

THE ROAD NETWORK AND PUBLIC TRANSIT – THE COMPLEMENTARITY CHALLENGE IN GREATER MONTREAL

Joël Gauthier
President and CEO
Agence métropolitaine de transport
Montreal, Quebec, Canada
jgauthier@amt.qc.ca

ABSTRACT

The mission of the *Agence métropolitaine de transport* is to facilitate commuting in the greater Montreal region by fostering a modal shift from automobile transport to public transit. In a situation of ever-increasing traffic congestion and automobile ownership, the AMT is especially interested in deploying a highly reliable express metropolitan bus service. As the reserved lanes for metropolitan bus service are not fully networked yet, many of the bus lines are running into traffic congestion, which increases transit time and makes them less competitive with automobile commuting. Instituting reserved lanes is an effective solution—one that is sure to increase the efficiency of commuting on the public road network. As outlined in its 2011-2020 strategic plan, the AMT would like to install a rapid-transit bus network based on the implementation of reserved lanes and other priority measures. Some thirty major arteries potentially able to accommodate BRT (bus rapid transit) will be recommended for the greater Montreal region overall. For all corridors, committees will be formed which will work in partnership on the identification of needs, the definition of service solutions and the development of the final project.

1. ABOUT THE AMT

Founded by the government of Quebec in 1996, the *Agence métropolitaine de transport* (AMT) is a government agency whose mission is to plan, coordinate, integrate and promote public transit services in close cooperation with its partners. More specifically, the AMT plans and operates the commuter train network for the metropolitan region of Montreal. It is also responsible for planning the metropolitan bus network and for any extension of the subway system. In keeping with its mission, the AMT streamlines commuting throughout the region, fosters a modal shift from car travel to mass transit, and works continually on improving the fluidity and efficiency of the region's metropolitan road network.

The AMT's territory represents 83 municipalities, as well as the Kahnawake reserve, and covers close to 4,000 square kilometres. The territory is home to 3.6 million people, which constitutes fully 38% of the entire population of Quebec. The Island of Montreal alone accounts for more than half of the greater Montreal area's population¹. According to

¹ Statistics Canada, 2006 Census, <http://www.statcan.gc.ca>

demographic projections, the population of the greater Montreal area could reach 4.3 million by the year 2030².

2. OVERVIEW OF THE TRANSIT NETWORK IN THE REGION

The greater Montreal region enjoys some very advanced transport infrastructure, whose planning took place chiefly in the Sixties and Seventies. The region's rapid growth, combined with the hosting of major international events such as Expo 67 and the 1976 Olympic Games, entailed the building of some major items of urban infrastructure, such as the highway network or the Métro.

