the **University of Toronto Scarborough Campus**, hosted an Industry Leaders Workshop. By special invitation, 64 senior executives from across sectors were brought together to discuss the innovation opportunities for vertical farming in Canada. The workshop was divided into eight roundtables with eight participants, each table focusing on a different topic with accompanying discussion questions.

Next Steps

It is an exciting time for WSP Canada as we explore new market opportunities in our efforts to redefine sustainability through innovation. In the field of indoor vertical farming, we are fortunate to be collaborating with some of the best across industry, government and academia. We are eager to identify pilot projects that test the limits of sustainable indoor vertical farming. We have much to explore as we strive to bring expertise across building science, energy and food production together to build Canada's contribution to this rapidly emerging global market.

TABLE TOPICS

- Table 1:** Public & Private Sector Relations
- Table 2:** Urban Agriculture
- Table 3:** Architecture & Integrated Design
- Table 4:** Striving for Hyper-Efficient Building Performance
- Table 5:** Branding, Marketing & Promotional Opportunities
- Table 6:** Innovation, Education & Research
- Table 7:** Next-Gen Systems
- Table 8:** Return on Investment



How Dwight Ball's government has handled the Muskrat Falls investigation could become a serious issue during the fall's provincial election campaign.

Inset: New Brunswick and British Columbia both had shaky minority governments that could crumble in 2019.



BATTLEGROUND CANADA

Two left vs. right battles will dominate Canadian politics in 2019. *By Andrew Macklin*

The posturing and politicking has already begun in the run up to two significant elections taking place in 2019. And both will have a significant impact on infrastructure funding and priorities, as the parties discuss the best way to spend, or cut, hundreds of billions of dollars on public sector infrastructure.

The war out west

The only election in the first half of 2019 is in Alberta, where one-term Premier Rachel Notley's New Democratic Party (NDP) will look to stave off a strong challenge from the United Conservative Party (UCP). The UCP are led by Jason Kenney, who held multiple ministerial roles in Prime Minister Stephen Harper's cabinet before resigning as an MP in September of 2016 to focus on provincial politics.

During the four years that the NDP have been in office, they have accomplished a fair amount on the infrastructure portfolio, especially in terms of megaproject development. They have provided financial support for multiple projects in the transportation, transit, health care, and water-wastewater sectors. However, the government has come under fire for its level of support, not providing the level of financial

support that is expected by municipalities. We discussed this last year after Edmonton Mayor Don Iveson suggested a change was needed in the funding formula for new infrastructure projects, suggesting that the tri-government one-third split should instead be a 50-40-10 split, taking into consideration who has to pay for the operations and maintenance of the asset through its entire lifecycle. The most recent major project in Edmonton to receive government funding, the Yellowhead Trail Freeway Conversion Project, received just \$241.6 million of the overall \$1 billion from each of the provincial and federal governments.

On the infrastructure portfolio, the government has also found itself embroiled in controversy. In September, the government terminated the contract of Graham Construction, who was the Construction Manager for the \$647.5-million Grande Prairie Regional Hospital. Graham has suggested that it could take legal action as a result of having its contract terminated.

Kenney's infrastructure priorities had not been clearly stated by the time this report went to press, but it will be important to see whether his investments focus on the big city priorities and renewable energy resources, as the NDP seem to now,

or if he will take a different approach.

A second term for Trudeau?

It has been a term of record investment in public sector infrastructure at the federal level, but thanks to decisions made in other strategic portfolios, that might not be enough to allow the Liberal government to return for a second term in office.

The Conservative Party of Canada (CPC) is making a strong push to reclaim power in Ottawa, and polling in the fall suggested Andrew Scheer's term may win a mandate on October 21st. What that means for record levels of infrastructure spending is not quite clear, but it could mean that the Canada Infrastructure Bank will be short lived. The CPC has made it clear that they don't believe the Bank is necessary, instead favouring the traditional public-private partnership model already in place for building infrastructure megaprojects in Canada.

It's worth keeping an eye on a few key current and future projects, and how those could impact voter support for the current government. The timing of the opening of the Champlain Bridge Corridor could impact the vote, as the opening will occur about four months out. Whether voters are more excited about its opening or the six-month delay that

was incurred could sway the vote in either the CPC or Liberals' favour. The same could be said for the proposed Northern Corridor. If the federal Liberals pursue moving the proposed \$100-billion project forward, could that help push voters to support them in some rural ridings throughout the country?

