Application

# Montréal

*A vision of sustainable mobility rooted in concrete action*

# SMART CITIES AWARD 2017

Montréal

# *Introduction*

Ville de Montréal is proud to submit an application for the ***2017 SMART CITIES AWARD*** organized by the Fédération Internationale de l'Automobile (FIA). Rather than single out a specific project for consideration, Montréal has opted to provide the judges with the enclosed overview of the various actions the City has undertaken in the past decade to foster sustainable mobility. These initiatives have made Montréal a strong contender for the title of North American capital of sustainable mobility.

The contents of this application outline Montréal's achievements in terms of active and public transportation. It includes a brief summary of the numerous strategic documents used in Montréal and a description of key projects that have, slowly but surely, helped stabilize and even reverse the trend toward excessive automobile use, especially single-occupant automobile use that has been observed in the city and throughout the Western world.

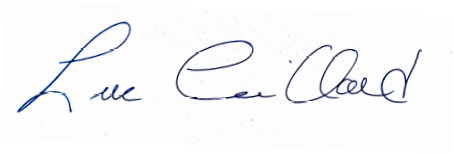
Backed by its commitments with metropolitan partners, Montréal is indisputably at the vanguard in the fight against climate change. The fact that the ***HYDRO-QUÉBEC MONTRÉAL ePRIX*** event is being held in the streets of Montréal speaks to the role the City is determined to play in the international arena as municipal administrations around the world develop a New Urban Agenda to tackle global challenges at the local level.

FORMULE E FIA 2017
HYDRO-QUEBEC
MONTRÉAL ePRIX

The greenhouse gas emissions targets set by national governments will be impossible to meet without the cooperation of their towns and cities. Montréal understands this and is dedicated to playing a front-line role in meeting this challenge.

We firmly believe that what we have accomplished is ushering in a wind of change in Montréal and that this is the beginning of a true revolution toward a more sustainable, more intelligent, more integrated and more inclusive form of mobility – one that is increasingly oriented toward community service and is attuned to the hopes, needs and values of Montrealers.

Respectfully submitted,



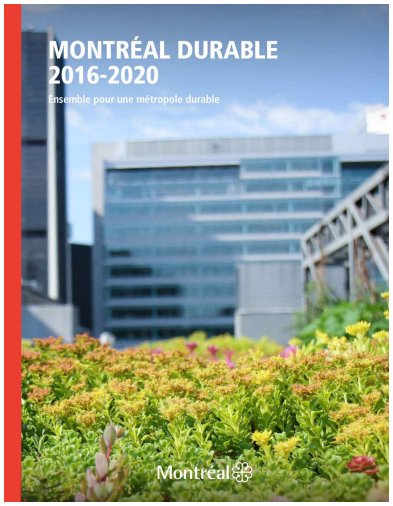
Luc COUILLARD

Commissioner for Transportation Electrification and Intelligent Vehicles

# Background

Following the 21st United Nations Climate Change Conference (COP 21), His Worship Denis Coderre, the Mayor of Montréal, announced that Ville de Montréal had signed a declaration made by the Climate Summit for Local and Regional Leaders. Through this pledge, elected officials worldwide have agreed to work together to fight climate change.

Accordingly, Montréal is committed to taking the lead on the international scene when it comes to climate change initiatives, in a context where towns and cities are developing a New Urban Agenda to address local and global challenges. More than ever, municipal administrations have an important part to play in this process. The targets set by national governments are simply not achievable without their contribution.




In the fight against climate change, Montréal has vowed to do everything in its power to achieve a greenhouse gas (GHG) reduction target of 30% compared with 1990 levels by 2020. Since transportation is one of the main sources of GHG emissions in Québec, and in Montréal in particular, this pledge will require a shift in transportation-related energy in order to significantly reduce fossil fuel consumption.

The efforts implemented thus far and the buy-in of the general public have contributed to cementing Montréal's leadership role in international circles. The long list of mobility-oriented events planned for Montréal this year confirms this role. They include:

- Association québécoise du transport et des routes (AQTr)
- International Association of Public Transport (UITP)
- C2 Montréal
- Movin'On (Challenge Bibendum)
- Metropolis
- The International Economic Forum of the Americas
- Hydro-Québec Montréal ePrix
- FIA Smart Cities
- High Level Forum
- ITS World Congress
- Entretiens Jacques-Cartier

Moreover, an agreement was signed with the Institut de l'électrification et des transports intelligents and Michelin to create the "North America Open Lab Challenge Bibendum" in Montréal with regard to sustainable mobility, based on the Open Lab Europe model. From the very start, the program has incorporated the culture and innovation methods specific to North America. This is a concrete example of Montréal's leadership in sustainable mobility. The complementarity of this initiative with the efforts spearheaded by mobility-oriented organizations in Montréal will ensure its effective integration into the Québec innovation ecosystem.

# *Efforts to Promote Sustainable Mobility*

This section presents a brief description of the various initiatives implemented in Montréal to facilitate the transition toward a more sustainable mobility environment.

## *Schéma d'aménagement*

The Montréal Urban Agglomeration Land Use and Development Plan[1] reflects the will of the municipalities and boroughs on the Island of Montréal to work together to improve living conditions and embrace sustainable development. This metropolitan vision of development sets forth the guidelines that will shape our choices and decisions concerning land use and development in the coming decade.

This planning document encapsulates the major land use and development issues facing the world's biggest cities in the 21st century. It guides our efforts, especially those designed to better equip our administration to address climate change, to promote active and public transportation, and to create greener, more compact and more sustainable living environments.