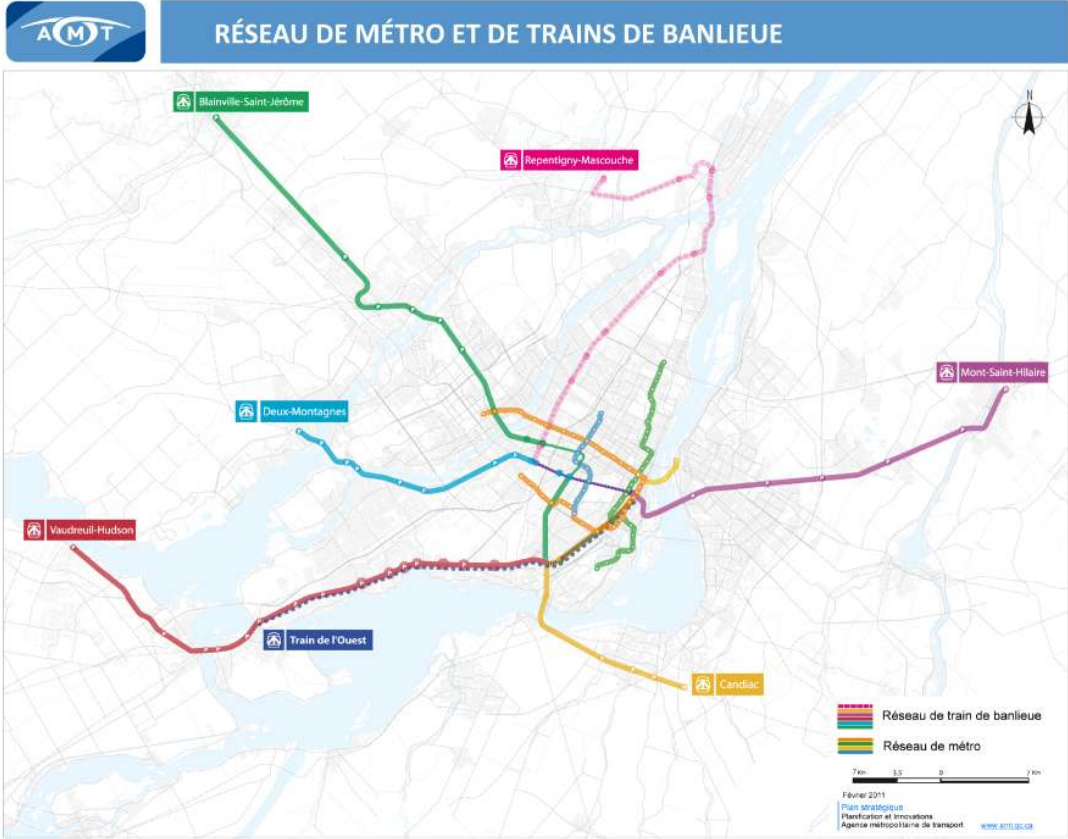
The metropolitan public transit service consists of the Métro system, the commuter train network and the metropolitan bus network. As surveyed in 2008, the entire system moved an average of 470 million commuters annually. The quality and extent of its mass transit network ranks Montreal third in North America in terms of public transport, with a modal share of 25% of all morning rush hour traffic³.

The Métro network boasts 4 lines and 68 stations, while the commuter train network comprises 5 lines, 51 stations, 39 park-and-ride lots and 16,410 parking spaces. The AMT also provides its ridership with a network of rapid-service metropolitan buses consisting of a metropolitan Express, 16 terminals, 22 park-and-ride lots providing close to 13,200 parking spaces, and over 85 kilometres of reserved lanes. The Metropolitan Express moves 1.3 million passengers a year, and the annual ridership in all of its metropolitan bus terminals adds up to 71.3 million commutes annually. The metropolitan bus network gives commuters quick access to the subway or to commuter trains, or it brings them directly downtown, where most of the region's jobs are concentrated.

² *Institut de la statistique du Québec, Perspectives démographiques du Québec et des régions, 2006-2056* (demographic outlook for Quebec and its regions), 2009 edition,
http://www.stat.gouv.qc.ca/publications/demograp/pdf2009/perspectives2006_2056.pdf

³ Agence métropolitaine de transport, 2008 Origin-Destination Survey

Figure 1 – The Métro and commuter train network in the greater Montreal region



An example of a reserved express lane on the Champlain Bridge, the last leg of the A10 axis

- Opened in 1978 as a pilot project, this express lane is still in operation and has become the most heavily travelled in the Montreal area.
- Every day at rush hour, a corridor 7.5 km long is sectioned off from oncoming traffic with temporary traffic cones.
- An hourly average of 160 buses belonging to 6 different public transport companies use the corridor during the morning rush.
- 21,800 public transit customers commute along this corridor every morning rush hour.
- Two metropolitan terminals (Brossard-Chevrier and Brossard-Panama), which connect with highways A10 and A30, provide 3,270 park-and-ride spaces on the South Shore. They are filled to over 90% of capacity every day.
- This is a very heavily travelled axis that would do well to be instituted on a permanent basis.



