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The City of Montréal's Electrification Strategy

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Short Abstract

In order to meet Montrealers' mobility needs and, at the same time, reduce their dependency on automobiles, the city of Montréal plans to position itself as an exemplary actor and partner in transportation electrification, and to become a forerunner in this area. City of Montréal representatives will present municipal directions, actions taken and plans in the area of transportation electrification.

Municipal gouvernement, Policy, Sustainability, Fleet.

1. Strategic directions

The transportation sector is undergoing a major shift. The electrification of transportation and the integration of smart technologies are at the heart of the changes that will shape the cities of the future, as is the integration of public and active modes of transportation.

The city of Montréal has a number of advantages in this respect. Its subway system, which accounts for half of all public transportation travel in the province, has been fully electric since it opened in 1966. Several dozen charging stations for electric vehicles have already been set up throughout the city by Electric Circuit partners. And finally, Montréal has access to clean electric energy that can be used to power electric vehicles.

The city of Montréal has been interested in transportation electrification for many years. In the late 1990s, it participated in project "VÉ-Montréal 2000," gathering information on the benefits of using electric vehicles in municipal fleets. Then, in 2001, it was closely associated with "Branché: Mobility Reinvented!" a project to introduce self-serve electric vehicles that was spearheaded by Montréal's transportation coordination agency, the Agence métropolitaine de transport (AMT). Several important conferences on this subject have also been held in Montréal.

The city wishes to position itself as a leader in transportation electrification by implementing a transportation electrification strategy that will enable it to reach the various environmental objectives it has set. Through this strategy, the city of Montréal also hopes to stimulate the development of companies in the electric vehicle sector and make itself more attractive to such companies and research centres.

This transportation electrification strategy is based on the directions defined in the following city planning documents:

- The city of Montréal's **Master Plan**;
- The **Transportation Plan**, which proposes that parking spaces be set up for energy-efficient vehicles and microcars by equipping them with charging stations;
- The **2010-2015 Montréal Community Sustainable Development Plan**, whose objectives include improving air quality, reducing greenhouse gas (GHG) emissions and encouraging transportation electrification (e.g. by acquiring electric or rechargeable hybrid vehicles and installing charging stations in public parking facilities or on public roads); and
- The **Economic Development Action Plan**, whose aim is to develop the transportation electrification sector.

The city thus intends to reduce the Montréal community's greenhouse gas emissions by 30% between now and 2020 (compared to 1990 levels). Electrifying transportation is a key part of reaching this target, since vehicles are responsible for 43% of GHG emissions in Quebec.

2. The electrification strategy

The major pillars of the city of Montréal's electrification strategy revolve around the following interventions:

1. Installation by the city of a network of off-road and roadside charging stations and implementation of conditions promoting the deployment of a fleet of over 1,000 self-serve electric vehicles;

2. Implementation of a green policy for rolling stock whose priorities include converting the municipal fleet from combustion engines to electric;
3. Adoption of a parking policy with a special focus on innovative measures;
4. Implementation of an Economic Development Action Plan to help develop concrete business opportunities from the city's efforts to combat climate change, and more specifically, from the steps it takes in electrifying transportation;
5. Ongoing collaboration between the city and its public partners to implement electrification and major transport infrastructure projects.

3. Actions taken by the city of Montréal

3.1 Installation by the city of a network of charging stations and deployment of a fleet of self-serve electric vehicles

In 2013, the city of Montréal became a partner in Hydro-Québec's Electric Circuit, the first public charging network for electric vehicles in Canada, powered by clean, renewable energy produced by Hydro-Québec. Joining the Electric Circuit network led the city to acquire eighty (80) 240-volt off-road charging stations, whose rollout will be completed this spring. This network of off-road charging stations, servicing all of Montréal's boroughs, offers charging points outside of public buildings such as cultural centres, sports centre, libraries, arenas and Space for Life centres. Two roadside charging stations, offering four charging points each, were studied in a pilot project. One station was located on Saint-Urbain Street (north of René-Lévesque Boulevard) and the other on Gauvin Street (facing the Stock Exchange Tower) in the Ville-Marie borough. The project was a success.