The Plan métropolitain d'aménagement et de développement (the metropolitan land use and development plan, or the PMAD) proposes setting aside at least 40% of projected urban development within a 1-kilometre radius of existing and future metro, commuter train, light rail and rapid transit bus stations for transit-oriented development (TOD).

From a transportation perspective, the PMAD suggests developing the metropolitan public transit network to increase the modal share of public transportation during the morning peak period from 25% to 30% in 2021 and 35% in 2031.

## *Transportation Plan*

Almost 10 years ago, Montréal made a firm commitment to its citizens – a pact of sorts between civil society and its representatives – to promote sustainable mobility. The Transportation Plan is a key strategic document that jump-started a revolution in this field – a revolution that is ongoing today as various stakeholders strive to create aesthetically pleasing, user-friendly living environments.


In its Transportation Plan, Ville de Montréal indicated that it wished to address its residents' mobility needs by making the city highly liveable, economically prosperous and

[1] The agglomeration of Montréal consists of the city of Montréal and 15 suburban municipalities. Geographically, the agglomeration covers the entire Island of Montréal and Île Bizard.

environmentally friendly. To achieve these goals, Montréal has clearly stated that it plans to substantially reduce dependence on car travel by investing heavily in public and active transportation alternatives.

A total of 125 briefs were submitted during the public consultation process that accompanied the development of the Transportation Plan. In these briefs, Montrealers stressed what they wanted for themselves and their children: a green environment and a 21st-century city that placed importance on sustainable development.

## *Pedestrian Charter*

Montréal is a great place to live – an eminently walkable city, as visiting tourists point out. And it must do even more in this respect. The Pedestrian Charter was therefore drafted to make Montréal a city where pedestrians feel safe and respected at all times.

The *Pedestrian Charter* proposes a new approach to making our streets as walking-friendly as possible. It involves redefining the status of motorized modes of transportation, adhering to existing rules of the road and embracing safety-conscious conduct. In calls upon all users of public roadways, pedestrians included, to change their habits.

The *Charter* puts forward a set of guidelines and actions to be undertaken in various aspects of municipal life, namely urban development, public works, traffic management and safety. It suggests ways to create a city that is specifically designed to put the needs of people above the needs of automobiles.

The adoption of the *Charter* and the actions subsequently taken as a result have helped reduce the negative impacts related to automobile use and improve Montrealers' quality of life. By prioritizing pedestrians in the city's transportation planning, the *Charter* confirms the City's commitment to fighting the hazards of sedentary lifestyles, which constitute a growing public health concern.

The *Pedestrian Charter* is a societal pact intended to appeal to public administrations and socioeconomic partners and spur them into action. It underscores the importance of making walking the preferred form of transportation in development projects and designing urban space in a way that puts pedestrians first.

The *Charter* is an important step forward in a movement that has been ongoing for many years to make it easier for people to get around on foot. Accordingly, the City has:

- Prohibited right turns on red lights at intersections within its jurisdiction
- Installed pedestrian traffic signals with countdown timers
- Made school zones safer via road signs/markings and surveillance
- Allowed more time for pedestrians to cross the street during traffic light phases
- Implemented traffic-calming measures
- Widened sidewalks
- Shortened the distance involved in crossing a street at an intersection

- Assigned more police officers to traffic duty
- Developed an action plan for universal accessibility, in conjunction with various associations, and applied these recommendations when designing pedestrian facilities

To ensure public roadways are more walkable, it is necessary to redefine the status of motor vehicles and promote more sensible automobile use. This entails a significant cultural change, which will eventually be justified by the various benefits experienced in quality of life, the environment and public health.

### *Planning and use of living environments*

Ville de Montréal has:

- Integrated pedestrian-specific needs into urban planning bylaws
- Taken pedestrians' needs into consideration throughout the planning process
- Striven to minimize physical barriers for pedestrians
- Developed more routes that lead to places frequented by pedestrians
- Redefined how users share public roadways in order to put pedestrians first

### *Maintenance and snow/ice removal*

Ville de Montréal has:

- Eliminated conflicts stemming from the presence of permanent and seasonal equipment
- Evened out sidewalk surfaces
- Taken steps to ensure snow and ice are sufficiently cleared from sidewalks
- Corrected shortcomings in the drainage system
- Maintained road markings in good condition

### *Active and passive safety*

Ville de Montréal has:

- Enforced the provisions of the *Highway Safety Code*
- Adjusted traffic volumes based on the roadway hierarchy
- Limited vehicle speeds
- Protected pedestrians on the streets
- Improved safety at various conflict points and near metro stations
- Reduced the width of crosswalks
- Mapped out safe routes to schools
- Implemented traffic-calming measures in residential neighbourhoods
- Eliminated non-pedestrian-friendly delivery practices
- Protected pedestrians in the vicinity of obstructions
- Ensured the appropriate lighting levels for roadways and crosswalks
- Ensured pedestrian and motorist visibility at intersections
- Revisited roadway width and make the required adjustments
- Identified routes for people with reduced mobility and made them safer

### *User awareness and information*

Ville de Montréal has:

- Increased public awareness of the importance of courteous driving
- Made pedestrians more aware of their rights and responsibilities
- Emphasized the health and environmental benefits of walking, especially in the business and school communities
- Sensitized construction site managers to the hazards of pedestrian obstacles
- Drawn pedestrians' attention to various attractions within the city
- Set up signage showing walking times and distances where appropriate
- Standardized signs used in the city's indoor network of walkways
- Ensured adherence to the *Pedestrian Charter*

The *Pedestrian Charter* is a natural extension of public policies aimed at encouraging people to adopt and maintain healthy lifestyle habits. It will enable Montréal to significantly improve its environmental performance by reducing motorized travel.

