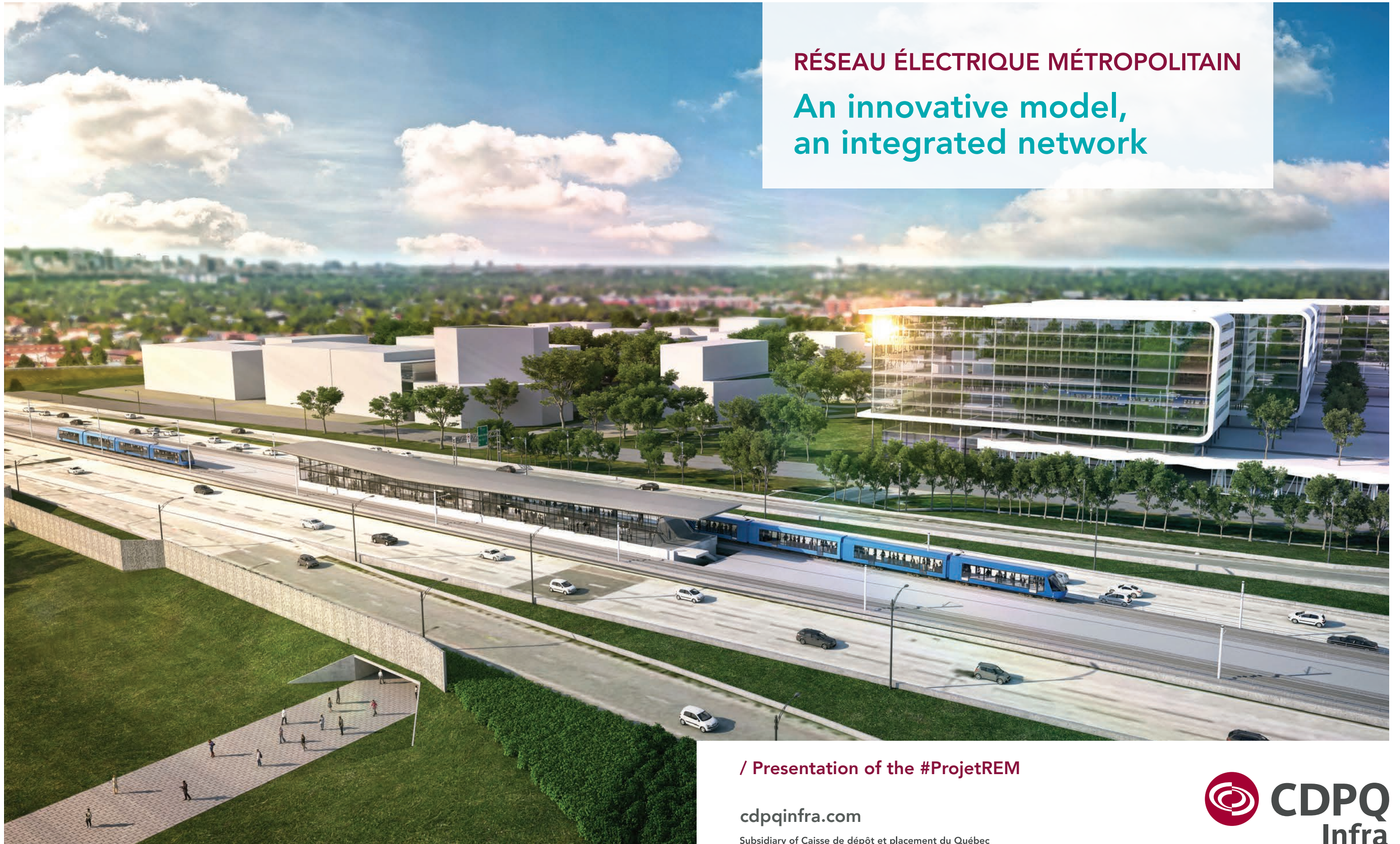


# RÉSEAU ÉLECTRIQUE MÉTROPOLITAIN

An innovative model,  
an integrated network



/ Presentation of the #ProjetREM

[cdpqinfra.com](http://cdpqinfra.com)

Subsidiary of Caisse de dépôt et placement du Québec





# THE REM: A PROJECT WITH IMPACT

The REM is a fully automated, electric light rail transit (LRT) system, made up of 67 km of dedicated rail lines, with 50% of the tracks occupying existing rail corridors and 30% following existing highways. The REM will include four branches connecting downtown Montréal, the South Shore, the West Island, the North Shore and the airport, resulting in two new high-frequency public transit service lines to key employment hubs.

A team of close to 400 experts is contributing to this project, ensuring well-planned, efficient and effective integration with the other transit networks. All sorts of elements are being considered, including the REM's integration into the urban fabric and landscape, access to stations and impacts on the environment. Based on the current planning stage, the REM would become the fourth largest automated transit network in the world, with 27 stations, 13 parking facilities and 9 bus terminals, in addition to offering:

- frequent service (every 3 to 12 minutes at peak times, depending on the stations), 20 hours a day (from 5:00 a.m. to 1:00 a.m.), 7 days a week;
- reliable and punctual service, through the use of entirely dedicated tracks;
- reduced travel time through high carrying capacity and rapid service;
- attention to user safety and security through cutting-edge monitoring;
- highly accessible stations (by foot, bike, public transit or car) and equipped with elevators and escalators to improve ease of travel for everyone;
- flexibility to respond to increases in ridership, with the possibility of having trains pass through stations every 90 seconds.