In keeping with these initiatives and in light of the positive results, Montréal began implementing a network of charging infrastructures on public property. Its goal is to install nearly 1,000 charging points to service the whole of its territory by 2020.

Currently, the roadside charging stations offer two charging points, meaning that two vehicles can charge at the same station. These 240-volt stations can completely recharge a rechargeable hybrid vehicle in three or four hours and an all-electric vehicle in six to eight hours. Installing this type of roadside charging station enables individuals to partly recharge their vehicle while at work or in the downtown area so they have enough power to return home.

This public network will be compatible with the deployment of an all-electric self-serve vehicle system. The objective is to encourage citizens to use green and sustainable modes of transportation. The city of Montréal therefore created conditions conducive to such deployment by establishing a regulatory framework calling on several private suppliers to operate and manage the fleet of self-serve electric vehicles.

In the area of innovation, the installation of roadside charging stations is a first in North America. These stations will be deployed gradually, with an increasing number installed every year. The city will begin by deploying a first network of charging stations in the Ville-Marie borough. Once these 106 charging points are in place by the end of 2016, Montréal will be the first city in Canada to have a downtown area equipped with such a network of charging stations.

Deployment will continue in the central boroughs followed by outlying areas. Concurrently, some boroughs will be installing off-road charging stations in public parking facilities.

Given that the installation of roadside charging stations will enable electric vehicle owners to charge their batteries while at work or in the downtown area, this offer is complementary to the charging station at their home and workplace. It should be noted that other Electric Circuit partners have also installed charging stations, most at workplaces. These charging points should be counted in the overall offer.

Implementing a network of charging stations in an urban environment comes with a unique set of challenges and issues: urban integration, the space available on public property, and the installation and maintenance of additional urban fixtures. Each site has unique characteristics and poses a different technical challenge. In addition to these purely technical considerations, the esthetics of the charging stations must also be taken into consideration, and design adjustments to the standardized stations must be considered regularly. To guarantee the deployment of the entire network in the set timeframe, careful planning and close collaboration is required between the various stakeholders involved, both to place the charging stations in optimal locations and to carry out and supervise the work.

3.2 A green policy for rolling stock

The city of Montréal's Rolling Stock and Municipal Shops Department, which is responsible for the city's fleet of vehicles, recently adopted a third-generation green policy for the period of 2016 to 2020—the first version having been adopted by the municipal administration in 2007. This document embodies the city's eco-responsible resolve and direction to achieve a 30% reduction in greenhouse gas emissions by the target date of 2020, which was set by the Montréal community. Achieving this GHG reduction necessarily

involves a global and large-scale transportation electrification plan, but it also means maintaining and developing specific ad hoc initiatives, including the implementation of a massive and ambitious program to convert conventional or thermal vehicles to fully electric vehicles.

The interventions targeted by the green policy fall under 5 major areas: engine-related actions (electrification of the fleet of municipal vehicles); fuels (types and management); user awareness; technical and technological change; and contribution to the Montréal Community Sustainable Development Plan.

While the two previous policies were more suggestive in their approach, the 2016–2020 green policy on rolling stock differs in marking a major turning point and a strong statement by the city of Montréal in favour of the massive electrification of its 2015 fleet of vehicles (which has set an objective to replace 95% of the conventional or thermal vehicles with fully electric vehicles).

The total benefits of the three green policies in terms of GHG reduction (ongoing) demonstrate their effective contribution to the Montréal Community Sustainable Development Plan, and their necessity.

3.3 Adoption of a mobility plan and a parking policy

While developing its mobility plan for 2017–2022, which will grant a significant role to transportation electrification, the municipal administration first adopted a parking policy aimed at strategic management, while also taking into consideration municipal orientations on sustainable mobility, land use and economic development.

The proposed measures include setting up parking spaces equipped with charging stations for electrical vehicles, developing sustainability mobility hubs (BIXI bikes, taxis, self-serve vehicles, electric cars, car sharing), introducing combined pricing that includes the recharging of electric vehicles, amending regulations to require parking spaces for car alternatives including electric vehicles.

Each of these measures, relating to developing mobility, sharing the road and designing a regulatory framework, work at various scales to help achieve GHG-reduction goals.