Champlain Bridge Rapid Bus Transit



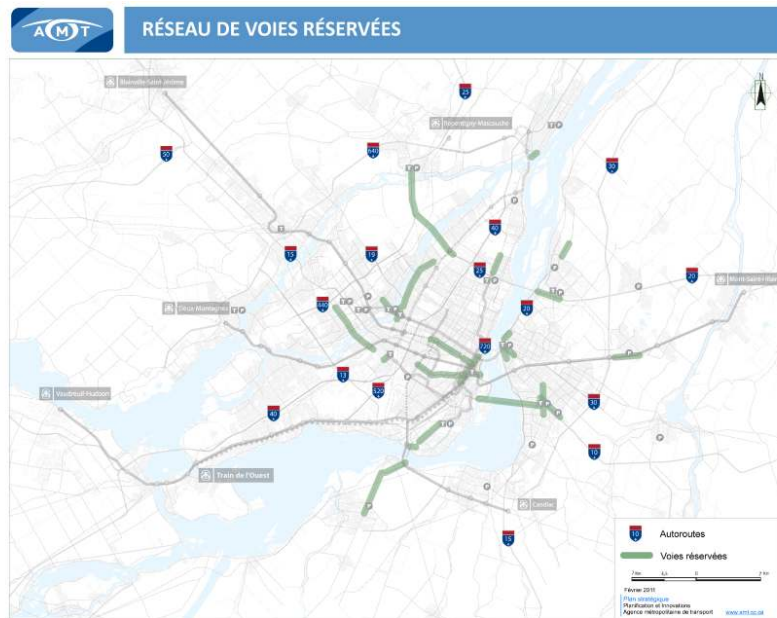
3. A FAVOURABLE CONTEXT FOR MASS TRANSIT DEVELOPMENT

The evolution of mobility behaviours in recent years clearly shows that the situation in the Montreal area is very favourable to the development of public transit in the greater Montreal region. For the first time since the initial Origin-Destination surveys were conducted in the Seventies, car use is actually on the wane during morning rush hour. The 1% drop recorded between 2003 and 2008 is clear evidence of a trend reversal in this respect. In 2008, morning rush hour ridership on the region's public transit services averaged 427,000, which was a 15% increase in comparison to 2003. The modal share of public transit, for its part, increased from 22% to 25% over the same period. In response to the success of metropolitan public transport services, the AMT has been hard at work developing major deployment projects to expand the use of the Métro and BRT and to consolidate the suburban commuter train network.

4. THE NEED TO DEVELOP A RESERVED LANE NETWORK

Lanes reserved for metropolitan buses were developed to address a set of specific needs. When it started in 1996, the metropolitan bus transit network consisted of 9 lengths of reserved lanes sectioned off from some of the city's main traffic arteries (Pie-IX boulevard, Champlain Bridge, Park avenue and Côte-des-Neiges road) as well as 6 park-and-ride lots. Since that time, the reserved lane and park-and-ride system has greatly expanded outside of the city proper.

