

GREEN BOND NEWSLETTER

PROVINCE OF QUÉBEC

August 2020

Votre 
gouvernement

Québec 

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QUÉBEC GREEN BOND PROGRAM

Québec's Green Bond program draws on the Green Bond Principles (GBP).

Québec has been a member of the GBP group since October 2018.

To demonstrate its commitment to protecting the environment, as to developing the Green Bond market, Québec put in place a Green Bond program in February 2017.

- Since then, the Québec government has launched five Green Bond issues and has committed to being a regular issuer on the Green Bond market.
- Québec is promoting its Green Bond program in a dedicated section of the MFQ website: www.finances.gouv.qc.ca/Green-bond.

Québec has committed to publish an annual information bulletin for investors.



CICERO (Center for International Climate Research) issued an independent opinion on the framework and the selection process of Québec's Green Bond program.

- Québec's Green Bond framework was awarded the highest possible rating - dark green.
- The most recent version of CICERO's Second Opinion is available on our website.

Consult document¹
from CICERO

¹ http://www.finances.gouv.qc.ca/documents/Autres/en/AUTEN_Quebec_2nd_Opinion.pdf

QUÉBEC GREEN BOND ISSUES

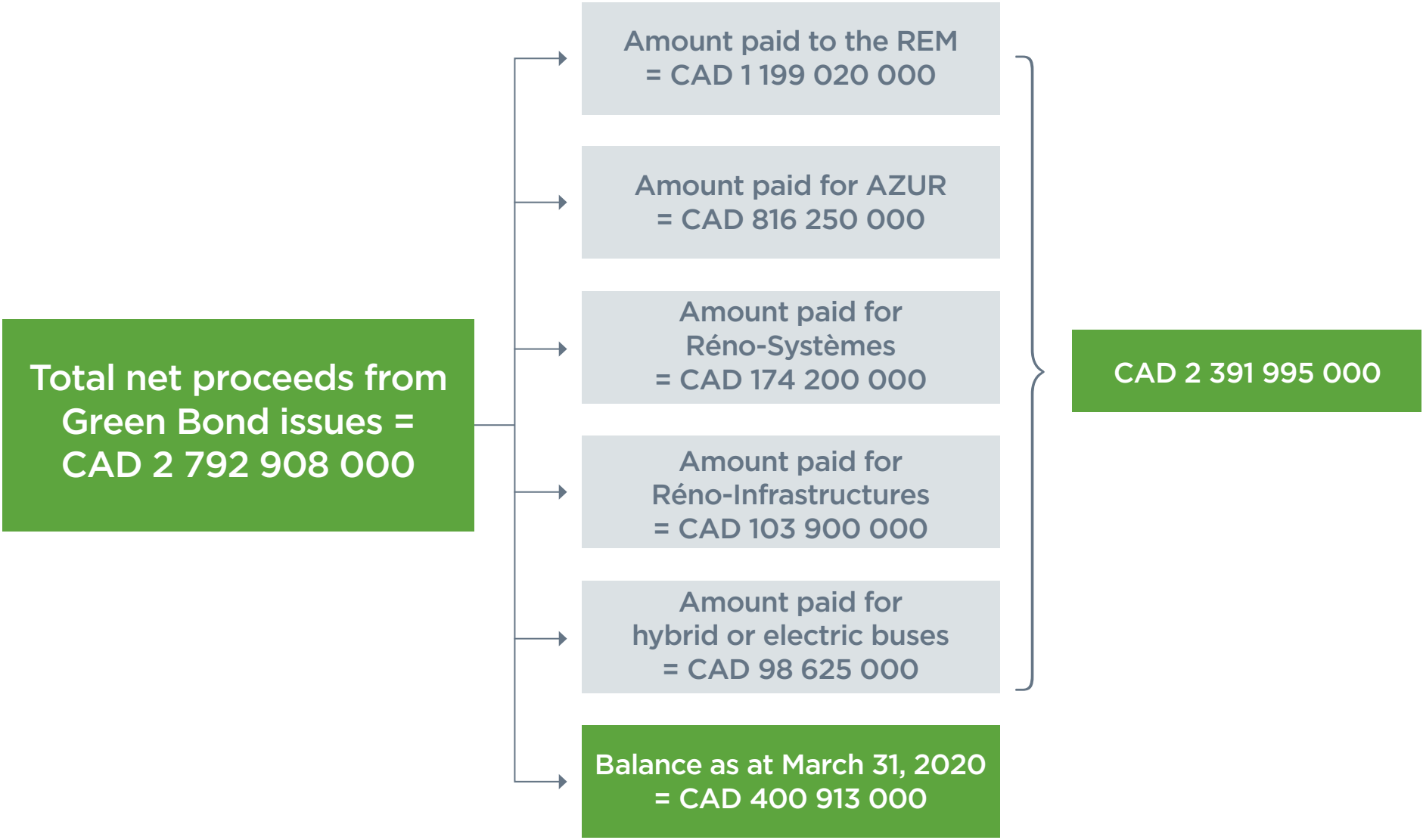
	1 st issue 1.65% - March 3, 2022 (5-year)	2 nd issue 2.45% - March 1, 2023 (5-year)	3 rd issue 2.60 % - July 6, 2025 (7-year)	4 th issue 2.25% - February 22, 2024 (5-year)	5 th issue 1.85% - February 13, 2027 (7-year)
ISSUE SIZE	CAD 500 M	CAD 500 M	CAD 500 M	CAD 800 M	CAD 500 M
ORDER BOOK SIZE AND NUMBER OF INVESTORS	> CAD 1.1 B > 60	> CAD 1.8 B 50	> CAD 1.9 B 55	> CAD 2.4 B 55	> CAD 2.75 B 62
PRICING DATE	February 24, 2017	February 22, 2018	June 28, 2018	February 14, 2019	February 6, 2020
REOFFER SPREAD	+57.0 bps (CAN 0.50% March 1, 2022)	+38.0 bps (CAN 1.75% March 1, 2023)	+52.5 bps (CAN 2.25% June 1, 2025)	+46.0 bps (CAN 2.25% March 1, 2024)	+48.0 bps (CAN 1.50 % June 1, 2026)
FORMAT	Global				
EXCHANGES	Luxembourg Green Exchange (LGX) - Euro MTF Market				
LEADS	HSBC, RBC and TD	CIBC, HSBC, RBC and TD		BMO, CIBC, HSBC and RBC	BMO, HSBC, RBC and Scotia
SENIOR CO-LEADS	SEB		SEB and BMO	SEB and TD	SEB
GREEN MANDATE OR UN PRI SIGNATORIES	> 90%	> 85%	> 90%	94%	85%
DOMESTIC / INTERNATIONAL INVESTORS	60% / 40%	79% / 21%	86% / 14%	80% / 20%	80% / 20%
PROJECT CATEGORIES	Public transit				Public transit and energy efficiency
ELIGIBLE PROJECTS	AZUR métro cars, Réno-Systèmes, Réno-Infrastructures and hybrid or electric bus purchase		Réseau express métropolitain (REM)	REM, Réno-Systèmes, Réno-Infrastructures and hybrid or electric bus purchase	AZUR métro cars, Réno-Systèmes, Réno-Infrastructures, hybrid or electric bus purchase, Bellechasse bus garage, East end of Montréal bus garage and Montréal métro's blue line extension
ALIGNMENT WITH THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS (SDG)	<div> <div>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</div> <div>11 SUSTAINABLE CITIES AND COMMUNITIES</div> </div>				<div> <div>3 GOOD HEALTH AND WELL-BEING</div> <div>7 AFFORDABLE AND CLEAN ENERGY</div> <div>9 INDUSTRY INNOVATION AND INFRASTRUCTURE</div> <div>11 SUSTAINABLE CITIES AND COMMUNITIES</div> <div>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</div> </div>
INCLUSIONS IN GREEN BOND INDICES	Bloomberg Barclays MSCI Green Bond Index / BofA Merrill Lynch Green Bond Index Solactive Green Bond Index / S&P Green Bond Index				