## *Cycling*

Cycling is so widespread throughout the Island of Montréal, it seems to be part of the city's DNA. In 2015, there were more than 1 million cyclists in the city, representing over half of its total population (1,974,408).

Programs such as *On the Move in the Community,* which promotes cycling and the development of cycling-friendly environments, have helped encourage young people to make the activity part of their everyday lives. Created in 2005 by Vélo Québec, *On the Move in the Community* has reached out to more than 123,200 students and their parents in 176 elementary schools and 60 high schools in Montréal. The program is one of the most elaborate in North America, featuring a variety of measures to facilitate active transportation as an effective means of travelling between home and work or school.


From 2008 to 2013, the mode share of cycling rose by half among women and one-third among men, increasing from 1.2% to 1.8% and 2.4% and 3.3%, respectively. On any given day, some 116,000 bicycle trips are made in Montréal. This represents an increase of 57% between 2008 and 2013. The ongoing development of the cycling network and the implementation of traffic-calming measures have undoubtedly played a role in this increased use.

The mode share of cycling for work commuters was 2.9% in 2011 and this has definitely grown in the years since. Montréal outperforms all similarly sized U.S. cities in this respect. In terms of absolute numbers, some 24,000 Montrealers cycle to work, compared with 36,000 in New York, a city four times larger.

In Montréal's central neighbourhoods, which are home to a population of over 1 million, 4% of trips are made on two wheels. In the boroughs of Villeray and Plateau-Mont-Royal, where there is a combined population of 210,000, 6.4% and 10.8% of all trips are done by bicycle. These results compare favourably with Helsinki, Seville, Vienna and Stockholm (6%–11%) and are just shy of Berlin and Munich (13%–14%).

Since 2010, Montréal's network of bikeways has grown at a steady pace. At 748 kilometres, the city's multi-faceted cycling system considerably outdistances both Toronto's (670 kilometres) and Vancouver's (289 kilometres).

## *Bixi*[2]

With 5,200 bicycles, BIXI is the leading bike-sharing system in Canada and was the first initiative of its kind in North America. The Montréal program is larger than Chicago's (4,760 bicycles) and is second in size only to New York's (7,500 bicycles).

The number of bicycles in the BIXI fleet has been stable at around the 5,000 mark since 2010, but the number of stations has continued to grow, from 400 in 2010 to 460 in 2015, an increase of 15%.

In 2015, 473,000 Montrealers lived within 250 metres of a BIXI station, and 687,000 lived within 500 metres. During the day, nearly 600,000 people live, work or study within 250 metres of a station. Since the launch of the program in 2009, more than 23 million trips have been taken on a BIXI bike. The 3.5 million trips taken in 2015 represent a 9.4% increase over the previous year. On an average week, BIXI bicycles are used 113,000 times.

Some key facts and figures about the BIXI program:

- 460 stations, 9,670 bike docks, 95 km$^2$ covered
- 5,200 bicycles
- Operates 214 days per year
- 4.1 million trips made
- 19,069 trips a day on average
- 15 minutes per trip on average
- More than 134,000 trips (400,000 km) during the six free BIXI Sundays offered by Manulife

## *Car Sharing*

Established in 1994, Communauto is a car-sharing pioneer in North America. It is the oldest and one of the largest services of its kind on this side of the Atlantic Ocean. It is also stands as one of the world's leading car-sharing companies and is proud of its socially and environmentally conscious philosophy.

Car-sharing is less expensive than ownership and more flexible than leasing or renting. It is a convenient, budget-friendly alternative that also helps to reduce the number and volume of vehicles on the road.

[2] L'état du vélo à Montréal en 2015, Vélo-Québec

More than 50,000 people in Québec have already been won over by the multiple benefits of car-sharing. And it would seem that this is just the beginning: annual surveys of Communauto users show a high level of satisfaction with the service. Word of mouth is an important driver of growth for the company.

Communauto operates in several locations throughout the world, including Paris.

Another car-sharing provider in Montréal is car2go.

## *City Mobility*

Montréal's City Mobility is a showcase project championed by the Société de transport de Montréal (STM). The STM will acquire, put into service and assess three 100% electric passenger buses over a three-year period. The buses will be fitted with conductive-charging technology, with quick-charging stations at the beginning and end of the line.

This initiative is being carried out in collaboration with Nova Bus, the designer and manufacturer of the three electric buses, along with several Québec-based industry and research partners.

The City Mobility showcase project is an initiative of Volvo and its North American division, Nova Bus. The purpose of the program is to pool the expertise of a number of public- and private-sector players to put forward a workable transit electrification project. City Mobility is currently active in nine cities, with Montréal being the first North American city to take part.

The initiative consists in installing two quick-charging stations to serve fully electric Nova Bus buses.

Testing of the electric buses and charging equipment will continue until December 31, 2019. This test period will make it possible for the City to become familiar with the technology and, if all goes as planned, begin acquiring electric buses as of 2025.

## *REM*

The Réseau électrique métropolitain (REM) project is a fully automated, electric light rail transit (LRT) system with 67 kilometres of dedicated rail lines.

It will feature four branches connecting downtown Montréal, the South Shore, the West Island, the North Shore and Montréal–Trudeau airport, resulting in two new high-frequency public transit service lines to key employment hubs.

A number of elements are being considered in this project, including the REM's integration into the urban fabric and landscape, access to stations and impacts on the environment. The REM is poised

to become the fourth largest automated transit network in the world, with 27 stations, 13 incentive parking facilities and 9 bus terminals.

This is Montréal's biggest transit-related undertaking since the metro. It will usher in a new age of public transportation and strengthen the City's reputation for innovation, with a modern, fully automated, electric train that restores this form of transportation to its former glory and that will blend seamlessly into existing infrastructure to form a comprehensive network.

