TOWARDS A TRANSPORTATION PLAN FOR THE REGION OF MONTRÉAL

PHASE 1 : CHOICES
EXISTING SITUATION AND POSSIBLE ORIENTATIONS

CONSULTATION DOCUMENT

Québec

Toward a Transportation Plan

for

The Montréal Region

Phase 1: Choices

EXISTING SITUATION AND POSSIBLE ORIENTATIONS

Consultation Document

Transport Québec

For further information on the analyses and data supporting this consultation document, please refer to the document titled *Toward a Transportation Plan for the Montréal Region Phase 1: Choices - Existing Situation and Possible Orientations. Reference Document*.

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MESSAGE FROM THE MINISTER

Transportation in the Montréal region deserves our undivided attention. The effectiveness of systems and networks and the ease of moving people and goods within the territory, along with economic competitiveness, quality of life, and equitable sharing of costs and use of public assets are at stake. These are the issues that will determine the region's future.

The complexity of the decisions that must be made is further increased by the fact that they form part of a larger context marked by the meshing of transportation modes and the absolute necessity to integrate networks and systems. Henceforth, transportation must be viewed as a coherent whole in which the parts are, by definition, interdependent. Compounding this is the interaction, often structural, of transportation with other major functions, particularly land-use planning and economic development, which compels us to adopt an integrated approach.

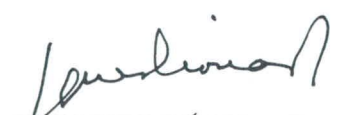
We must also keep in mind, however, that the vitality of transportation is tied to regional realities, and contingent upon international economic conditions and the constraints of scarce financial resources.

In short, we can no longer make choices and take action on a piecemeal basis or in isolation. Our region needs an integrated transportation plan born out of a clear vision of how the region should be developed. Today, we have to do better in order to do more. On behalf of the Ministère des Transports, I invite all partners to join us in this vital endeavour.

To this end, a diagnosis of the existing situation as well as major orientations and broad outlines of possible actions are presented as a basis for discussion. The Metropolitan Transportation Advisory Committee will serve as the main forum for consultations and coordination.

As Minister of Transport for Québec, I fervently hope that we can reach mutually acceptable choices and coordinated, logical approaches culminating in effective and sustainable solutions.

This mid-point of the 1990s will be a pivotal year for those charged with making transportation decisions within the Montréal region. The development and implementation of the Transportation Plan for the Montréal Region is an undertaking of major proportions. I firmly believe that it will provide the opportunity for us to demonstrate solidarity, generosity and a clear, enlightened vision of the future.



JACQUES LÉONARD

Minister of Transport

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Outlook

Getting around the Montréal region in the year 2011 will call for large reserves of patience. This is what's in store if urban sprawl and job decentralization continue, if households maintain the trend to a second car and if the public doesn't change its transportation preferences.

Minimum three-hour lineups

Transport Québec simulations predict lineups on Island of Montréal expressways and bridge approaches throughout the rush hour period, i.e. at least three hours. This congestion will have direct repercussions on the region's competitive position and will significantly reduce its residents' quality of life.

Morning rush hour will see 300,000 additional movements—12,000 of them on public transit. Bridges leading onto the Island of Montréal will alone carry an additional 66,000 vehicles. Absorbing this heavier traffic will require the construction of four new highway bridges.

Still, estimated traffic growth over the next 20 years is lower than the increase recorded between 1981 and 1991. Why? Most bridges onto the Island of Montréal are already full to capacity during rush hour periods. Unless drivers radically change their hours of travel, additional vehicles will only lengthen current lineups.

Slower traffic

If current trends continue, in 20 years, rush-hour travel by car from the South Shore or Laval to Montréal will require an added 30 minutes on average. Congestion will cut the average speed to 13 km an hour throughout the region and will lengthen average travel time by 23 minutes.

At the same time, unless public attitudes change, morning rush hour ridership on public transit will increase by only 3% between 1991 and 2011. Still not back to 1982 levels!

In the short and medium terms, commercial traffic will also increase. If current traffic forecasts are accurate, trucking costs will increase in line with congestion, and the centre of the Montréal region will lose its appeal as an industrial location. The competitive position of the whole region will weakened.

Truck transportation problems could affect the vitality of the Port of Montréal, currently a key element in maritime trade and intermodal transport. Because of rail-truck dependency in intermodal transportation, the railway industry would also suffer.

What explains this situation?

The Bureau de la statistique du Québec (BSQ) estimates the region's population growth at 670,000, an average annual increase of 33,500 residents. Most will settle in the suburbs. Indeed, if urban expansion trends continue, 550,000 new residents (mainly young households) will settle in the area off the Island of Montréal.

The exodus from the centre to the outlying areas will be less pronounced than in the 1970s and 1980s. The wave of baby boomers seeking their first home is almost over and thus it is anticipated that residential housing will target buyers moving up to their second home.

The centre of the region and surrounding neighbourhoods will see a slight increase in the population of ethnic communities. According to BSQ assumptions, approximately one third of the estimated regional demographic growth will result from immigration. For the most part, new arrivals congregate in the centre of the region. However, since the Island of Montréal itself only receives one sixth of the region's growth, immigration there would be reduced by the departure of young households to the outskirts.