USE OF PROCEEDS FROM QUÉBEC GREEN BONDS

USE OF PROCEEDS AS AT MARCH 31, 2020

Balance as at March 31, 2019		CAD 265 354 332
Balance from the first Green Bond issue (CAD 975 000)		
Proceeds used for the REM project	(CAD 975 000)	
	(CAD 975 000)	
Balance from the fourth Green Bond issue (CAD 264 379 332)		
Proceeds used for the REM project	(CAD 228 691 332)	
Proceeds used for the Réno-Infrastructures project	(CAD 23 500 000)	
Proceeds used for the Réno-Systèmes project	(CAD 7 600 000)	
Proceeds used for the hybrid or electric bus purchase project	(CAD 4 500 000)	
	(CAD 264 291 332)	
Net proceeds from fifth Green Bond issue	CAD 498 925 000	
Proceeds used for the hybrid or electric bus purchase project	(CAD 39 100 000)	
Proceeds used for the Réno-Infrastructures project	(CAD 30 400 000)	
Proceeds used for the Réno-Systèmes project	(CAD 28 600 000)	
	CAD 400 825 000	
Balance as at March 31, 2020		CAD 400 913 000

USE OF PROCEEDS FROM QUÉBEC GREEN BONDS



ALLOCATION OF GREEN BOND PROCEEDS

PROJECT NAME	Category	1 st issue: Final Funding Allocation	2 nd issue: Final Funding Allocation	3 rd issue: Final Funding Allocation	4 th issue: Final Funding Allocation	5 th issue: Potential Funding Allocation
New AZUR métro cars	Public transit	100%	64%	0%	0%	[0-30]%
Réno-Systèmes	Public transit	0%	15%	0%	12%	[10-30]%
Réno-Infrastructures	Public transit	0%	10%	0%		
Hybrid or electric bus purchase	Public transit	0%	11%	0%	1%	[5-40]%
Réseau express métropolitain (REM)	Public transit	0%	0%	100%	87%	0%
Bellechasse bus garage	Energy efficiency	0%	0%	0%	0%	[0-10]%
East end of Montréal bus garage	Energy efficiency	0%	0%	0%	0%	[0-10]%
Métro blue line extension	Public transit	0%	0%	0%	0%	[0-5]%

FINANCED PROJECTS – UPDATE

RÉSEAU EXPRESS MÉTROPOLITAIN (REM)



REM IN NUMBERS

The Réseau express métropolitain (REM) is a light rail transit system under construction in the Greater Montréal area. The REM will serve 26 high-frequency stations 20 hours a day, 7 days a week.