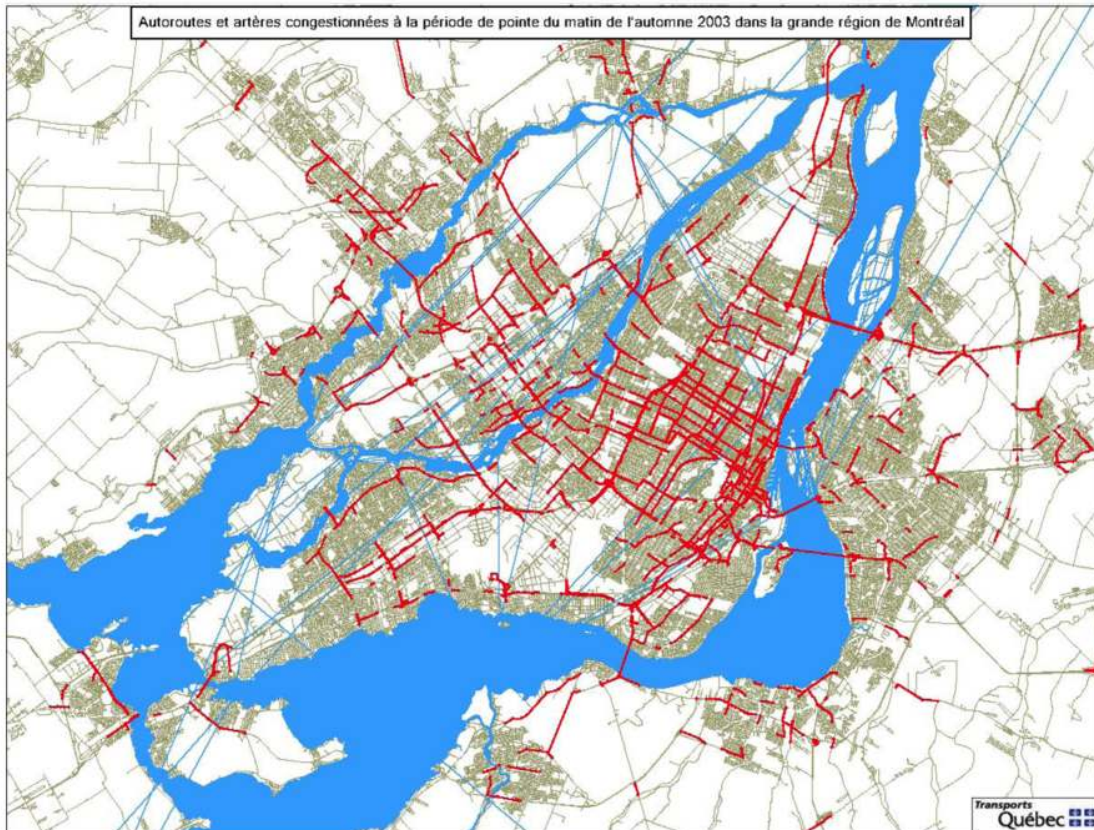
Figure 2 – The reserved lane network for metropolitan buses in the region



However, these lanes reserved for metropolitan buses cannot be called a network in the true sense of the word. Now expanded to 30 sections, the system is not fully networked and

remains poorly implemented in the major highway axes and the most heavily congested arteries. Many bus lines are in direct competition with car traffic, which seriously increases transit time and makes them less competitive with the use of automobiles.

Figure 3 – The most congested traffic arteries in the greater Montreal region



As in virtually all large cities, traffic congestion is a major problem in the Montreal area. One study by the *Ministère des transports du Québec* (MTQ – Quebec dep't of transport) estimated the socio-economic cost of recurring traffic congestion on the region's highways and traffic arteries to be \$1.423 billion in 2003⁴, and that it was chiefly attributable to the accumulated lateness of car drivers. When compared with a cost of \$841 million in 1998, the 2003 figure represents a 50% increase in 5 years and thus evidences a major deterioration of the road network's traffic flow⁵.

The increase in car use by households does not augur well for the resolution of this issue in the years to come. Between 1998 and 2008, the greater Montreal region's automobile fleet increased 19.8%, which translates into 295,300 more vehicles⁶. The increase in the number of cars outstripped the increase in population two to one during the same period.

⁴ Ministère des Transport du Québec, Évaluation des coûts de la congestion routière dans la région de Montréal pour les conditions de référence de 2003, mars 2009

⁵ Ibid.

⁶ Agence métropolitaine de transport, 2008 Origin-Destination Survey 1998, 2003 et 2008

Under such circumstances, improving the performance of the metropolitan bus network in the region entails the implementation of an entire series of priority measures on the road network. Reserved lanes are an effective, affordable solution that would increase the efficiency of commuting on the public road network. The AMT is accordingly working on a bus network that would mesh with and complement the road network in order to foster better sharing among the various users of public roadways and offer residents of the greater Montreal region a wider diversity of commuting modes.