The goal of this document is to give you an overview of this key project. CDPQ Infra is keeping communication channels open so that you can track all of the steps in the realization of this new public transit system for the Greater Montréal area.





# CAISSE DE DÉPÔT ET PLACEMENT DU QUÉBEC AND CDPOQ INFRA

## CAISSE DE DÉPÔT ET PLACEMENT DU QUÉBEC

Caisse de dépôt et placement du Québec's mission is to grow its clients' funds while contributing to Québec's economic development. La Caisse was created in 1965. It is now one of the largest institutional fund managers in Canada and North America. During the past 50 years, la Caisse has developed global expertise in key sectors and markets, strong teams and a leading network of partners. La Caisse has also acted as owner of major projects for a long time. Playing such a role is in la Caisse's DNA. Its Ivanhoé Cambridge subsidiary, which manages \$40 billion of real estate assets, has for decades planned, financed, built and managed buildings worldwide.

## LA CAISSE'S EXPERTISE

La Caisse has invested in the infrastructure sector for the past 15 years. The experience it has gained from its investments in regions ranging from Australia to the UK, has enabled it to develop an understanding of global best practices related to undertaking large projects with discipline and efficiency.

La Caisse has more than \$14 billion in assets invested in infrastructure projects around the world. La Caisse's transportation infrastructure investments include:



### THE CANADA LINE

The Canada Line is a light train that runs between the Vancouver Airport and the city's downtown core. The line, which was built for the 2010 Olympics, is 20 kilometers long and services 120,000 passengers per day. La Caisse has been a shareholder in the project since its beginnings in 2005. It has been cited as one of the country's greatest new infrastructure execution successes.



### HEATHROW EXPRESS

Heathrow Express is the fastest, most efficient link between central London and Heathrow Airport. The train transports more than 5.8 million passengers each year. La Caisse has been a shareholder since 2006.



### KEOLIS

A public transit operator in 15 countries and four continents, Keolis services more than 2.5 billion passengers each year. La Caisse has been one of the company's two shareholders since 2007.



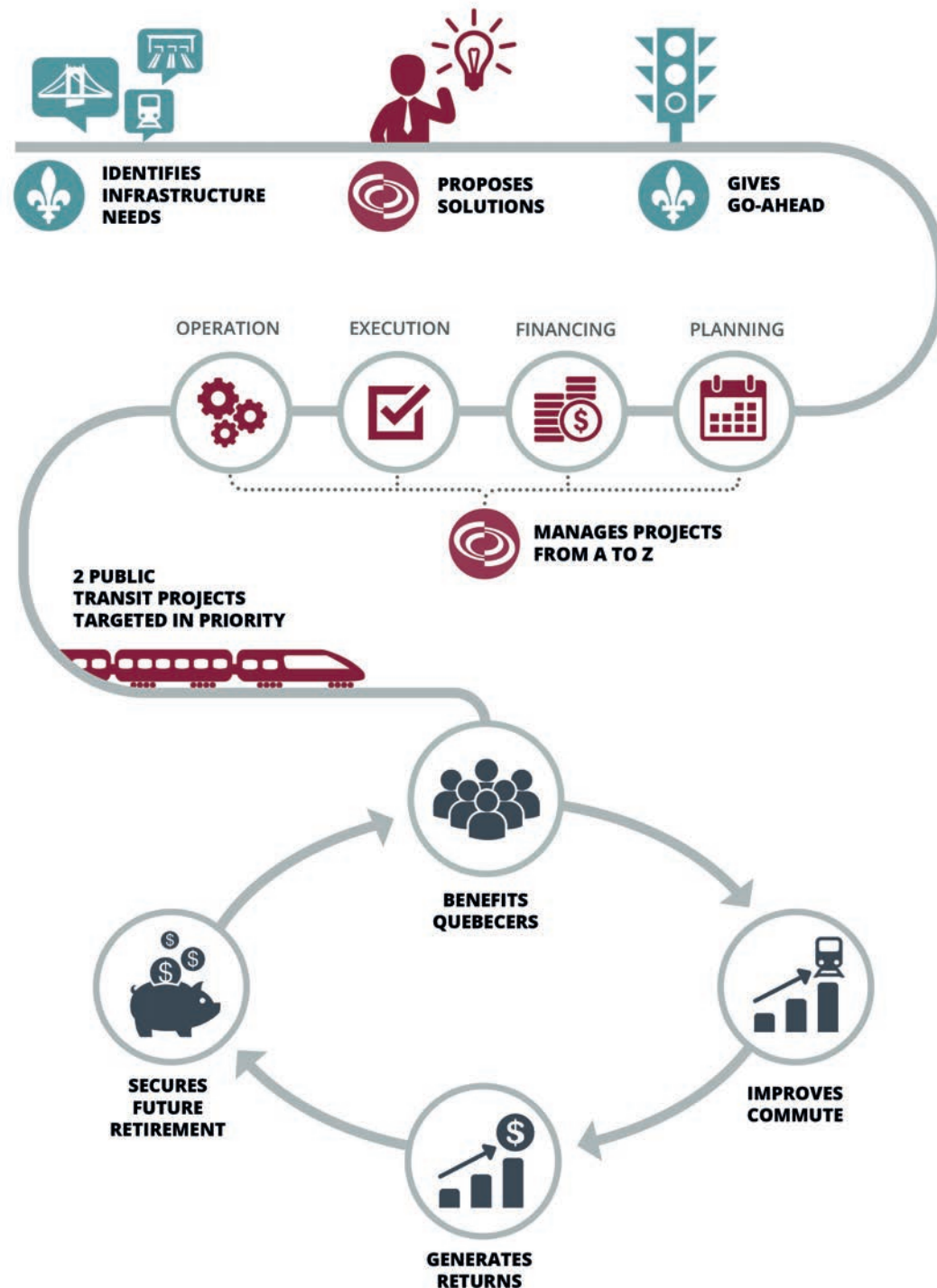
### EUROSTAR

Eurostar supplies high-speed train services, primarily between London and Paris and London and Brussels. It is Europe's largest international high-speed train operator and has served more than 150 million passengers since its inception in 1994. La Caisse has been a shareholder since 2015.