CDPQ Infra, a subsidiary of the Caisse de dépôt et placement du Québec, is responsible for developing and operating the REM project.

The REM is a project worth 6.5 billion Canadian dollars. The Québec government made an equity investment of \$1.28 billion. It will finance the investment, in total or in part, by issuing Green Bonds.

A FEW NUMBERS

- **4 directions from downtown Montréal (South Shore, Montréal's Pierre-Elliott-Trudeau Airport, Sainte-Anne-de-Bellevue, Deux-Montagnes)**
- **26 stations**
- **3 connections with the métro (Bonaventure, McGill and Édouard-Montpetit stations)**
- **67 km of tracks**
- **100% electric**
- **2021-2023: progressive commissioning of the REM**
- **34 000 direct and indirect jobs created in Québec during the construction phase and more than 1 000 permanent jobs once the REM starts running**
- **\$6.5 billion for the construction of the project**

MAIN SUSTAINABILITY ADVANTAGES

- **Increase in public transit use, and reduction in car use and the associated social costs**
- **Decrease of nearly 680 000 tonnes in GHG emissions over 25 years**
- **Significant reduction in noise levels, adverse visual impacts, and air pollution linked to the passing of cars**
- **Contribution to the electrification of transportation and improvement of the sector's energy efficiency to develop the economy and reduce GHG emissions**
- **Contribution to the academic, professional and social integration of people with mobility impairments, thanks to universally accessible stations and cars**

NATURE OF THE WORK

Implementation of a new technology: automated electric light rail transit on fully dedicated lines (dedicated corridor)

- Construction of the South Shore, Airport and Sainte-Anne-de-Bellevue branches
- Reconversion of the infrastructures to accommodate a light métro on the Deux-Montagnes train line (which will gradually replace the current commuter train service)
 - Elimination of level crossings
- Modernization of the Mont-Royal tunnel
- Construction of three connections with the métro (McGill, Édouard-Montpetit and Bonaventure) and one intermodal station (Côte-de-Liesse)

CONSTRUCTION OF THE REM'S 26 STATIONS

Station buildings will be enclosed, sheltered from the elements and universally accessible

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TIMELINE

LESS THAN TWO YEARS AFTER ITS UNVEILING, THE REM PROJECT BECOMES A REALITY.

- Construction began in April 2018.
- Since the summer of 2018, work has been taking place simultaneously on the four branches of the REM.
- The first tests will be carried out at the end of 2020.
- The first commuters will be able to use the train at the end of 2021 (segment between the South Shore and downtown Montréal).
- The REM station located at Édouard-Montpetit will open in 2022 and will allow users to travel between this station and downtown Montréal in three minutes.
- The remainder of the transit system will gradually come into service by the end of 2023.



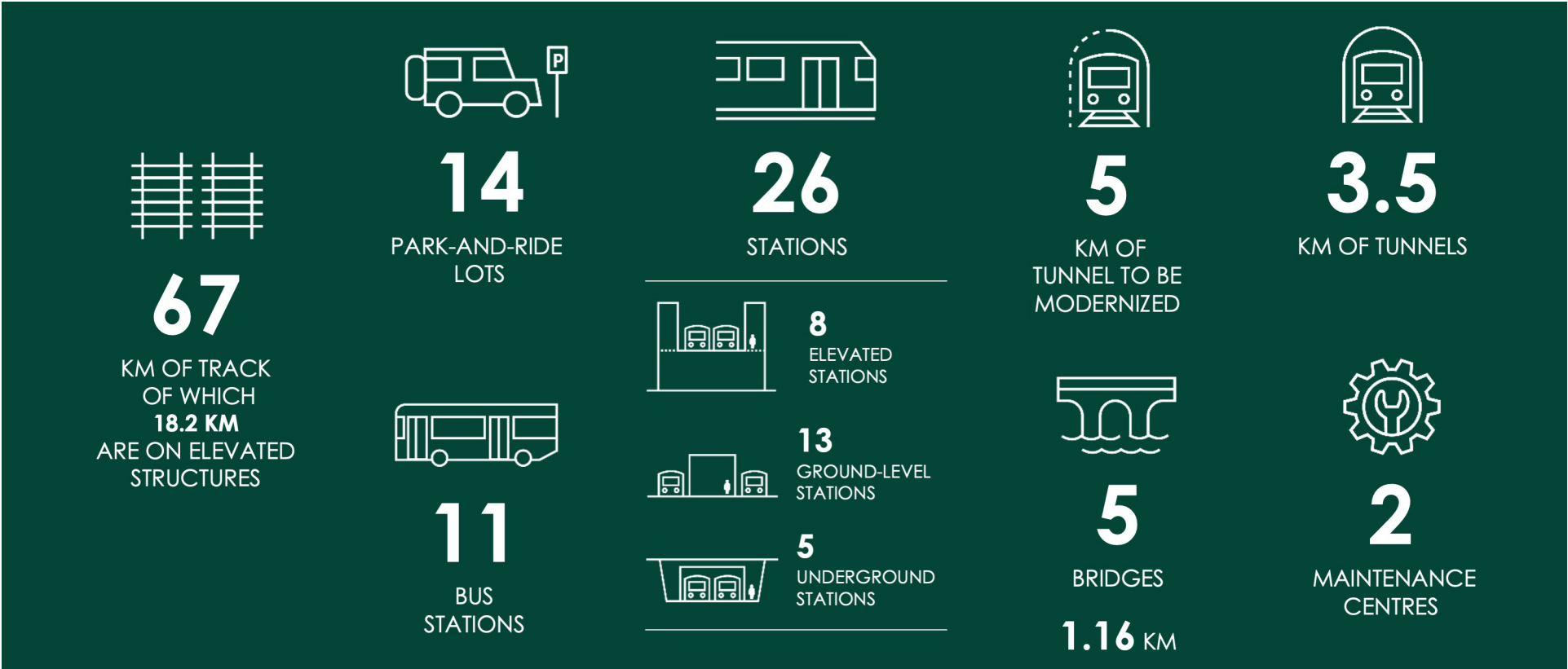
Source: [Overview of REM's Construction Sites, page 6, Project schedule](#)