The release of the CPC plan for infrastructure development will be the key development to watch for in the coming months.

The rest of Canada

There are three additional provincial and territorial elections that will take place in 2019, all of which are set to occur over a two-day span in the heart of the federal campaign.

On October 7, voters in Prince Edward Island and the Northwest Territories (NWT) are set to elect new provincial and territorial leadership. In the NWT, there has been an uptick in transportation and fibre infrastructure built over the past term of office. That includes the completion of the Inuvik to Tuktoyaktuk highway, approval of the Tlicho all-season road, and the installation of 4G wireless technology in every community.

In Prince Edward Island, Wade McLaughlan

will look to secure a second straight majority for the Liberals, after capturing 18 of 27 seats in the 2015 election. Funding secured through the bilateral agreement with the federal government is helping to address some of the province's infrastructure issues, but several communities have been vocal about the need for more resources to rehabilitate and renew aging road, bridge, and cultural infrastructure.

The following day, on October 8, voters in Newfoundland and Labrador are scheduled to head to the polls. Liberal Premier Dwight Ball is seeking a second majority mandate in the province, after his party captured 31 of 40 seats in the 2015 election. The party only had six seats leading into the campaign.

The cloud that still hangs over the province's collective head is that of the Muskrat Falls Project, which now carries an overall project cost of \$12.7 billion despite being originally budgeted to cost \$7.4 billion. The inquiry into the project is set to deliver its final report by the end of 2019, which will provide insight into the cost increases, oversight, and the methodology behind the original selection of the project. How this issue will impact voter support for any party is not yet known, but if blame for the project overruns is assigned before the election takes

place, it could play a major factor at the polls.

Will the minority's hold?

We could also see two more provincial elections take place in 2019 depending on the stability of minority governments at opposite ends of the country. In B.C., the NDP-Green minority has held fairly strong so far, but that could change with one controversial issue or a sudden by-election. And in New Brunswick, both the Conservatives and the Liberals hoped to lead the minority government there, after the 22-21 result left the balance of power in the hands of the Green Party and the People's Alliance (three seats each). Gallant was given the first chance to govern, but should he falter, and Conservative leader Blaine Higgs fail to produce stability, voters could quickly head back to the polls.

With hundreds of billions of dollars in infrastructure at stake, the 2019 election campaigns will be a determining factor in the level of investment and priorities for investment in infrastructure for years to come. ♣

Andrew Macklin is the editor of ReNew Canada.

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SMART HEALTH



All Photos: PCL Construction / Curtis Corneal Photography

By getting the design and construction teams together early in the process, smart and green initiatives can be successfully incorporated into the build.

Learning from the ‘smartest’ hospital ever built in Canada. *Staff Report*

When the Humber River Hospital (HRH) set out to plan its new facility in the heart of Toronto’s north end, they did so with a new vision for health care delivery in mind: lean, green, and digital. And for the companies interested in bidding on the project, it was this vision that had to be incorporated into the design-build of the new facility.

The winning consortium for the \$1.75-billion hospital was Plenary Health Care Partnerships, which began construction in 2011. Part of that partnership was PCL Constructors Canada, responsible for the design and construction of the new 14-storey, 1.8 million square foot hospital.

The contractor was ultimately tasked with the responsibility of putting the vision into the plan, deciding how best to meet the aggressive expectations set for by the hospital’s management.

Before the bid

For public sector infrastructure development, combining the need to build both lean AND green is a new concept. Most previous builds had targeted one or the other, based on the project’s owners’ priorities, but not both. The

demands of HRH presented a new challenge.

In the case of the proponent for HRH, the design and contractor teams came together early in the bid process to understand how lean and green could coexist in solutions to meet the hospital’s vision. Potential solutions were put on the table, and then both groups discussed whether or not they could be included within the design framework of the build. This included elements such as HVAC systems that could also capture of waste heat, increasing insulation above current building code regulations, and using windows reduce energy use.

with the hospital’s goal of reducing the spread of disease, as some porous materials found in curtains can trap contaminants such as pathogens.