## CDPQ INFRA

CDPQ Infra is a subsidiary of la Caisse, created in July 2015, which deals with the planning, financing, implementation and operation of infrastructure projects. Based on the broad guidelines provided by the Québec government, CDPQ Infra is currently planning the REM, a large public transit project, which is a new integrated network linking downtown Montréal, the South Shore, the West Island, the North Shore and the airport.



## HISTORY OF THE REM PROJECT

In September 2015, the Québec government provided CDPQ Infra with broad guidelines that will enable it to initiate the planning phase related to two public transit projects:

- **The public transit system for the A-10 / Downtown Montréal axis:** this initiative projected the implementation of a new electric transit service that connects the South Shore to downtown Montréal via the new Champlain Bridge.
- **The public transit system for Montréal's West Island, via the airport:** this project involved the implementation of a new electric transit service, that links the West Island to downtown Montréal via the Pierre Elliott Trudeau International Airport.

The two projects have been the subject of numerous studies during recent years by various stakeholders. A technical analysis completed by CDPQ Infra pointed to a solution that combines the proposed projects into a single network. Merging the two systems will create a broad public transit network that will link to existing networks (bus, metro, commuter train) in the Greater Montréal area and generate economies of scale related to system construction and operation. The REM was presented to the public in April 2016.



THE REM will be the world's fourth largest automatized electric transit network in terms of route length.

## THE REM AT A GLANCE

NETWORK	STATIONS	CONNECTION
67 km of double tracks 4 branches connected to downtown	27 stations 1 potential station Wi-Fi throughout the network	9 bus terminals 13 parking facilities

## LOCATION AND DESCRIPTION OF THE BRANCHES

The REM project will comprise 67 km of rail lines, divided into four branches and dedicated to public light rail transit (LRT) passengers. Approximately 80% of these tracks will run along existing rail corridors (the Deux-Montagnes commuter rail line and Doney branch in the Montréal Technoparc sector) and existing highway corridors (A-10, Champlain bridge, A-40).

### SOUTH SHORE BRANCH (15 KM)

This new 15 km branch will start in Brossard, southeast of the A-10 / A-30 interchange and include the A-10 corridor leading downtown, connecting to Central Station.

### DEUX-MONTAGNES BRANCH (31 KM)

This branch will leverage the Deux-Montagnes commuter train line, the existing rail corridor dedicated to passenger transportation. The line will be transformed into a 31-km LRT branch line that will link Deux-Montagnes with downtown Montréal.

### SAINTE-ANNE-DE-BELLEVUE BRANCH (16 KM)

The new Sainte-Anne-de-Bellevue branch will run along the Deux-Montagnes corridor to the A-13. It will then branch off towards the existing Doney right-of-way line (in the Montréal Technoparc) along the A-40 line to Sainte-Anne-de-Bellevue. This 16-km branch will connect Sainte-Anne-de-Bellevue to downtown Montréal via the A-40 line.

### AIRPORT BRANCH (5 KM)

This new branch, about 5 km long, will start at Central Station, run along the Deux-Montagnes and Doney lines and then branch off south to connect with the Montréal-Trudeau Airport.

All the lines will connect into a single transit network, allowing for a smooth, continuous commute.

## TRAVEL TIME AND FREQUENCY

The system would operate seven days a week, 20 hours a day between 5 am to 1 am. Trains would run every three to 12 minutes at peak times depending on the station. The REM would provide a high-frequency service, thus reducing travel times for Greater Montréal area residents.

	Travel time			Frequency	
	By car (currently)	Public transit (currently)	REM	Public transit (currently)	REM
<b>From the South Shore to downtown</b>	40 to 50 min. on average	20 to 25 min. on average from Chevrier	15 to 17 min.	Every 15 min.	Every 3 to 6 min.*
<b>From the airport to downtown</b>	30 to 45 min. on average	45 to 60 min. on average	25 to 26 min. Express: 18-20 min.	Every 8 min.	Every 6 to 12 min.*
<b>From the West Island to downtown</b>	50 min. on average	45 to 50 min. from Sainte-Anne-de-Bellevue on average	33 to 35 min.	Every 20 min. on average	Every 6 to 12 min.*
<b>From Deux-Montagnes to downtown</b>	Over one hour	40 to 45 min. on average	32 to 34 min.	Every 30 min. on average	Every 6 to 12 min.*

\*Based on ridership developments.

## SYSTEM AND TECHNOLOGY

### CHOICE OF TECHNOLOGY: THE AUTOMATED ELECTRIC OPTION





The REM favors fully-automated electric light rail transit (LRT) technology. LRT will address two key challenges more than other available technologies (tramway, tram-train, bus rapid transit (BRT), etc.):

- It will meet the projected transport demand up to the year 2031;
- It will provide flexibility in response to changing ridership, for example by increasing train frequency or by adding cars.