Photo credit: REM

RÉSEAU EXPRESS
MÉTROPOLITAIN (REM)

SCOPE OF THE WORK TO BE PERFORMED





REM - MAIN WORKS FOR 2019-2020

Brossard Terminal Station

- The construction of the aerial structure is almost complete. It is made up of 33 concrete beams and 6 steel beams. The deck on which the REM will circulate is being concreted. The installation of the rails is progressing rapidly.
- Construction of the Brossard station along with the maintenance and control centre continues (facades, windows, plumbing, electromechanical equipment and elevators, etc.). The bus terminal is also starting to be clearly visible and the roof will be installed shortly.

Du Quartier Station

- Construction of the Du Quartier Station, located at the Cinéplex Odéon Cinema in the center of Highway 10, is continuing. The interior fittings are underway, as well as the installation of electromechanical equipment (ventilation, heating, lighting). The building's exterior envelope is also being finalized.
- The pedestrian walkways that connect the station to the DIX30 and the Solar Uniquartier project are now in place. Their installation will be finalized in the coming months.

Panama Station

- Construction of the station at the center of Highway 10 is underway, and the foundations will be concreted in 2020.
- The temporary bus terminal was put into service in the spring of 2020. With the temporary parking now in place, these temporary infrastructures will make it possible to free up the work space necessary for the construction of the permanent REM infrastructure while maintaining bus service for users.

Samuel De Champlain Bridge

- Work is underway to prepare the installation of the rails base and the catenary poles on the central span of the Samuel De Champlain Bridge.

Île-des-Sœurs

- Construction of the Île-des-Sœurs bridge and the aerial structure is underway. Work is also continuing on the foundations of the station.

Canal de Lachine Area

- The construction of the REM air structure that spans the Lachine Canal is almost complete. The installation of the railings will take place shortly, as will the installation of the electrical system and the rails.



REM - MAIN WORKS FOR 2019-2020

Central Station

- The REM's Gare Centrale station will be in the same location as the current station and will offer access to Montréal's orange line and its extensive underground shopping and restaurant network (RÉSO).
- Work on fitting out the technical and electrical rooms, as well as the future access to the station, is underway. Since the spring of 2020, major work has been taking place for the construction of the station, including the removal of existing railway infrastructure, demolition, installation of equipment and construction of the future central platform for the REM.

McGill Station

- McGill Station will be located beneath McGill College Avenue, in the very heart of downtown, and will offer access to Montréal's green métro line and underground Montréal (RÉSO). It will be connected to the Eaton Center in Montréal and Place Montréal Trust.
- The excavation of McGill Station and the construction of the pedestrian tunnel that will connect the REM to the McGill métro will continue in 2020. The demolition of the Mont-Royal tunnel arch, the excavation for the platforms and the construction of the station's foundations began in the spring of 2020.

Édouard-Montpetit Station

- The future REM station will be located in front of the University of Montréal's Marie-Victorin Pavilion. This underground station will be 70 metres (20 storeys) below the surface, making it the second deepest station in North America.
- The horizontal excavation of the station's galleries was completed in the spring of 2020. Construction of the station (structural work, concreting and installation of equipment) then began. The excavation of the station's platforms began in the spring of 2020.

Bois-Franc Station

- The work started at the future Bois-Franc Station is continuing in order to finalize the construction of the foundation elements of the station, including the elevator shafts, the basement walls, the foundation walls and slabs, and to erect the steel structure of the station, which involves reinforcement, formwork and concreting work.
- Since the spring of 2020, work is also being carried out in the parking lot at Bois-Franc station to allow for the construction of a bus loop during the interruption of the Deux-Montagnes train service.



REM - MAIN WORKS FOR 2019-2020

Canora and Mont-Royal stations

- In 2019, the work carried out at the future Canora and Mont-Royal stations mainly consisted in finalizing the foundation work for the two new stations.
- In 2020, a new phase will begin with:
 - the excavation of materials in the Mont-Royal tunnel which will be transported by wagons to the industrial sector of the Correspondance A40 station for storage
 - construction of the two future stations' metal structures
- the repair of the Jean-Talon Bridge to bring it up to standard, which implies its phased closure over a 2-year period to ensure its demolition and reconstruction, while maintaining a two-way traffic lane at all times.
- Since the spring of 2020, the Cornwall Bridge is closed and will remain closed for a period of eight months for demolition and reconstruction.