A transportation system of this size is part and parcel of Montréal's vision for the development of the city – a vision that is already under way. The development plan for Montréal and the development and land-use plan of the Communauté métropolitaine de Montréal present an integrated version of urban development and transportation.

Both plans espouse the principles of transit-oriented development (TOD). Additionally, urban development in Montréal must take into consideration the City's economic development action plan, which aims to transform environmental liabilities into business opportunities. In this regard, the REM will meet workers' commuting needs while helping to reduce the city's environmental footprint. Furthermore, through this initiative, Montréal plans to revitalize its industrial parks, including the economic hub in the western part of the city. Improving accessibility for workers is one of the keys to achieving this goal.

The REM will make downtown service more efficient and connect this area of the city with the airport. For two decades, Montrealers have been reinvesting in their city centre, where there has been a sharp rise in the population. As a result of this project, the downtown core will be a model of sustainable urban development, with a smaller carbon footprint because of the close proximity to key amenities and the density of the built environment.
The impact of the REM on downtown Montréal will be significant. People will be motivated to go there to shop, have fun and take advantage of the vibrant business and cultural scene. And the airport will be serviced in a manner worthy of a world-class city, which is in line with efforts to attract more direct flights, carriers and travellers to Montréal. By providing an innovative solution and an effective alternative to the automobile, the REM will also go one step further in helping to reduce greenhouse gas emissions.

## Bonaventure Project

This new urban boulevard will straddle the middle of the Lachine Canal and extend all the way to Notre-Dame Street, where the expressways end. It will be characterized by its own aesthetic and the quality of its infrastructure. It will also link adjacent neighbourhoods currently isolated from one another by the raised section of the Bonaventure Autoroute north of the canal. The demolition of the raised section and the Montréal portion of the Bonaventure Autoroute served to eliminate this physical and psychological barrier, thus allowing people to circulate freely.

This ambitious undertaking is also meant to breathe new life into one of the major gateways to the city by lending it a people-friendly, functional and prestigious character – notably with the addition of the monumental work titled Source by Catalan artist Jaume Plensa. The new urban artery will be called Robert-Bourassa Boulevard, in honour of the late former premier of Québec.

## Turcot Project

The Turcot Interchange is a hub for road traffic in the Montréal area, connecting a number of highways and facilitating access to the Champlain Bridge. It is also an essential road link between the airport and downtown Montréal.

After almost 50 years of service, the Turcot Interchange, one of the largest interchanges in Québec serving more than 300,000 vehicles a day, must be rebuilt. The Turcot Project also includes the reconstruction of various other interchanges.

The initiative will make it possible to permanently add various public transit facilities, notably in the east-west corridor of the project. A number of preferential transit measures have been funded and implemented since 2011 in order to mitigate the traffic repercussions of the various phases of

the work involved. Moreover, the project has been designed to protect a right-of-way for airport service between Trudeau airport and downtown Montréal.

## Champlain Bridge Project

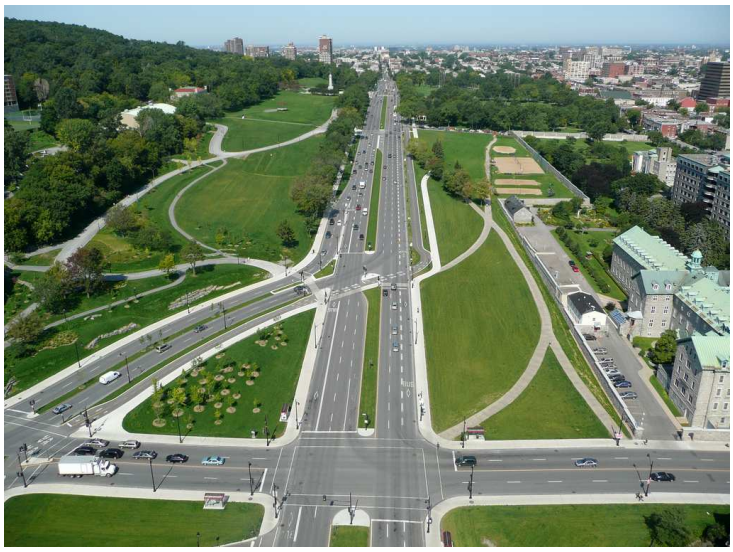
The Champlain Bridge is one of North America's busiest spans, with 50 million cars, buses and trucks crossing it each year. In addition to its being used by residents of the metropolitan region for their everyday commute, the crossing is part of a vital overland link for freight transportation between Canada and the United States.

In 2015, a new work site was put into operation to build the new Champlain Bridge. History will be written before our very eyes in the coming years.

The project also incorporates:

- Rigorous environmental monitoring and mitigation measures to protect the surrounding natural environment
- Architectural quality and features that will enhance Montréal's cityscape and contribute to the corridor's status as the main gateway to the city
- A corridor reserved for public transit and a safe, accessible multi-use path for pedestrians and cyclists

## Parc / des Pins Intersection



The Parc/Des Pins interchange was an enormous concrete structure that was originally built to connect Parc Avenue and Des Pins Avenue and eliminate a traffic light for inbound motorists. One of the downsides of this contorted, complex configuration was to make access to the foot of Mount Royal from the Milton-Parc neighbourhood next to impossible.

The demolition of the interchange and the construction of the new intersection began in the summer of 2005. The concrete structure was a classic reflection of the philosophy of "functional urbanism." This vision

prioritized the automobile to the detriment of pedestrians and the overall cityscape. The removal of the interchange, and the subsequent improved access to Mount Royal, has been a turning point in the recent history of the Milton-Parc neighbourhood and the surrounding area.