Bus-related options (using reserved lanes or through BRT) were not selected as these will not provide the ability to meet projected demand. Furthermore, they will not attain availability and reliability performance metrics comparable to those of LRT technology and will generate a higher average cost per user. Finally, this method will not provide the ability to offer universal access as easily.

Based on the analyses, the tramway and tram-train options will reach capacity limits on certain branches by 2031 and will not improve travel times compared with those currently offered by the public transit system in the Greater Montréal area. Tramways, which share car lanes, will not offer the same fluidity as transit options that use dedicated infrastructure. Tramways, which run along roads, could have a negative impact on traffic and the urban fabric.

Light rail transit, which operates on an entirely dedicated and automated corridor, will ensure security, flexibility and reliability while offering among the most advantageous average operating costs per trip. The ability to increase its frequency to every 90 seconds will enable the light rail transit system to handle future transportation demand. Compared to other systems, the light rail transit is the option that will most effectively meet the identified needs.

	 Bus	 Tramway Tram-train	 Light Rail Transit (Automated LRT) REM	 Heavy Metro (non-automated/ automated)
<b>Respond to demand 2031</b>	X	X	✓	✓
<b>Flexible in time</b>	X	X	✓	✓
<b>Fast commercial speed</b>	X	X	✓	✓
<b>Cost/trip</b>	✓	✓	✓	X

## INTEGRATION INTO THE PUBLIC TRANSIT SYSTEM



The REM, which will comprise 27 stations, 9 bus terminals and 13 parking facilities, will be integrated into the metropolitan bus, metro and commuter train network and provide customers with efficient access to stations.

### BUSES

The analyses that were done demonstrated that a large majority of customers will access individual stations by bus. CDPQ Infra has set up a working group composed of representatives from the Ministère des Transports, de la Mobilité durable et de l'Électrification des transports, the Agence métropolitaine de transport, the Société québécoise des infrastructures, the Société de transport de Montréal, the Réseau de transport de Longueuil, and the Société de transport de Laval. This working group's objective is to identify all bus routes in the REM corridor and determine how frequently they operate, define principles for ensuring the quality of transfers, and evaluate bus line redeployment options.

### COMMUTER TRAINS

The REM will provide a simple, efficient connection with the Mascouche line at the A-40 transfer station. The Saint-Hilaire line could also be accessible to REM users travelling from Central Station.

### METRO

The system will provide connections to the Montréal Metro network through the Orange line via Bonaventure station (Central Station), the Blue line via Édouard-Montpetit Station or the Green line via McGill Station.

CDPQ Infra's objective: promote public transit by ensuring a maximum number of connections and feeder buses at REM stations.