Côte-de-Liesse Station

- As of 2022, the Mascouche line will be connected to the REM by a new intermodal station at the Correspondance A40 station, which will be located north of Highway 40, along the railway right-of-way, between Stinson Street and Deslauriers Street, up Hodge Street.
- Work is progressing well in this sector where the construction of the Exo dock and the sidings is well advanced and will allow the Mascouche trains to stop running when the REM is put into service. The preparatory work necessary for the development of the tracks and the construction of the station includes the relocation of public utilities, construction of a service building, construction of foundations and installation of the tracks, as well as filling and paving work.

Grand-Moulin and Deux-Montagnes stations

- The Deux-Montagnes Station building, which will eventually be demolished, was closed to the public in December 2018. Signs were posted on all four doors.
- In Saint-Eustache, the construction of the temporary garage for Exo trains is completed. This garage can convert to a permanent Exo maintenance centre to make it compatible with REM cars.



REM - MAIN WORKS FOR 2019-2020

Marie-Curie and Aéroport Montréal-Trudeau stations

- In the Technoparc sector, the REM will gradually dive into a tunnel in order to protect wetlands further south. A 3.5 km long tunnel will be built at a depth of more than 30 metres between the Technoparc and the airport.
- The tunnel will be drilled using a tunneling machine (TBM) capable of both digging through rock and assembling the tunnel. This is the first time that a TBM will be used in Québec. Because of its size (100 metres long), the TBM had to be delivered piece by piece, requiring around 60 trucks. Once the assembly of the parts is completed, tests will be conducted and drilling will start in 2020.

Île-Bigras and Sainte-Dorothée stations

- In 2020, work in progress in the area consists of the construction of new railway bridges for REM traffic, on both sides of the Laval islands. Between Montréal and Laval, a brand new two-track rail bridge will be built adjacent to the existing rail bridge, while the bridge located north of the islands will be doubled.
- Around mid-2021, when service on the Deux-Montagnes commuter train line is completely interrupted, construction work on the two stations will begin.

Pierrefonds-Roxboro and Sunnybrooke stations

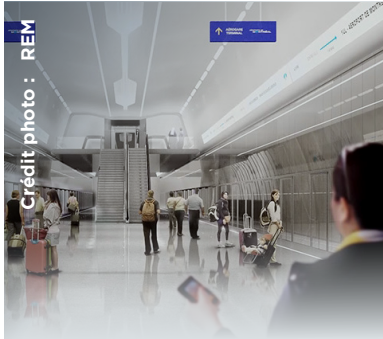
- The future Pierrefonds-Roxboro and Sunnybrooke stations will replace the existing stations of the same name on the Deux-Montagnes commuter train line in 2023.
- In 2020, work in progress in the area consists of the construction of a new two-track rail bridge adjacent to the existing bridge to allow REM traffic over Rivière-des-Prairies between Montréal and the Laval islands.
- Around mid-2021, when service on the Deux-Montagnes commuter train line is completely interrupted, construction work on the two stations will begin. The Pierrefonds-Roxboro Station will be aerial and built using a similar method to that used at the Sainte-Anne-de-Bellevue branch stations, while the Sunnybrooke Station will be elevated, and built above Sunnybrooke Boulevard.



REM - MAIN WORKS FOR 2019-2020

Des Sources, Fairview Pointe-Claire, Kirkland and L'Anse-à-l'Orme stations

- On West Island, the REM's route runs through the old Doney spur, and then crosses and runs along the north side of Highway 40.
 - Since 2019-2020, the linear sequence of work on West Island continues to unfold in predictable stages.
1. **Geotechnical drilling and relocation of utilities** (Hydro-Québec, Bell, Énergir) in conflict with structures under construction.
 2. **Foundation drilling of the elevated structure:** deep into the ground, down to the bedrock.
 3. **Column installation:** many pillars have already appeared along the REM's elevated structure, and this work will continue in 2020.
 4. **Crosshead installation:** this is the part installed on the top of the column and whose shape is similar to a tulip's.
 5. **Deck segment installation:** more than 4 000 segments (prefabricated parts manufactured in Québec) are transported by truck and then assembled using the launching beams. The beam is placed between two pillars and lifts the segments to assemble them one after the other, thus forming part of the deck on which the REM will travel. When a segment is completed, the beam is moved between the next two pillars to continue its work, and so on. During the winter of 2019-2020, the two beams were shut down, and work resumed in the spring of 2020.
 6. **Laying the tracks:** starting in 2020, the tracks will be installed on certain finished segments of the deck.
 7. **Station construction:** in 2020, work will begin at the Fairview Pointe-Claire and L'Anse-à-l'Orme stations with the construction of the platforms and the start of foundation work.



2020: ON OUR WAY TO OPERATIONAL TESTING

Some 20 construction sites are underway across the metropolitan area. Among this year's milestones: modernization work is taking place in the Mont-Royal Tunnel, the tunnel boring machine is starting drilling on the airport branch, and a representative segment will be implemented on the South Shore in late 2020.