The efforts to find solutions for the new Parc/Des Pins intersection and the optimized layout that has emerged as a result have mitigated, even eliminated, the adverse repercussions of the original structure, erected 50 years ago.

This initiative is a clear illustration of the City's commitment to creating an even more walkable and bikeable city. Moving forward, all new facilities must blend into their environment and embrace an approach that meets the public's expectations. It is safe to say that this project symbolized the end of the "car first" era in Montréal.

## *Vision Zéro*

Montréal's Vision Zero road safety strategy was unveiled in fall 2016.

The strategy features a series of short-term actions and concrete measures to protect the most vulnerable members of the public. It is the result of an upstream thought process. Minimizing accidents has always been one of the City's responsibilities and priorities. The strategy includes nine short-term commitments to safe travel, with an emphasis on engineering, education and enforcement.

Today, nearly one trip out of every five in Montréal involves a form of active transportation. The popularity of the bicycle has experienced unprecedented growth with the expansion of the year-round cycling network. It is therefore important to adapt design practices for streets, underpasses and intersections, areas that are heavily travelled and where accident risks must continue to be lowered.

Vision Zero is a highly successful Swedish approach to road safety based on the simple premise that no loss of life on the road is acceptable. The approach recognizes that human beings are prone to making mistakes. The road system must continue to progress, but without ever losing focus on the importance of protecting the most vulnerable users.

The four core principles of Vision Zero are:

1. Ethics: Human life is paramount and takes priority over mobility.
2. Responsibility: Designers, managers and users share the responsibility.
3. Safety: Transportation systems must take into account human fallibility – they must be "forgiving."
4. Change: Designers, managers and users must accept a paradigm shift.

There are nine concrete actions in the short term:

- Adhere formally to Vision Zero and create a Canadian network of zero-accident cities
- Authorize the Commission sur les transports et les travaux publics and the Commission sur le développement économique et urbain et l'habitation to revise the trucking plan
- Introduce a new awareness campaign for 2017, based on shared responsibilities
- Implement the reduced 30 km/h speed limit in residential neighbourhoods and school zones, and harmonize implementation of the 40 km/h limit on arterial roads
- Implement a four-way stop pilot project
- Introduce targeted short-term measures in problem areas to ensure user safety and friendliness
- Redesign sectors as part of major urban projects
- Implement short-term concrete actions for the 10 intersections/arteries deemed most dangerous
- Develop a bicycle plan based on cyclist safety

## *CGMU*

A priority undertaking within the scope of Montréal's strategic plan for intelligent transportation systems, the Centre de gestion de la mobilité urbaine (CGMU) opened in September 2014. The UMMC is designed to be the heart and the brains of the city's smart transport systems and accelerate the rollout of various intelligent facilities. The implementation of the UMMC is in keeping with the overall strategy to make Montréal a smart, digital city.

The UMMC is a real-time decision-making centre to facilitate individual mobility. Specialized equipment (cameras, priority light signals, variable message signs, etc.) makes it possible to manage road traffic remotely and react quickly in the event of a problem. Among other things, it helps authorities better coordinate festivals and major events, and control traffic around major construction sites.

The UMMC receives and disseminates information:

- To manage traffic lights in real time
- To improve bus traffic
- To monitor roadways and infrastructure with increased vigilance
- To optimize emergency response and traffic patterns in an incident
- To share information with key partners (fire, public safety, municipal/provincial transportation officials, etc.) in a timely manner
- To ensure more efficient communication with partners' control centres

## *Quartier vert Project*

A “quartier vert,” or “green neighbourhood,” is an area selected by the borough, with the support of the community, where a set of public space development measures are implemented to improve safety, calm traffic, reduce traffic volumes and speeds on local streets, and incorporate more vegetation into the cityscape.

This approach encourages walking and cycling for getting around to nearby destinations and the use of public transit for other needs. It identifies residential neighbourhoods and areas around parks, schools, hospitals, public amenities and, in some cases, businesses or tourism facilities.


The “green neighbourhood” vision applies to a selected living environment that has been delineated through the collaborative efforts of local stakeholders and boroughs. The borough administrations are responsible for all actions on local streets, whereas the City’s department of transportation is responsible for specific actions involving the arterial network and for providing technical and financial support.

Two conditions are essential for a neighbourhood to be recognized under this program:

- An engaged citizenry and the collaboration of a specific subsection of the community
- A sustainability-minded approach to individual mobility and the greening up of public space, in accordance with an urban ecology philosophy

In order to provide boroughs and communities with the tools they need to develop their green neighbourhoods, the municipal transportation department has prepared a brochure that outlines the overall objectives, the steps to follow and a number of basic technical recommendations. This is the first of 12 brochures that will eventually form a more comprehensive guide on sustainable streetscapes.

To date, there are eight recognized “Quartiers verts,” with many others currently awaiting assessment.

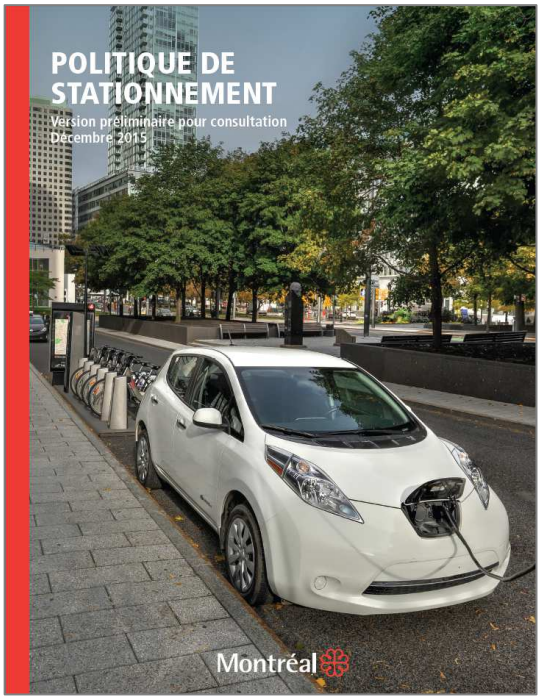
## *Parking Policy*

The Parking Policy adopted in June 2016 is a decisive element in shaping the City’s mobility framework. The City uses this policy as:

- A management tool to balance parking supply and demand, especially in the downtown core and central districts, to ensure improved quality of life and economic vitality
- A solution consistent with municipal priorities in terms of sustainable mobility, land-use planning and economic development

- An opportunity to take advantage of emerging technologies and solidify Montréal's status as an intelligent city

In a city the size of Montréal, parking takes up a lot of space – too much space, especially amid growing concerns and commitments regarding the environment and quality of life. In keeping with its sustainable mobility and development priorities, the City must embrace a strategic approach to parking management in order to reduce automobile dependence and ensure a more balanced approach to sharing public space.




The Parking Policy is an important part of the Transportation Plan. The measures it contains will contribute to reducing automobile use in urban settings and curbing air pollution and greenhouse gas emissions. This also represents an opportunity to leverage emerging technologies and confirm Montréal's leadership status as an intelligent city.

A smart parking strategy isn't just a matter of rolling out a new technology – it's a matter of managing the entire system in an intelligent way. A rapid shift toward a system designed to benefit the public will require the City to take a three-pronged approach:

- Simplifying and harmonizing municipal management practices and rates
- Creating a municipal parking management authority
- Simplifying on-street parking signs

The implementation of these priorities and other measures outlined in the policy will provide a cohesive, forward-looking and user-friendly framework to manage the City's parking facilities.

Through the Parking Policy, the City hopes to make parking a strategic tool to support its sustainability, land-use planning and economic development goals and prioritize the well-being of its citizens.

The guiding principle of the Parking Policy is:

« To ensure a balance between parking supply and demand to improve citizens' quality of life and ensure economic vitality, while also reducing dependency on automobiles and their impact on the environment »

***There's still plenty of room for cars on the road – as long as they make room for everyone else.***

The idea is not to banish cars altogether, but to control their ever-increasing use by encouraging residents to opt for other alternatives. This vision illustrates how complex the issue of parking is within a city's transportation system. It takes into account the diversity of the various areas of the city, the differences in users' needs and the multitude of private- and public-sector stakeholders. The policy approaches parking as a key element in the overall mobility plan as it takes shape.

## *Urban Distribution Centre*

The delivery industry has changed dramatically since the Transportation Plan was adopted in 2008. The boom in e-commerce has led to a fragmented delivery framework, forcing all those involved to rethink the "last kilometre."

E-commerce also adds to the volume of deliveries, many of which go straight to people's homes. Various studies have also pointed out that individual parcel sizes have grown smaller. The cyberlogistics business is booming in many big cities as a result.

In recent years, many specialists have touted the electric vehicle as the best way to overcome delivery-related challenges, although limited battery capacities and high costs have dampened many a proponent's spirits.

The emergence of the concept of the "last kilometre," in reference to public transit and freight transportation, has paved the way to redefining the role of electric vehicles in the supply chain. But electrification does not constitute an economically viable solution on its own. Going forward, the idea of pooling resources seems to be a new and viable alternative. Reducing the number of deliveries will also help minimize the corresponding problems.

Accordingly, in an effort to improve the flow of pickups and deliveries, Montréal will work with local stakeholders to determine convenient locations on side streets, rather than busy main streets, where these activities can take place. Intelligent sensors could be installed to provide real-time information to delivery crews on the availability of appropriate spots.

As far as the concept of the "last kilometre" is concerned, Montréal will evaluate the possibility of spearheading a pilot project for an urban distribution centre (UDC), in collaboration with delivery industry professionals. The UDC would offer a shared platform and electric vehicles to provide "last kilometre" service. Minimizing the perimeter involved and the distances to be travelled makes the use of electric vehicles feasible.

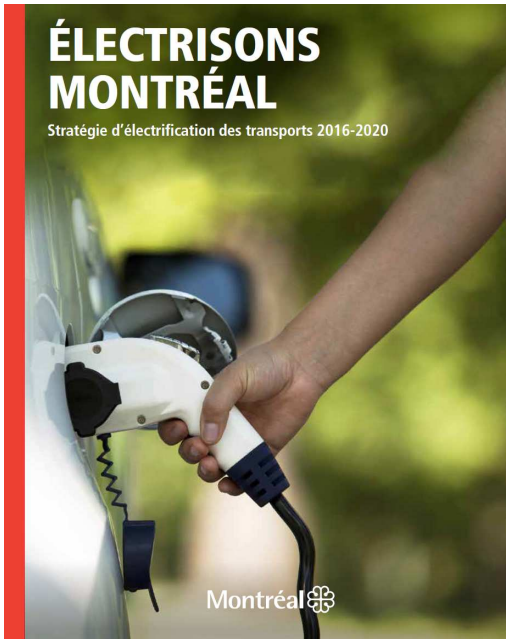
## *Electrification Strategy*

The 2016–2020 Transportation Electrification Strategy has a promising outlook. It is designed to foster ambitious initiatives aimed at speeding the transition of various forms of individual and public transportation to a sustainable and non-polluting source of energy available in abundant supply, that is, hydroelectricity. Québec is home to the lowest electricity rates, and some of the highest gasoline prices, in North America. In this context, going electric would appear to be the logical choice.