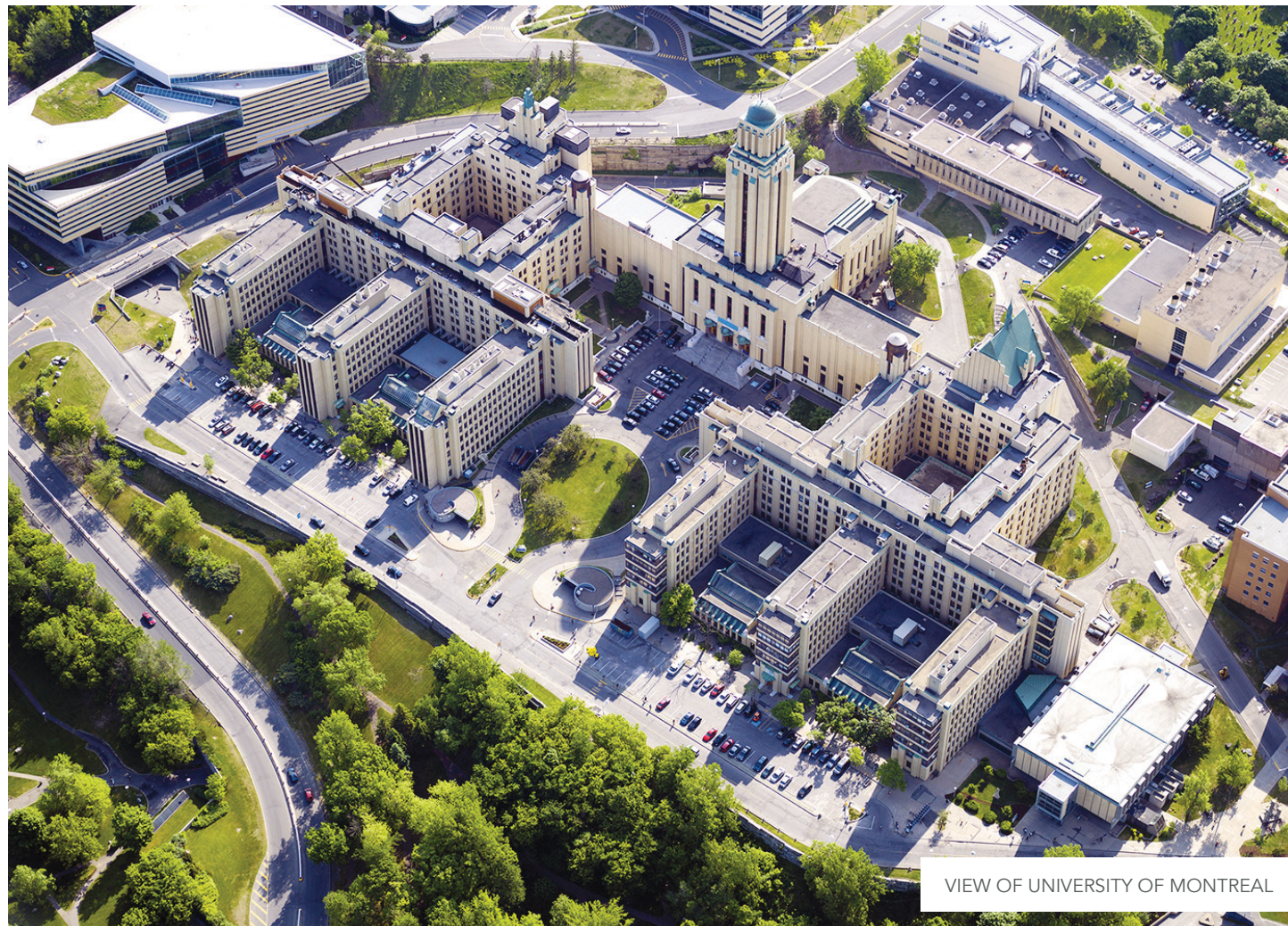


## DOWNTOWN STATIONS

CDPQ Infra's teams have developed solutions to technical challenges related to building the Édouard-Montpetit, McGill and Bassin Peel stations. These, along with the 24 stations originally planned for the route, will complete the network and help to more effectively connect the REM to the Metro system. Completion of these stations once the REM is in operation will ensure:

- Increased ridership and greater use of public transit in the Greater Montréal area
- Easier access to educational institutions (Université de Montréal, HEC Montréal, Polytechnique Montréal) and to important hospitals (CHU Sainte-Justine, Jewish General Hospital, St. Mary's Hospital), via the Édouard-Montpetit Station
- More efficient access to downtown Montréal and to McGill University via the McGill Station
- Better transit service for the Griffintown area
- New starting points from downtown Montréal to the Montréal airport

In addition to these three stations, a new access dedicated to the REM will be built at Central Station to facilitate connection between the Bonaventure metro station and the REM station at Central Station.



### ÉDOUARD-MONTPETIT STATION

The station's depth (70 meters) posed significant technical challenges right from the start, particularly related to the construction of escalators. As REM stations will all be universally accessible, the proposed solution is based on the use of high-capacity and high-speed elevators. Users will thus be able to circulate from the REM to the Metro in a fluid and efficient manner.



### MCGILL STATION

Ensuring the ability to connect the REM station located in the southern section of the Mont-Royal Tunnel, the narrowest area, with a Metro station on the Green line was complex. Now that the technical issues related to integrating the REM system into the underground infrastructure and urban technical networks has been resolved, the REM can now connect to the Métro's Green line.



### BASSIN PEEL STATION

The original intention was to have two potential stations (Bridge-Wellington and Du Havre) serve this area. Following a proposal by the Ville de Montréal and a desire to consolidate transit services in high-growth areas, only one station is now being projected for the Peel Basin area. Two major exit areas are planned, one in the north and one in the south. The new station will ensure better services for a major employment hub (Cité du Multimédia) and for the growing Griffintown and Pointe-Saint-Charles sectors.



## CHARACTERISTICS OF THE STATIONS AND THE CARS

Depending on their locations, stations will be accessible by all modes of transportation, including foot, bike, public transit or car. REM stations will respect principles of universal access and be designed to improve travel fluidity for everyone and thus be equipped with elevators and escalators.

Stations	Bus terminal	Parking facility	Drop-off areas (for cars)	Bike racks
A13	✓	✓	✓	✓
Airport			✓	✓
Bassin Peel				✓
Bois-Franc	✓	✓	✓	✓
Canora			✓	✓
Correspondance A40			✓	✓
Des Sources			✓	✓
Deux-Montagnes		✓	✓	✓
Du Quartier			✓	✓
Du Ruisseau		✓	✓	✓
Édouard-Montpetit				✓
Central Station			✓	✓
Grand-Moulin		✓	✓	✓
Île-des-Sœurs			✓	✓
Île Bigras		✓	✓	✓
Kirkland	✓		✓	✓
McGill				
Montpellier			✓	✓
Mont-Royal			✓	✓
Panama	✓	✓	✓	✓
Pointe-Claire	✓	✓	✓	✓
Roxboro-Pierrefonds	✓	✓	✓	✓
Sainte-Anne-de-Bellevue	✓	✓	✓	✓
Sainte-Dorothée	✓	✓	✓	✓
Sunnybrooke		✓	✓	✓
Technoparc Montréal			✓	✓
Terminal de la Rive-Sud	✓	✓	✓	✓

### THE STATIONS AT A GLANCE

- Modern buildings with glass windows, architecturally designed with a focus on brightness and transparency
- Covered, climate-controlled buildings for user comfort
- Surveillance cameras in the stations
- Screens that display the next departure time and inform users of network status
- 80-meter-long platforms, separated from rail lines by automatic sliding doors, for maximum security
- Attendants travelling on the network providing information and control