The pace of technology

The hospital’s vision was known early enough in the procurement process that interested contractors could start making plans early in the process. According to project director Bruce MacPherson, the team spent lots of time investigating and learning about the new technology very early in the process. That included investigating the use

Upon its opening, the hospital became the first certified ICAT SMART hospital in North America.

Some of the solutions even presented themselves as both lean and green when implemented properly. For example, glazing used for patient windows created the design energy efficiency impacts. At the same time, the glazing reduced sunlight enough to remove the need for curtains, which assists

of Automated Guided Vehicles, or AGVs, which had previous never been used in a Canadian hospital.

“We visited hospitals where the robots were used,” said MacPherson. “By the time the bid happened, we were comfortable with the technology.”

Technology implementation was an uphill battle for the project planning, as the rapid innovation could mean that a product at the cutting edge during the design phase could be all but obsolete by the time the hospital opened.

Introducing modular construction

One of the lean and green solutions discussed and executed by the contractor was the use of modular construction for some of the building elements of the hospital. In the case of Humber River, patient washrooms and data centres were both created with a standard design, one that created at a warehouse facility in the Greater Toronto Area. Modular construction can be beneficial as it prevents any external factors from impacting construction, such as weather, variation in contractors, and interference caused by other work being done in the same section of the building. It also allowed the vendors on site to focus on works that needed to be customized.

Before HRH, PCL had been working to reduce construction waste at its projects across Canada. But the decision to go modular with elements of HRH allowed for that waste to be reduced even further, as moulds allowed for custom-built pieces that produced little to no additional waste. In total, 96 per cent of construction waste was diverted from the landfill.

Going green

Reducing energy consumption and minimizing construction waste represented two considerable steps in meeting green targets on the Humber River project. They both helped the hospital to reach LEED Gold status, even though LEED Silver was targeted pre-construction.

But one of the key elements that the project owner wanted was the incorporation of at least 50 per cent green roof area. With all of the complexities introduced with the HVAC system, including the 100 per cent fresh air system, this was a significant challenge to work around as part of the building's design.

Green roofs in major building projects are becoming more common in the projects now coming through the procurement process but in 2009-2011, when procurement of HRH took place, it was not a common contract demand, especially not at this scale. The process forced both the contractor and subcontractors to become educated on the installation, operation, and maintenance of a green roof system. This included the need for greater understanding



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on the type of plant species to be used based on sunlight and climate, and how that could change bird and insect species' presence on the property and their impact on the overall health of the hospital and its patients.

Culture change

With an abundance of new building systems and demands implemented in the Humber River Hospital construction, it was vital for the proponent to work with a team that was

open to new ideas. Whether it be the green roof, the new approach to HVAC systems, the need to target greater material recycling, or the installation of modular constructed rooms, it became just as important to pull together a team that would be willing to be educated, learn while doing, and still perform at a very high level of craftsmanship.

Humber River Hospital opened in October of 2015 following four years of construction and commissioning. Upon its opening, the hospital became the first certified ICAT SMART hospital in North America. The aggressive energy efficiency strategy resulted in a 47 per cent lower than the Energy Star Portfolio Manager Canada target for hospitals. And the introduction of 100 per cent fresh air circulation was well above CSA-Z317 standards

And as a result of the work done at HRH, PCL is now implementing several of its lean and green construction methods into its current builds, including significant amounts of modular elements in the Greater Toronto Area's newest SMART hospital, the \$1.6-billion Mackenzie Vaughan Hospital. ♣

—Staff

Plenary Health Care Partnerships

Humber River Hospital was delivered under Infrastructure Ontario's Alternative Financing and Procurement (AFP) delivery model in partnership with:

- **Owner:** Humber River Hospital
- **Lead Sponsor and Financial Arranger:** Plenary Group
- **Design-Builder and Construction Manager:** PCL Constructors Canada Inc. (Toronto)
- **Architect:** HDR Architecture Associates Inc.
- **Facilities Management:** Johnson Controls
- **Sustainability Consultant:** MMM Group Limited
- **Mechanical/Electrical Consultant:** Smith + Andersen
- **Structural Consultant:** WSP Canada Inc./Halsall
- **Mechanical Contractor:** Modern Niagara Toronto Inc.
- **Electrical Contractor:** Plan Electric
- **Civil Engineer:** A.M. Candaras Associates Inc.
- **Landscape Architect:** Quinn Design Associates

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The annual conference and tradeshow will continue to explore these challenges through leading edge professional development, idea sharing, workshops and fun networking opportunities with your peers and new players in government, academia and industry.