WORK SCHEDULE FOR 2020

SOUTH SHORE

- Continued construction of the Brossard and Du Quartier stations and their related infrastructure
- New phase of work at Panama Station and the future bus terminal
- Continued installation of the track and electrical system in the center of Highway 10
- Continuation of work on the central span of the Samuel De Champlain Bridge
- Fall 2020: Start of testing on the representative segment between the Brossard Station and Milan Boulevard (3.5 km)

DOWNTOWN

- Construction of Île-des-Sœurs Station and channel bridge
- Continued construction of the elevated structure, installation of tracks and the electrical system in Pointe-Saint-Charles
- Continuation of rehabilitation work on the railway overpass, replacement of railway tracks in Griffintown
- Central Station: Replacement of electrical and mechanical systems, creation of entrance to the concourse, construction of the central platform
- McGill: Work to connect the station and the Mont-Royal Tunnel, start of platform construction, installation of electrical and mechanical systems in nearby buildings
- Édouard-Montpetit: Work to connect the station to the Mont-Royal Tunnel, start of construction of platforms and station

DEUX-MONTAGNES ANTENNA

- As of May 11, 2020: Train service suspension between Central Station and Du Ruisseau Station
- Excavation work and replacement of existing railway tracks in the Mont-Royal Tunnel
- Dismantling of the catenary and removal of the tracks between Central Station and Du Ruisseau Station
- Construction of steel structures and roofs at Canora, Mont-Royal, Côte-de-Liesse and Bois-Franc stations
- Opening of construction sites at Du Ruisseau and Montpellier stations
- Engineering works: Demolition and reconstruction of the Jean-Talon and Cornwall bridges, continued work on the Rivière-des-Prairies bridges

AIRPORT AND WEST ISLAND

- Continuation of work on the elevated structure: Construction of pillars, production of segments, installation of tracks on the deck
- Construction work begins on Fairview Pointe-Claire and L'Anse-à-l'Orme stations
- Winter and spring 2020: Departure of Alice, the tunnel boring machine, from the Technoparc to the airport
- Spring 2020: Resumption of activities of the two launching beams, Anne and Marie (suspended all winter)



ACQUISITION OF AZUR MÉTRO CARS

PROJECT DESCRIPTION

- For Montréal métro users, the new rolling stock significantly improves service: an 8% increase in capacity, high-tech information systems, a new ventilation system, 27% wider doors than the previous ones and an optimized layout.
- Powered 100% by hydroelectricity, these cars manufactured with 60% Canadian content will be 92.5% recyclable at the end of their useful life.
- Thanks in part to the AZUR métro cars, the Société de transport de Montréal (STM) aims to increase electric-powered travel on its network from 69.5% in 2015 to 88.6% in 2025.

PROJECT PROGRESS

THE STM RECEIVED THE 54TH AZUR TRAIN IN 2019, WHICH COMPLETES THE DELIVERY OF THE TRAINS PROVIDED FOR IN THE CONTRACT SIGNED WITH THE BOMBARDIER-ALSTOM CONSORTIUM IN OCTOBER 2010, ACCORDING TO THE ORIGINAL SCHEDULE.

- This project, which spanned several years, called for a major investment of \$1.2 billion, financed jointly by the Ministère des Transports du Québec (75%) and the urban agglomeration of Montréal (25%).
- This project was designed to replace the 342 MR-63 cars, which were running since the métro opened in 1966, and meet future needs related to traffic growth (63 cars) and métro extensions (63 cars).
- The last MR-63 métro cars were removed from the network on June 21, 2018.

In November 2018, the Québec and Canada governments announced that they would complete the acquisition of 17 additional AZUR trains to replace the MR-73 cars.

- Ultimately, 90% of the trains that will run on the green line will be AZUR trains.

As at March 31, 2020:

- 54 AZUR trains had been transferred to the STM, and the last 17 trains should be delivered by the fall of 2021, i.e. 7 trains in 2020 and 10 trains in 2021, for a total of 71 trains.



54 AZUR trains running

- The first train was delivered in June 2020.
- Of the 71 trains, 38 are replacing MR-63, 7 are replacing MR-73 and 26 are additions.
- Currently, 8 AZUR trains run on the green line and 44 on the orange line.
- 283 AZUR cars were financed with the proceeds from Québec's Green Bond Program.



Crédit photo : REM

ACQUISITION OF AZUR MÉTRO CARS

ACQUISITION OF AZUR MÉTRO CARS: STM FINALIST FOR A PRESTIGIOUS INTERNATIONAL PROJECT MANAGEMENT AWARD

The STM was among the three finalists for the PMI-International Project of the Year Award for its project to acquire the AZUR metro cars. The purpose of this award is to give international recognition for excellence in project management.

About the PMI Project of the Year Award

Founded in 1969, the Project Management Institute (PMI) is a globally recognized organization in project management research and development. The PMI's prestigious Project of the Year Award recognizes an organization for its professionalism and expertise in the field of project management. Specifically, the award recognizes major, complex projects that have demonstrated superior performance in their project management practices, organizational results and impacts on society.