Fully automated **electric** light rail transit (LRT) system

Electric powered **rolling stock**

Surface, underground and overhead links

**Network integration** and bus lines that feed into the stations

**Sliding doors** on the platforms



2 cars during non-peak times = capacity of **300** persons

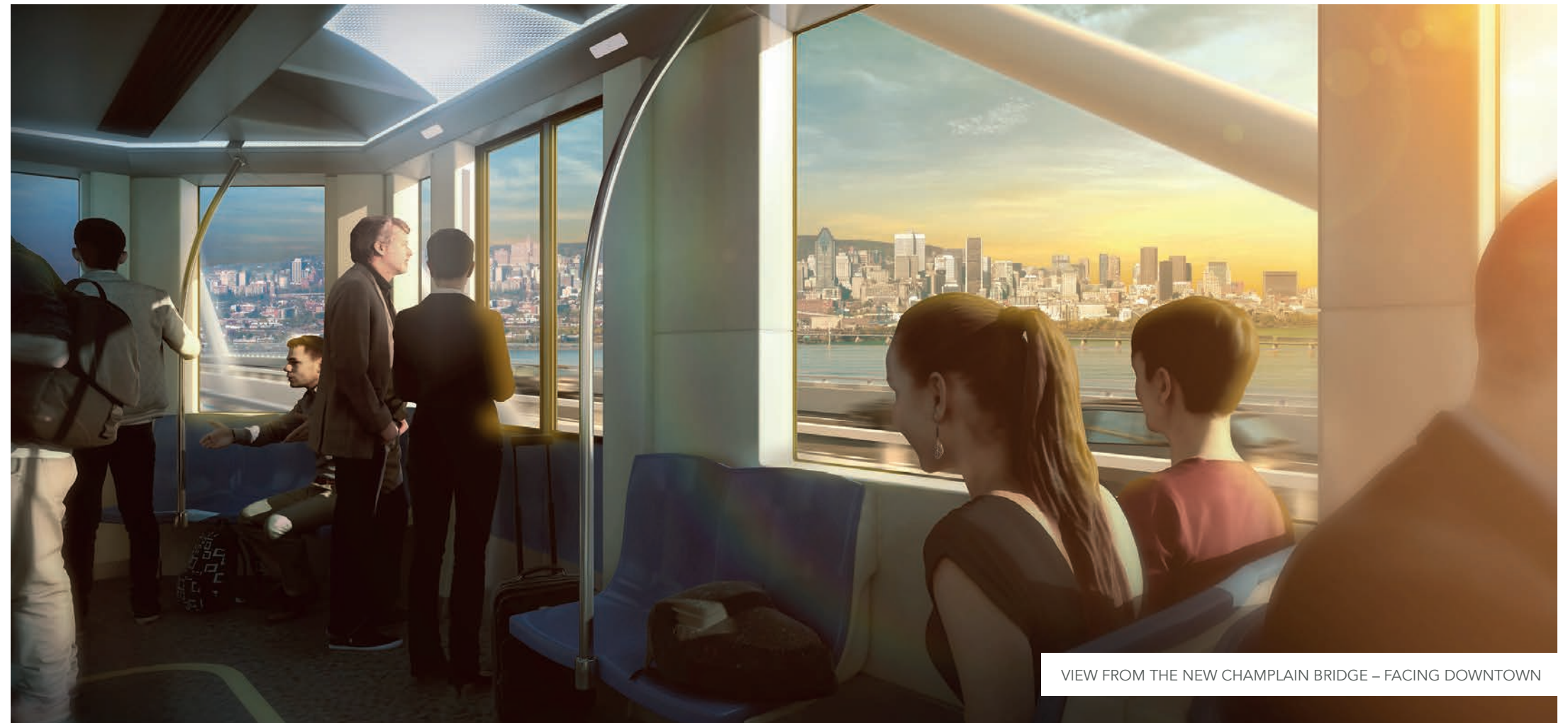
4 cars during peak times = capacity of **600** persons

Fleet of about **200 cars** once in operation

**27** stations accessible on foot, by bicycle and car

Platforms approximately **80 m** long

Two types of **"boa"** type car configurations



VIEW FROM THE NEW CHAMPLAIN BRIDGE – FACING DOWNTOWN





KIRKLAND STATION

# PROJECT BENEFITS

## SIGNIFICANT IMPROVEMENT IN PUBLIC TRANSIT SERVICE

### Increase frequency and capacity

- Conversion of the Deux-Montagnes commuter line will triple daily train departure capacity along this corridor
- The South Shore branch will facilitate replacement of the bus service, which is currently saturated, with a new high-frequency option, operating 20 hours a day

### Open possibilities

- The new A-40 transfer station, will increase connectivity with the Mascouche commuter rail line and offer a new link to the airport and employment hubs in the West Island and South Shore
- The REM branch that extends to the airport will open access to new metropolitan area lines to travellers, lighten airport parking and facilitate employee travel

## IMPROVED ROADWAY FLUIDITY AND SECURITY

### Optimize travel fluidity

- THE REM will contribute to optimizing travel in the highly congested Autoroute 40 and Autoroute 10 sectors, the downtown terminus and the "Couronne-Sud"

### Offer greater safety

- The reduction in level crossings will improve the safety of car drivers and pedestrians while ensuring greater roadway fluidity

## NETWORK INTEGRATION

### Improve connections

- The REM will offer the ability to connect to the Mascouche and Saint-Hilaire commuter rail lines and potentially Saint-Jérôme as well, via Canora Station
- Connections to the three major Montréal Metro lines (Blue, Green and Orange) will considerably optimize transportation, by increasing user options

## ECONOMIC DEVELOPMENT

### Serve employment hubs

- Creation of a new branch along the A-40 and a second that runs towards the airport, along with a station at the heart of the Montréal Technoparc, will offer new public transit services to these key employment hubs