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Bill Oliver

Bill Oliver has been named the Minister of Transportation and Infrastructure in **Blaine Higgs'** new Cabinet in New Brunswick. Oliver was first elected to the legislative assembly in 2014 for the riding of Kings Centre and was re-elected in 2018. Oliver was the deputy whip for the official Opposition, the Opposition critic for Worksafe NB and a member of the legislative administrative committee.



Erinn Pinkerton

BC Transit has announced that **Erinn Pinkerton** has been appointed as the organization's president and CEO. She had been in the role of interim President and CEO for BC Transit since April 25, 2018. Based on her outstanding performance in that role, the Board has unanimously decided to appoint her as CEO.

In her tenure as interim President and CEO, Pinkerton used her strong customer focus lead the introduction of many new service offerings across the province. This includes the launch of NextRide, BC Transit's new vehicle location service that allows customers to track their bus in real time. She also led the operational planning on behalf of the Province of B.C. to launch BC Bus North, the first long-haul transit service supported by BC Transit.



Jay Grewal

Manitoba Premier **Brian Pallister** has announced that **Jay Grewal** will succeed **Kelvin Shepherd** as president and chief executive officer of Manitoba Hydro, effective February 4, 2019.

"Ms. Grewal is a proven leader, with extensive senior leadership experience in the utility, resource and consulting sectors," said Crown Services Minister **Colleen Mayer**. "She will join Manitoba Hydro from Northwest Territories Power Corporation, where she currently serves as president and chief executive officer."

Before joining Northwest Territories Power Corporation, she held senior executive roles with Capstone Mining Corp, Accenture Inc., B.C. Hydro, and CIBC World Markets.

James also confirmed that Shepherd has agreed to remain as president and CEO until Feb. 1, 2019, in order to facilitate an orderly transition.



Christine Hill

Christine Hill has stepped into the role of chair for the Consulting Engineers of Ontario's (CEO) board of directors as **Jeremy Carkner** steps down to pursue a career path in a different industry.

Hill is highly regarded in the field due to her activity in a number of industry associations and brings 29 years of engineering experience to the role. For the majority of her career, Hill held a number of progressive roles with XCG Consulting Limited—beginning as a project engineer her role evolved into partner in 2005. In 2017, COLE Engineering Group acquired XCG's Water Business and Hill became the business development leader for infrastructure planning at COLE. She has also held a number of board positions with the Water Environment Association of Ontario (WEAO) culminating in a term as chair at WEAO. Hill has been actively involved with CEO for the past five years chairing a number of committees and is completing her second term on the board.



Kate Witte

Hemmera announced that **Kate Witte** has joined their Calgary team as regional vice president, leading all aspects of Hemmera's Alberta operations.

Kate brings technical and leadership experience in environmental and engineering consulting. This valuable experience will now benefit Hemmera's clients and our staff.

Kate has managed and delivered technical work for municipal government, upstream, midstream, and downstream hydrocarbon clients in Canada, for historic gasworks remediation companies in the UK, and for commercial and municipal brownfield development customers including landfill and transportation infrastructure projects.



Tonja Leach

The board of directors of QUEST (Quality Urban Energy Systems of Tomorrow) has announced that **Tonja Leach** has been appointed as the organization's new executive director.

Leach has been with QUEST since its inception in 2007 in a number of roles of increasing responsibility. She has been instrumental in establishing QUEST's extensive national network and ensuring

that QUEST is known as the Canadian organization that accelerates the adoption of efficient and integrated community-scale energy systems in Canada. Leach had been the interim executive director since **Brent Gilmour's** departure from the role in July.

"QUEST is fortunate to have Tonja Leach as its new leader. Tonja's passion and commitment to the QUEST idea are unmatched. She understands that Smart Energy Communities are not just important to the transition to a low emissions future, they are at the heart of the transition," said board chair **Mike Cleland**.



Gary J. Bale

The Canadian Design-Build Institute (CDBI) has announced the election of **Gary J. Bale** as its new chair, with past-chair Samuel (Uel) McFall ending his two-year term as chair. The election took place at the CDBI annual general meeting, held in conjunction with CDBI's 2018 National Design-Build Conference.