RECLAMATION OF MR-63 CARS

Following the arrival of the AZUR métro cars, the cars were either sent for recycling (318 cars) or reused for artistic or conservation projects (15 cars). The reclamation rate of the MR-63 cars is 85%. More than 50 types of parts were reused on the MR-73 cars and the locotractors, which resulted in major savings. In total, more than 85% of the 8 200 tonnes of MR-63 materials were reclaimed.



MR-63 RECLAMATION APPROACH HONOURED AT NOVÆ GALA

The quality of the work performed by the STM to ensure reclamation of the MR-63 cars, and its conclusive results, motivated the jury of the Novæ Citizen Enterprise Awards to present the STM with an award in the "Residual Materials Management" category. The Novæ Awards recognize best practices in sustainable development and social responsibility in Québec.



RÉNO-SYSTÈMES AND RÉNO-INFRASTRUCTURES

PROJECTS DESCRIPTION

- The Réno-Systèmes program attends to the replacement, construction or refurbishment of Montréal métro's network operational stationary equipment. The Réno-Infrastructures program attends to the replacement or refurbishment of the métro infrastructure.
- The two projects are essential to improve the quality and performance of the métro service and are therefore closely linked to the AZUR métro car acquisition project, partly funded through the first two Québec Green Bond issues.

ADVANTAGES

RÉNO-SYSTÈMES

- Improvement in the reliability, availability and safety of the métro's network operational stationary equipment (fewer service outages)
- Improvement in communications (public address system)
- Improvement in response times in the event of a service outage
- Improvement in universal accessibility

RÉNO-INFRASTRUCTURES

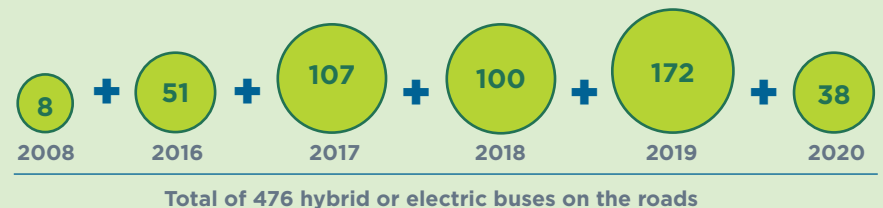
- Maintenance of the infrastructure's condition and reliability
- Maintenance of the métro network's availability and safety
- Improvement in universal accessibility
- Restoration of several works of art

PURCHASE OF HYBRID OR ELECTRIC BUSES

PROJECT DESCRIPTION AND PROGRESS

- The purchase of hybrid biodiesel-electric buses is a key element in the STM's strategy toward electrification.
- Based on projections, the STM should hold a fleet of vehicles comprised entirely of hybrid and/or electric vehicles from 2029 onwards.
- In addition, the STM aims to buy only 100% electric buses from 2025 onwards, and to have a fully electric fleet by 2041.
- Phase 2 of the 12-metre bus acquisition project aims, for the period 2019 to 2024, the acquisition of 963 buses:
 - 498 hybrid or electric buses to replace buses at the end of their useful life;
 - 431 hybrid or electric buses added to the fleet;
 - 30 electric buses with garage charging added to the fleet;
 - 4 fast-charging electric buses added to the fleet.
- In 2019, the STM put 174 hybrid buses and 2 electric buses into service and disposed of 114 diesel buses at the end of their useful life. As a result, the share of hybrid and electric buses in the bus fleet increased from 14.9% in 2018 to 23.8% in 2019.

- As of March 31, 2020, there were 469 hybrid buses, of which 454 were air-conditioned, and 7 electric air-conditioned buses on the roads.
 - Of these, 104 buses were financed with the proceeds from Québec's Green Bond Program.
- By the end of 2020:
 - 109 new air-conditioned hybrid buses and 4 midibuses will replace diesel buses;
 - 260 hybrid buses and 29 electric buses will be added to the fleet.

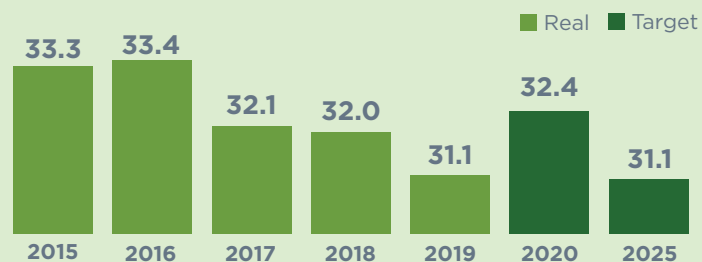


ESTIMATED BENEFITS FOR THE ENVIRONMENT

HYBRID OR ELECTRIC BUSES

- Thanks to hybrid buses, the STM aims to reduce GHG emissions per seat-kilometre from buses by 6.6% (from 33.3 g CO₂ eq. per seat-kilometre in 2015 to 31.1 g CO₂ eq. per seat-kilometre in 2025).

Bus GHG emissions per seat-km (g CO₂ eq.)