### Contribute to the development of strategic areas

- The route will facilitate consolidation of two South Shore Transit-Oriented Development Areas (TOD): the Panama and Du Quartier areas, which include major real estate developments
- Over the longer term, the REM will strengthen strategic areas with strong growth potential, notably the Parc d'entreprises de la Pointe-Saint-Charles and the Peel Basin area

### Create jobs

- More than 7,500 direct and indirect jobs will be created during each year of construction

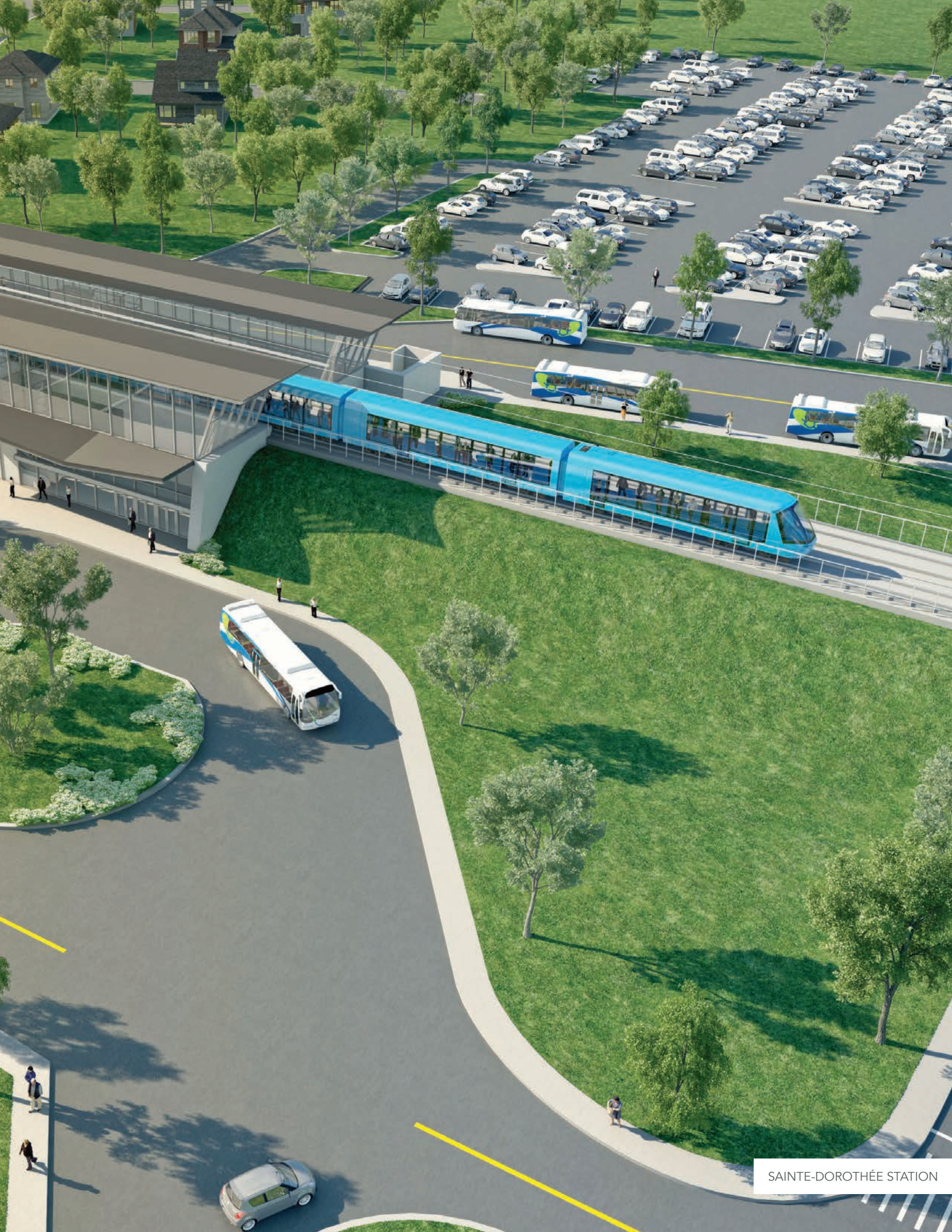
## ENVIRONMENTAL BENEFITS

### Improve air quality and reduce noise problems

- The project will reduce greenhouse gas (GHG) emissions by approximately 35,000 tons per year, once in operation
- The REM will spur a significant reduction of noise, visual and atmospheric problems linked to bus traffic in the Griffintown area

The projected REM lines would offer significant improvements in service to the North Shore, Laval, the West Island and the South Shore, as well as establishing new service between the airport and downtown Montréal.





SAINTE-DOROTHÉE STATION

# COMMUNITY RELATIONS OFFICE

Once construction starts, CDPQ Infra wants to regularly inform the public about its progress and work completed, using a range of diverse tools with a view to maintaining active, regular and transparent communication with all groups and individuals throughout the various stages of the project.

## REACHING COMMUNITIES ALONG THE ENTIRE ROUTE

CDPQ Infra will set up a community relations office to maintain permanent contact with relevant authorities and residents affected by the work. During the REM construction period, the office will be responsible for managing all communications with the stakeholders involved. It will be comprised of a dedicated project team that will inform the public about its various aspects and will ensure regular follow-ups with municipalities and boroughs.