The strategy is composed of 10 key goals intended to create an environment that fosters innovation and supports the transition to electrification and intelligent vehicles:

1. Incorporating transportation electrification needs into the planning and management of the City's housing stock
2. Converting the municipal fleet of combustion engine vehicles to electric vehicles
3. Implementing an economic development action plan to develop local transportation electrification and an intelligent transportation sector
4. Creating an institute on electrification and intelligent transportation
5. Electrifying the public transportation network operated by Montréal's municipal transportation agency (Société de transport de Montréal)
6. Participating actively in the Réseau électrique métropolitain (REM) project
7. Implementing the electrification measures set out in the Parking Policy
8. Rolling out a network of charging stations to support the desired gradual conversion of Montréal's automobile stock
9. Implementing a framework to facilitate the private-sector rollout of a self-serve network of electric vehicles
10. Ensuring ongoing collaboration with public and private partners in the electrification initiatives and in the promotion of sustainable mobility, in particular the Government of Québec, Hydro-Québec, the Caisse de dépôt et placement du Québec, the Bureau du taxi de Montréal and the Commission des services électriques de Montréal

Each of these initiatives takes the City one step closer to achieving its greenhouse gas reduction targets. They are also key economic drivers.




These drivers are in addition to Montréal's existing assets, which contribute to its dynamic business sector. Among other things, the Montréal area has an abundant pool of qualified labour, six universities (French and English), world-class research centres and dynamic industrial clusters in cutting-edge sectors, including the industrial cluster for electric and smart vehicles recently announced by the Québec government.

Montréal also boasts an intelligent, digital city strategy, which earned it the coveted Intelligent Community of the Year Award from the Intelligent Community Forum in 2016. And the City was presented with an E-Visionary award from the World Electric Vehicle Association (WEVA) at the Electric Vehicle Symposium (EVS29) in recognition of its efforts to promote electric vehicles as a sustainable means of transportation and to make electric mobility a reality for its citizens.

Montréal plans to build on these prestigious honours to lead the way in transportation electrification and will pull out all the stops to ensure these investments and efforts generate tangible results.

In more specific terms, the City will align its efforts to pursue three goals:

1. Mobilizing stakeholders in the electric transportation sector around a series of shared objectives
2. Leveraging transportation electrification initiatives with a view to favouring benefits for local companies and institutions
3. Increasing Montréal's attractiveness as a location for companies and institutions in this sector

In order to achieve these goals, Montréal has created the position of Commissioner for Transportation Electrification and Intelligent Vehicles – the first one of its kind in North America. This sends a strong message about the City's commitment to playing a leading role on the international scene.

## *Institut de l'électrification et des transports intelligents*

The Electrification and Intelligent Transportation Institute is the missing link that the City and its partners have established to speed up the transition to electric transport. The Institute also focuses on the accelerated development of intelligent, self-driving and connected vehicles. There are numerous opportunities available in this regard for businesses and research centres.

Montréal and Québec as a whole are at the forefront of the international electrification and intelligent transportation movement. The Institute will play a major role in raising the profile of the local industry, working closely with partners such as Montréal International and Investissement Québec.

In collaboration with Ville de Montréal, the Institute will oversee the urban testing corridors that are currently being set up. It will also develop and disseminate its unique expertise in sustainable, intelligent mobility in urban environments.

The Institute will foster the required synergy between the various stakeholders in Québec's electrification and intelligent transportation ecosystem.

The purpose of the Institute will be:

- To promote greater synergy between regional partners for sustainable mobility in research and development
- To stimulate the commercialization of innovations and accelerate the growth of companies
- To foster international partnerships

It will utilize Montréal's assets as an innovation-friendly city to galvanize the efforts and knowledge of those involved and help them shine on the world stage. The City is also committed to offering manufacturers favourable conditions to test new technologies in order to get them to market sooner.

Montréal is determined to start preparing for this shift immediately and stimulate the emergence and growth of businesses in this field. The City has been told time and time again what a wise decision it made in June 2016 when it adopted the Transportation Electrification Strategy. Montréal is therefore fertile ground for the Electrification and Intelligent Transportation Institute to take root and grow.

The Institute will be the ideal place to accelerate mobility-related innovation and to make Montréal a leader in this field. Through its achievements, it will curtail carbon emissions, improve traffic flow and generate economic benefits by encouraging the development of electric mobility and intelligent transportation.

The Institute will capitalize on the presence of world-class Montréal-based research centres specializing in artificial intelligence – a critical aspect in the evolution of self-driving vehicles.
All of the stages associated with the technology maturity scale can be developed and tested within a 30-kilometre radius of the downtown core. Montréal is poised to become a city flocked to by businesses, research centres and institutions interested in electrification and intelligent transportation.

In other words, the Institute will be a centre for physical and virtual testing in urban environments that foster the implementation of new technologies and solutions promoting innovation in electric, intelligent mobility.

The Institute's vision is to become an internationally respected urban laboratory serving as a catalyst for new forms of industry and individual collaborations that usher in the urban mobility of tomorrow.

Its mission is to speed the implementation and commercialization of innovative intelligent and electric mobility solutions through tests in urban settings adapted to the issues facing city administrations and residents. The Institute will strive to be a unique model in order to facilitate connections with the city, businesses and the entire ecosystem.

In addition, during the Movin'On sustainable mobility summit, the Institute signed an agreement with Michelin to set up a permanent accelerator program in North America based on the European "Fabrique des Mobilités" model.

## *Testing Corridors and a Technological Showcase*

The foundations are already in place to create testing corridors for electric and intelligent transportation covering downtown Montréal, Old Montréal and the Quarter de l'innovation (QI). This testing zone is meant to compensate for what is commonly referred to as "Death Valley" in innovation circles.