- GHG emissions from buses per seat-km decreased by 2.8% between 2018 and 2019 to reach 31.1 g CO₂ eq. The target set for 2025 was therefore reached this year.
- Hybrid buses offer two main benefits in terms of GHG reductions.
 - The GHG emissions avoided that correspond to car trips avoided by public transportation users. These benefits are quantified using the same method as for AZUR's benefits. Direct emissions from hybrid buses are deducted from these avoided GHGs.
 - Replacing diesel buses with hybrid buses reduces STM fuel consumption per km travelled.

MÉTRO AZUR AND HYBRID OR ELECTRIC BUSES

Thanks to, among other things, AZUR cars and hybrid or electric buses, the STM aims to:

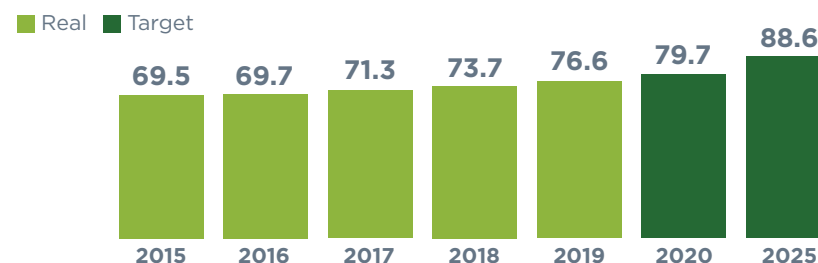
- Reach 440 million public transit trips on the STM network by 2025:

Ridership based on fares' sales
(millions of trips)



- Increase electric-powered travel on its network from 69.5% to 88.6% in 2025:

Percentage of trips made using electricity
(percentage)

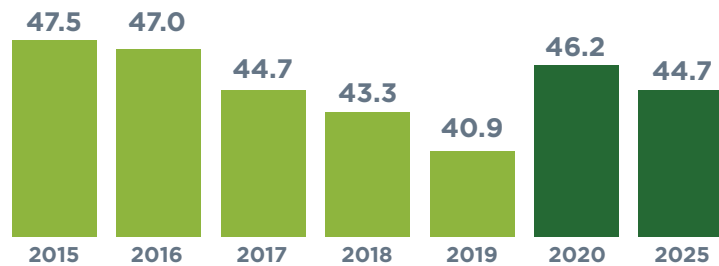


ESTIMATED BENEFITS FOR THE ENVIRONMENT

- Reduce GHG emissions per passenger-kilometre by 6% between 2015 and 2025:

Total GHG emissions per passenger-km (g CO₂ eq.)

■ Real ■ Target



Note: The emission factors used for the inventory of GHG emissions have been updated following the publication of the "National Inventory Report 1990-2017: Greenhouse Gas Sources and Sinks in Canada".

GHG EMISSIONS PER PASSENGER-KM

GHG emissions per passenger-km, which is the ratio between the STM's total GHG emissions and the cumulative distances traveled by customers on the network during the year, decreased by 6.0% in 2019 to 40.9 g CO₂ eq. This is a decrease of 14.3% since 2015. Thus, the 2025 target has again been exceeded this year. This gain is mainly explained by an increase in ridership and the STM's efforts to reduce its GHG emissions.

More information on the STM's calculation methodology can be found at:
http://www.stm.info/sites/default/files/media/doc/2019/ov_ghg_azur_hybrid_buses.pdf

Rapport de développement durable 2019 (French only)
<http://www.stm.info/fr/a-propos/informations-entreprise-et-financieres/rapport-annuel-2019/rapport-de-developpement-durable>

Tableau complet des indicateurs de développement durable 2011-2019 (French only)
<http://www.stm.info/sites/default/files/pdf/fr/indicateursdd2019.pdf>

Index du contenu GRI Standards (French only)
http://www.stm.info/sites/default/files/pdf/fr/rdd2019_gri.pdf

TOTAL GHG EMISSIONS

The STM's total GHG emissions decreased by 2.7% compared to 2018, reaching 159 247 tonnes of CO₂ eq. despite a 2.1% increase in service offer in seat-km.

- Bus GHG emissions, which represent 77% of the picture, decreased by 3.4%.
- Gas consumption used to heat ring-shaped buildings, which represented 16% of total emissions, decreased by 2.6%, mainly due to the temporary closure of the Saint-Denis transport centre and the demolition of the Bellechasse garage.
- Other direct emissions, which represent 0.6% of total emissions, rose due to the increase in the number of air-conditioned buses and their estimated refrigerant leaks.

Total GHG emissions from 2015 to 2019 by type of emissions

GHG emissions (tonnes CO ₂ eq.)*	2015	2016	2017	2018	2019	Difference 2018-2019
Direct emissions from mobile sources	132 970	133 719	131 789	131 684	127 257	-3.4%
Direct emissions from stationary sources	25 128	25 375	24 528	26 890	26 197	-2.6%
Other direct emissions	2 379	676	478	658	883	34.3%
Indirect emissions (electricity and paratransit service)	4 206	4 139	4 337	4 416	4 910	11.2%
Total GHG emissions	164 684	163 909	161 132	163 647	159 247	-2.7%

* The emission factors used for the inventory of GHG emissions have been updated following the publication of the "National Inventory Report 1990-2017: Greenhouse Gas Sources and Sinks in Canada".

GREEN BOND NEWSLETTER

PROVINCE OF QUÉBEC – August 2020

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