CDPQ Infra is therefore committed to:

- Disseminating proactively all information regarding future work and its impact on everyday life
- Maintaining contact with residents affected by the work and with authorities concerned to enable them to express comments and opinions
- Holding public information sessions to review the project's progress and explain future work
- Setting up a project phone line and email address
- Setting up good neighbour committees along the four branches
- Setting up a rigorous complaint handling system and diligently dealing with the concerns of residents affected by the work.

### A WEBSITE DEDICATED TO THE CONSTRUCTION PHASE

CDPQ Infra will create a website entirely dedicated to providing information about REM construction and work progress. Citizens will have access to interactive maps that detail obstacles to movement, will be informed of service changes on the Deux-Montagnes line, will be able to follow site progress through photos, video and news, and will be made aware of upcoming events (information sessions, good neighbour committees, etc.)



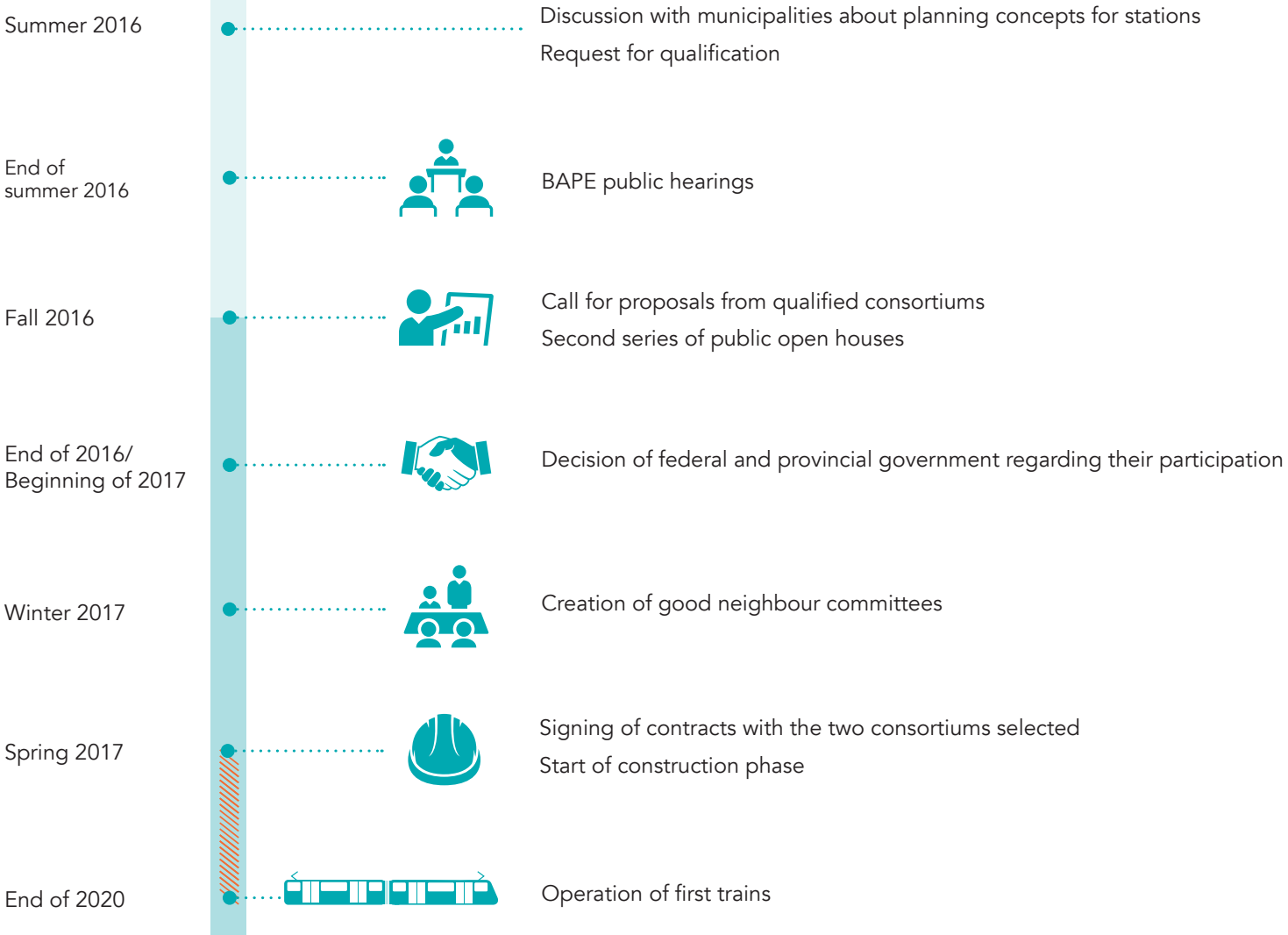
How will you like to receive news and alerts about work related to the REM?  
Share your suggestions by email by writing to:  
**[questions@cdpqinfra.com](mailto:questions@cdpqinfra.com)**.





AUTOROUTE A13 STATION

# NEXT STEPS





# TO LEARN MORE ABOUT THE REM

To stay on track with the developments related to the REM project or to get answers to your questions we invite you to:

- Contact us by writing to [questions@cdpqinfra.com](mailto:questions@cdpqinfra.com) or by phoning us at 514 847-2833
- Visiting the official CDPQ Infra website at [cdpqinfra.com](http://cdpqinfra.com) and by regularly consulting our "news" section
- Follow CDPQ Infra on Facebook, Twitter et YouTube



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