3.4 Economic Development Action Plan

The city of Montréal's transportation electrification strategy involves ambitious initiatives that will accelerate the transition of various modes of transportation toward an abundant, sustainable and non-polluting form of energy: electricity. These initiatives will also leverage substantial economic fallout. The electrification of the city fleet, the rollout of charging stations and the new urban development models are some of the initiatives that help make Montréal an ideal setting to attract businesses, research centres and institutions. These new benefits are additional to the assets Montréal already offers and that contribute to the vitality of its businesses. Its abundant and qualified labour force, four universities, world-calibre research centres, dynamic industrial clusters in cutting-edge areas, and the Montréal: Smart and Digital City strategy have already made Montréal of the seven top smart cities in the world, according to the Intelligent Community Forum (2016).

The city will take the necessary steps to ensure that its investments and its efforts to electrify transportation translate into concrete economic benefits. More specifically, there are three goals guiding its efforts:

1. Mobilize the driving forces involved in transportation electrification around shared objectives;
2. Use transportation electrification initiatives as a lever to promote benefits for local businesses and institutions;
3. Increase the appeal of Montréal as an ideal location for companies and institutions in this sector.

To achieve these goals, the city's Economic Development Department has inaugurated a Commissioner of Electric and Smart Transportation. In addition, an advisory committee will be quickly set up following the strategy's launch, and the department will develop an action plan whose implementation will begin in the fall of 2016.

Already, the groundwork has been done to create an electric and smart transportation corridor that will cover the city centre and the south-west, where the city's innovation hub—Quartier de l'Innovation (QI)—is located. A technological and commercial showcase will be launched, which will allow the city to be aware of and have access to the latest technology and innovations in the area of electric vehicles and smart vehicles, and will enable companies in Montréal and the province of Quebec to highlight their expertise, technology and innovations. This showcase will also include continuous technological intelligence.

3.5 Ongoing partnership with partners

To maximize the impact of its initiatives, the city must also work in collaboration with its various partners.

The first is the Government of Quebec, and its Transportation Electrification Strategy, whose aims include to increase the number of electric vehicles in the provincial fleet, to participate in the fight against climate change, to reduce energy dependence on oil and to contribute to Quebec's economic development by leveraging a forward-looking industry and by using the electrical power available in the province. Financial support provided under this program contributes to the achievement of some of the measures put forward by the city of Montréal.

Another key partnership is with Montréal's public transit authority (Société de transport de Montréal—STM), the agency responsible for planning and operating the city's public transportation network, including the subway system. The STM encourages a modal shift from solo driving to collective and active modes of transportation, which will reduce automobile-related environmental impacts.

In addition to its goal of reducing car transportation, the STM is also moving progressively toward the electrification of its bus fleet. By 2025, the STM aims to be buying only electric buses. The STM intends to act as a facilitator and to support industry in developing a fully electric technology that offers the same level of service as standard buses.

It is worthwhile to highlight some of the initiatives already undertaken by the STM:

- Purchase of exclusively hybrid buses;
- Installation of two rapid-charging stations for electric busses, as part of the Cité Mobilité program;
- Purchase of electric service vehicles (cars and subway service vehicles).

The city also works in partnership with the Government of Quebec, with Montréal's transportation coordination agency (Agence métropolitaine de transport—AMT), and the Caisse de dépôt et de placement du Québec on major transportation infrastructure projects at the city level, including the implementation of light rail systems on the Champlain Bridge and servicing the West Island, as well as the extension of the city subway system.

Another partner is the Montréal taxi bureau, whose policy on the taxi industry offers support for industry actions to electrify part of the taxi and limousine fleet in order to increase the number of environmentally friendly vehicles in Montréal by 2020, and to accelerate the rollout of electric charging stations.

4. Conclusion

The actions taken to date by the city of Montréal and its partners, and the actions proposed in its transportation electrification strategy are intended to make Montréal into a major player in the area of transportation electrification, in terms of innovation, development and promotion. Each action contributes in its own way; and together, they will help achieve the city's target of reducing GHG emissions by 2020, in accordance with the strategic orientations of its plans and policies. Ongoing monitoring will measure the impacts and ensure that the targeted goals are reached.

Authors

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