5. 2011-2020 STRATEGIC PLAN: DEVELOPING AN EXPRESS METROPOLITAN BUS NETWORK

In keeping with its statutes of incorporation, the AMT is currently working on developing a 10-year strategic plan for metropolitan transport in which the Agency lists its objectives, priorities and expected results. The metropolitan transport development strategy for the next decade addresses three major themes:

- Streamlining the movement of commuters by improving accessibility and service quality
- Fostering better alignment between urban development and public transit planning
- Developing and implementing a rapid, multimodal metropolitan network by increasing the capacity of the Métro system, commuter trains and metropolitan buses

In terms of the metropolitan bus network, the salient objective is to improve the efficiency of commuting and the network's ridership performance. In so doing, the AMT is seeking to accelerate the development of a BRT network that is perceived as effective by commuters and which would be operated by the region's various carriers. The network's aim is to:

- increase the efficiency of traffic corridors via the implementation of reserved lanes and priority measures,
- increase the fleet's capacity in support of the reserved lane network (terminals and parking lots),
- complete the networking of the different transit modes (bus, subway and commuter train) to facilitate recourse to heavier transport modes and streamline access to the region's employment hubs, and
- reduce the impacts of traffic congestion on bus services.

In terms of infrastructure, the reserved bus lane remains the most likely way to improve service performance, closely followed by the installation of priority traffic lights. Ultimately, a very busy artery could offer a BRT-type system, which copies the concept of rail systems to some extent (exclusive premises, structured stations, increased comfort, visual signature, etc.) to create a level of feeder service far outstripping that afforded by conventional bus services. This sort of BRT concept is currently in development on the Pie-IX corridor, and will eventually join Montreal and Laval.

Establishing a metropolitan BRT network entails a defined set of actions per corridor which may vary depending on the urban setting involved. The strategic plan proposes thirty or so such corridors, which could eventually provide BRT service for the entire greater Montreal region. Over the next decade, a project will emerge which will address all of these arteries on the basis of the commuting needs identified, the determination of the partners involved, and the characteristics of the urban setting the line crosses.

The BRT project (bus rapid transit) on Pie-IX boulevard

Description of the project

- One of the most heavily travelled bus corridors in the region, with 38,000 daily commutes in Montreal and Laval
- 14-kilometre route crossing the municipalities of Laval and Montreal
- 21 stations (18 in Montreal and 3 in Laval) and 3 park-and-ride lots
- Concept of two-way lanes for buses, on dedicated premises and implemented in the middle of Pie-IX boulevard
- Two car-traffic lanes sectioned off in the Montreal part of the route and 35% reduction of vehicular capacity on Pie-IX
- Cost of project estimated at \$305 million

Objectives

- Providing our clientele with a superior-quality public transit service that is rapid, reliable and comfortable
- Driving the modal shift from cars to buses
- Increase daily public transit ridership on this corridor from 38,000 to 70,000

Benefits

- Urban redefinition of this boulevard's vocation and better sharing of the roadway by car drivers, pedestrians and buses
- Improving pedestrian safety at a number of intersections via detailed analysis of walking traffic
- Articulated buses accessible to the mobility impaired
- Institution of an integrated system including technological tools and information for commuters
- Special attention paid to the design of stations and the choice of a visual signature for BRT



7. RESULTS EXPECTED

In keeping with its 2011-2010 strategic plan, the AMT is targeting the improvement of public transit service in the metropolitan region through more effective synergizing of the network and by instituting rapid multimodal services.

One of the AMT's chief objectives is to double the length of reserved lanes by 2020, which should considerably increase the speed of the metropolitan bus service. Increasing the subway's capacity, consolidating commuter train service, harmonizing the region's various public transit systems, and making information more available to commuters everywhere and at any time are all concepts that will improve the quality of the metropolitan transport network over the coming decade.

Ultimately, annual public transit ridership on all modes in greater Montreal region will increase by a third from 472 million to 628 million. Mass transit's share of morning rush hour traffic will increase from 25% to 30%.

As it reaches these milestones, the AMT is fulfilling its mission to significantly improve commuter mobility in the greater Montreal area, and to position this region as one of the most dynamic in North America in terms of sustainable mobility.

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