Bale is a principal of BALE Project Consulting, and is based out of Chilliwack, B.C. He specializes in providing executive advisory and strategic project procurement and management services, developing design-build and P3 proposals for transportation and infrastructure projects, along with project director services for the delivery and execution of major infrastructure projects in Canada.

HONoured



Alana Gauthier

Alana Gauthier, senior project manager of infrastructure at WSP has been awarded the prestigious 2018 Judith Weiszmann Women in Engineering Champion Award, sponsored by Engineers Geoscientists Manitoba.

As a role model for young women entering the engineering field, Alana is the co-founder of Technical Women in Consulting Engineering (TWICE), the first organization in Canada looking at the retention of women in consulting engineering.

The **Judith Weiszmann** award is intended to recognize women who through engineering and career achievements, have demonstrated qualities of an outstanding engineer, role model, and influencer of women in and entering the profession.

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Canada Infrastructure Bank CEO Pierre Lavallée.



Ontario Minister of Infrastructure and Communities Monte McNaughton.



Governor of Puerto Rico Rico Ricardo Rosselló.

All Photos: ReNew Canada

P3 2018 TORONTO, ONT.

Representatives from 30 countries attended the event, which has become an international showcase for the key issues, trends, and projects that are impacting the delivery of P3s around the world.

The 2018 edition featured presentations from Canadian leaders who influence hundreds of billions of investment in public sector infrastructure, including federal Minister of Infrastructure and Communities **François-Philippe Champagne**, Ontario Minister of Infrastructure and Communities **Monte McNaughton**, and Canada Infrastructure Bank CEO **Pierre Lavallée**. Their keynote

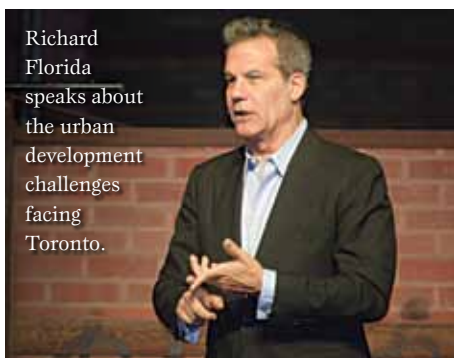
remarks were completed by a host of industry leaders discussing issues such as risk management, investment strategies, new markets of opportunity, and more.

One such speaker was **Ricardo Rosselló**, the governor of Puerto Rico. The 38-year-old Rosselló spoke about the needs for rebuilding the territory following the pair of hurricanes that devastated it in 2017. It is estimated that it will take \$140 billion to rebuild the country's infrastructure, and Rosselló and his government have a 10-year plan to get it done. However, he realizes that it will take the expertise of the global community, and

innovative partnerships such as the ones established through P3s will be part of the solution.

Speaking of McNaughton, he and his team used the conference to announce their Market Sounding Initiative. The Ontario Ministry of Infrastructure is listening to global industry leaders to try and find ways to improve infrastructure delivery in the province, especially given the massive investment that is currently ongoing.

For more information on the conference, as well as updates on upcoming events, visit pppcouncil.ca.



Richard Florida speaks about the urban development challenges facing Toronto.



A panel of local experts discuss the growing pains that Toronto will have to address as it continues to grow.



The new event space at Evergreen Brick Works provided the perfect backdrop for the discussion on urban development issues facing the city.

All Photos: ReNew Canada

ULI TORONTO SYMPOSIUM TORONTO, ONT.

Building Canada's largest city to accommodate the demands of the decades to come is the challenge facing urban developers building Toronto.

At the Urban Land Institute's (ULI) Toronto Symposium 2018, more than 100 urban developers and associated stakeholders gathered at Evergreen Brick Works to discuss current development ongoing in Toronto, as well as the future needs for residential, commercial, industrial, institutional, and public sector infrastructure development that will build an affordable and accessible city.

University of Toronto professor **Richard Florida**, who has also written several books on urbanism, provided keynote remarks for the symposium, speaking on the urban development challenges that the city is currently faced with. He painted the picture of a city "in a crisis borne of our success," with residential and public sector infrastructure growth that has not kept pace with the business success that the city

has experienced. Toronto now represents approximately one-fifth of the nation's GDP, which put into American terms, means the equivalent of combining New York City, Los Angeles, San Francisco, and Washington D.C.