A technological and business showcase was also launched recently, the first edition of which took place in June 2017. This showcase helps the City learn about and gain access to the latest technologies and innovations in electric

and intelligent vehicles and enables businesses in Montréal and elsewhere in the province to shine the spotlight on their own expertise, technologies and innovations.

In an effort to maximize the impact of these initiatives, the City is working in partnership with the Government of Québec as part of the 2015-2020 Transportation Electrification Action Plan. This government action plan, combined with the City's Strategy, will pave the way for Montréal to fully assume its leadership role in the North American transportation electrification sector.

## *Quartier de l'innovation*

Montréal taps into the vitality of the Quartier de l'innovation (QI) to facilitate the development and testing of innovative technologies in transportation electrification and intelligent vehicles. The QI is a creative, dynamic platform dedicated to the needs of Montréal, Québec and Canadian players specializing in innovation. It is a modern ecosystem intended to address the new global challenges specific to this sector.

The QI is designed to be a unifying force by promoting an active partnership between players in the economic development sector and district residents. It seeks to integrate the four segments that are essential to a creative society: the industrial segment, the education and research segment, the urban segment, and the social and cultural segment. The integration and interconnections among these segments will create a world-class innovation ecosystem in Montréal.

The QI will be in the heart of the electric and intelligent transportation test corridors. The test corridors will be a full-scale (1:1) platform designed to assess the performance of sustainable mobility solutions of the future. The QI is located at the crossroads of Montréal's cultural, artistic, economic and technology corridors.

The mission of the QI is to draw on the leadership of its founding universities to create favourable conditions for establishing an urban district of the highest quality that brings together a creative and engaged community with the purpose of driving the development of an innovative and entrepreneurial culture that balances four pillars: industrial, education and research, social and cultural, and urban.

## *Bureau de la ville intelligente et numérique (BVIN)*

Already well known for its vibrant digital technology sector, Montréal has the potential to become a world-class model of the "smart city," driven by its flourishing creativity and spirit of collaboration. More than ever before, Montrealers themselves are both the creators and principal beneficiaries of their quality of life and economic prosperity.

Montrealers are among the most digitally savvy people on the planet, and this city is busting with creative types, innovators, entrepreneurs, investors and other multi-talented players.

Today, technology provides us with numerous opportunities to pool this wealth of talent. Through technology, citizens can make their desires known and can influence the decisions that affect them; creatives and innovators can propose more effective solutions; and entrepreneurs can launch groundbreaking new services, which are in turn brought to a global market by astute investors. By becoming a smart city, Montréal is choosing to bring these talented individuals together, improving the quality of life for all in the process.

With its goals of making Montréal a global model for the smart city by 2017 and tapping in to this enormous potential, in spring 2014 the City established its Smart and Digital City Office. Its team has the mission of providing a framework for the kind of transformational projects that affect every aspect of life here, whether they involve government, infrastructure, public services or social issues.

In order for this transformation to reflect the real needs of Montréal's citizens, the Office has entered into a major dialogue with institutional and private sectors, municipal workers and the citizens themselves. By analyzing the over 1 million phone calls and 40,000 emails to the 311 information service logged in 2013, the responses of more than 7,600 Montrealers over four surveys and consultations with over 400 participants as part of local co-design activities, and by rubbing elbows with people all over the island, the Office has developed a clear understanding of what matters most to Montrealers.


Inspired by global best practices and stimulated by an ongoing exchange with Montrealers, the Smart and Digital City Office targets five main areas of activity: urban mobility, direct services to citizens, quality of life, the democratic process and economic development. These are the themes that have served as the foundation for the strategic development of the smart, digital city that is Montréal.

Since its creation in 2014, the Smart and Digital City Office has spearheaded a rigorous initiative that has helped it identify what really matters to Montrealers.

Using a collaborative approach, the experience and ingenuity of citizens, municipal employees, public institutions and corporations has been put to good use in order to develop know-how in terms of innovation and to contribute to the emergence of original solutions to urban problems.

Technology is used to leverage economic growth and make concrete improvements to Montrealers' quality of life. The Smart and Digital City Office focuses on nine areas of activity, one of which is to optimize travel.

Montrealers are people in constant motion. Mobility becomes one of the key elements in our quality of life and economic prosperity. The real-time collection, processing and sharing of data will help enhance transportation fluidity and optimize travel. Finding the right route and mode of transportation will become that much easier.

# Conclusion

In Montréal, and across most of the country, we are on the cusp of a new age and a new relationship with cars. The trend toward the automobile as a service and away from the automobile as a possession is gaining momentum.

And Montréal is firmly in the driver's seat for this paradigm shift. In recent years, cycling in Montréal has more than doubled in popularity, walking has seen a significant increase, the mode share of public transit is stable and nudging slightly upward, and the percentage of serious injuries and fatalities involving pedestrians is on the decline.

Our vision for the future will continue to unfold with the same vitality and remain true to the same philosophy: an increased focus on pedestrians and cyclists, the completion of major projects with a clear sustainable mobility thrust, a decisive shift to electric transportation alternatives and a zero-accident approach to road safety.

Montréal is a city of curiosity and ambition, a city that thinks differently and that puts its imagination to work to create a better, more prosperous world. Montrealers refuse to stand still. They do not accept the mundane. They are bold, teeming with ideas and itching to put these ideas into action. More than ever, Montréal is a city that is looking to the future with drive and determination.

There's no doubt about it: the transportation revolution is in full swing in Montréal. The changes here that are leading the city toward a more sustainable, more intelligent and more service-oriented approach to mobility will undoubtedly trickle over to the rest of the planet in due course, with Montréal at the forefront of it all.