In order to meet the demands that the city's success has created, Florida suggests that we need to think about how to build up the density of the entire area, not just Toronto's core. Meeting the needs for housing affordability takes increasing the stock throughout the region, not just in the core. Building up, especially along existing and future rail corridors, gives people access to the networks that can move people from home to work and back again.

That will take a shift of thinking in some Toronto neighbourhoods, where increased population density hasn't occurred since the areas were first built. That doesn't necessarily mean skyscrapers in every part of the city, but perhaps medium density solutions that are currently available,

such as low-rise apartments and stacked townhouses, can increase the housing stock and make for greater affordability without increasing the residential land footprint outward.

Some of the solutions for how to future-build the community could also come as a result of the community Sidewalk Labs is designing on the Toronto Waterfront. But Florida stressed how important it is to get that project right, which means creating a 'lab' environment where infrastructure solutions can be tested, while also finding the solution for data gathering and privacy that the community at-large is comfortable with.

To compliment the information and perspective shared by Florida, ULI Toronto also offered 11 tours of residential, commercial, industrial, institutional, and public sector infrastructure sites throughout the city.

For more information on ULI Toronto, visit toronto.uli.org.

Top100 PROJECTS DINNER: FEBRUARY 19, 2019



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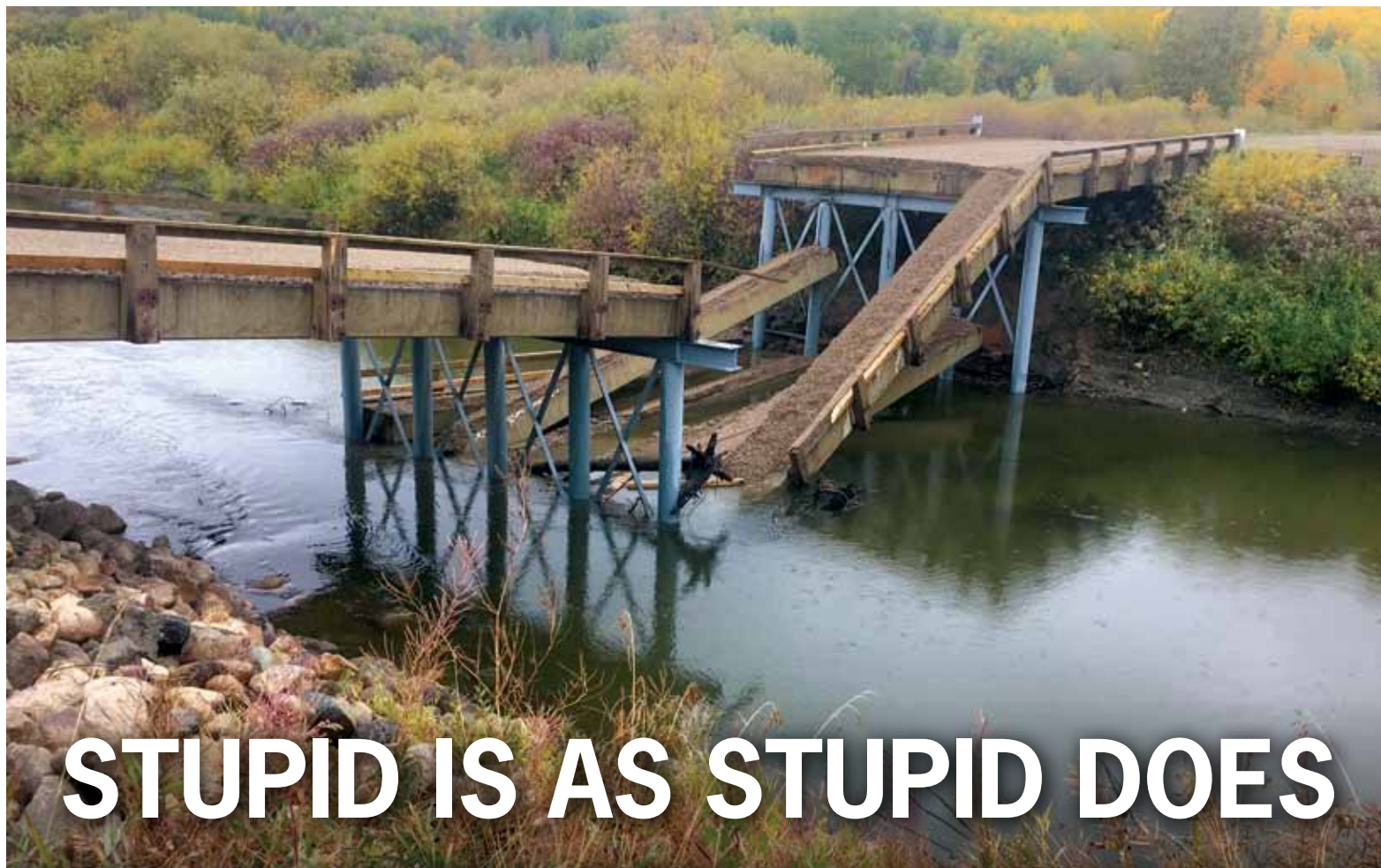
Dinner: 7:30 p.m.

Venue: The Carlu
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For corporate tables of eight or single tickets, visit top100projects.ca/celebrate

Sponsorship opportunities are still available. Contact Elena Langlois at 416-444-5842 ext. 151 or elena@actualmedia.ca



Credit: Duane Hicks

Will all the smart people in government please stand up? Seriously. *By Todd Latham*

While fishing in the murky waters of news surrounding a bridge collapse for other instances of shake-your-head stupidity, I found this headline from the Toronto Star: “Let the stupid games begin”. It references the new tell-all book from former Ontario PC Leader and now Brampton Mayor Patrick Brown. I shared the story on Twitter and added “I think they began some time ago.” Assuming our history books haven’t been doctored by the White House, it’s true. The ‘stupid is as stupid does’ mentality of politics has been going on for centuries. Ignoring truth and science, creating populist myths and inflaming misinformation has raised the profile of many a village idiot and exposed glaring examples of their ineptitude.

The intersection of stupid and government now has another casualty. Reeve Duane Hicks is the elected leader of the Rural Municipality of Clayton in Saskatchewan. The municipality wanted to get a new bridge over a local river but instead of going for a \$1.1 million Saskatchewan Association of Rural Municipalities (SARM) funded bridge that followed design criteria laid out by the Saskatchewan Ministry of Highways and would take a few months to build, Hicks opted for a less expensive design, with no geotechnical investigation, that would take only four or five weeks to complete. It cost

\$340,000 and it collapsed within six hours of being opened to traffic.

This guy must have been thinking he was the sharpest tool in the shed by approving a project that sped up the delivery of a road asset and saved the community a tonne of money. NOT. Under the provincial initiative, the municipality would have been eligible to receive \$750,000 from the provincially-funded roads and bridges program but they turned it down. Grade school math quickly reveals that Clayton could have had a properly engineered bridge for the difference: \$350,000. Beyond missing the obvious and significant value proposition of going with a better bridge for essentially the same price, had the municipality gone with the provincial funding, it would have been safely built by now.

Why did it collapse? The Reeve could offer no reasonable explanation other than it was “an act of God”. He told the Regina Leader-Post that: “It wasn’t structurally faulty. The fault is in what God did under the river.” No amount of geotechnical study could have possibly discovered this divine intervention. Despite his being blissfully ignorant to facts, science, and public safety, you would expect that the Reeve’s staff, fellow councillors, or local contractors would have more than one good book on their shelf. Directly or indirectly these people enabled a simple-minded

official’s decision to build a bridge without use of a calculator or a geotechnical investigation. I’m sure they must feel the stinging pain of hindsight now. An investigation is underway, the contractor and/or insurance company will be paying for the replacement bridge and smarter people across Canada are asking “what were they thinking?”

They weren’t. I am all for sound fiscal and project management which sometimes requires a change of thinking or approach, but when shortcuts are made and the big picture is ignored, we all lose. More should be expected from our elected officials. Like presidents of public companies, our political leaders should be held accountable for their actions. Stupidity can no longer be shrugged off. Those in charge (and their accomplices) should never allow ignorance and hubris guide public infrastructure projects.

So, if you see stupid happening in your office, call it out—that’s the only way we are going to see intelligent light at the end of this tunnel, er, bridge. ♣



Todd is the founder of ReNew Canada and hopes fact-based decision-making catches on some day.



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