Representing roughly one third of the region's population, the baby boomers will, however, continue to exert a strong influence on the demand for goods and services. For the most part, the baby boomers have founded their families, left the region's centre and moved to the suburbs. In so doing, they have deserted public transit and taken to the highway. The oldest *boomers* are in their mid-forties and the youngest are approaching thirty. Since the boom's birthrate peaked in 1960, most of this generation are turning 35 this year.

The demographic bulge caused by the baby boomers helps explain the greater number of cars on the highways. With fewer young adults in the coming generation, the next few years should, all things being equal, see slower growth in the number of cars compared with the last twenty years.

This does not mean that the average number of cars per household or per person will stop increasing. Our love affair with the automobile, its comfort and convenience, is here to stay. Other factors also play a role, including the growing number of two-income families, calling for additional journeys in order to juggle the needs of both work and family.

With demographic growth occurring mainly in outlying areas and jobs concentrated in or close to the *Communauté urbaine de Montréal*, (CUM), the average travel distance will be longer. These factors will all contribute to increasing the number of trips to work by car.

With the combined effects of a low birthrate and older baby boomers reaching retirement age, the ageing of the population will be felt more acutely throughout the territory, particularly in the older urban sectors.

Since travel habits and purposes differ considerably between retirees and young people and active adults, by the year 2000 we can expect changes in transit demands. There will be a greater demand for off-peak daytime service and an increase in the number of mobility-impaired transit customers. Without the large injection of new residents anticipated between now and 2011, the total number of movements would decrease. The number of retired workers would exceed the number of new arrivals on the job market, and job-related movements would go down.

These demographic changes make it clear that adaptation of public transit vehicles, equipment and services to satisfy the specific needs of this clientèle will occur at a faster rate than at present.

In both the core and outlying areas, the lower population density and the decentralization of jobs will encourage automobile use and thereby contribute to the ineffectiveness of the transportation networks and systems. It might be thought that things will change then, even if public officials fail to act to stem or slow these trends. However, these changes might have an equally deplorable impact on the city centre, the economic competitiveness of the region and the quality of life for the public. Be that as it may, the prospects facing us raise questions about the development sequence of urban perimeters, consolidation of the urban fabric and hoped-for improvements in the environment. An in-depth examination is needed.

Projections for 2011 are based on a transit-demand model developed by the MTQ. The MTQ used BSQ demographic forecasts by age and sex and data from STCUM 1978, 1982 and 1987 origin-destination surveys. Assumptions were made to take into account the change in the population's activity rate and car ownership by age and sex, the growth of employment poles between 1978 and 1987, and the increase in population between 1986 and 1991. This model simulates the population's transportation behaviour in relation to the economic situation in effect at the time of the STCUM 1987 survey.

The number of movements during the morning rush hour in 2011, both by car and by public transit, were simulated based on the existing highway networks and public transit systems within the region and on highway infrastructures now being implemented by MTQ.

Toward a transportation plan for the Montréal region

Expectations are high regarding transportation in the Montréal region. For public transit and the highway system alone, the cost of development projects under study at the MTQ or requested by the community would require an investment of three to four billion dollars. With existing budgets, it would take a hundred years to complete them all. But, the current state of government finances and the economic situation do not permit increases in these budgets.

Thus, the decision-makers and the population of the Montréal region must make choices and look into the possibility of other financing sources. The MTQ is committed to the need for a timely transportation plan for the Montréal region, a plan that integrates the transportation of people and goods.

Dialogue

The mission of the MTQ is to provide for the movement of people and goods through the development, arrangement and operation of transportation infrastructures and systems. The *Transport Act* also makes the MTQ responsible for improving transportation through coordination and integration.

Integration and coordination are prerequisites for effective transportation systems. Accordingly local and regional authorities, as well as the managers and operators of public and private transportation systems must be involved in the dialogue. Their data and expertise, and an awareness of their concerns are essential for clarifying and focusing discussions.

Moreover, since transportation underlies and supports regional planning and economic development, it cannot be dissociated from these activities. Transportation systems can also affect the environment and produce changes in land use. The MTQ considers that transportation choices must be viewed in light of the much larger context surrounding these considerations.

For all these reasons, the MTQ believes that planning must involve not only elected officials and transportation companies and agencies but also representatives of the general public and the business community. Identifying common goals, seeking consensus and mobilizing around a shared transportation vision is central to the MTQ planning of transportation infrastructures and systems for the Montréal region.

The tool: the transportation plan

The MTQ initiative aims for integrated and optimal planning of transportation systems and infrastructures for passengers and goods to meet the region's specific needs and roles. Given their interrelationship with transportation, social, economic and environmental aspects will also be considered in the plan. In this way, the plan will support harmonious regional development.

The Montréal region transportation plan is not limited to direct areas of MTQ responsibility. The plan considers all transportation activities having major impacts on the region. The MTQ proposes broadening the discussions to include areas consistent with its mission. In close collaboration with its partners in the region, the MTQ intends to fully exercise its leadership, to identify the common orientations and priorities and lend consistency to actions in the transportation sector and other activity sectors interacting with the MTQ.

The MTQ will use this input to establish the plan of its own interventions that will include measures, projects, programs and action strategies.

Transportation systems and infrastructures are primarily intended to serve people and companies. Unless problems arise, users have little interest in knowing who does what and how. What's important to them is the quality, reliability, effectiveness and cost of the service delivered.

A transportation plan must respond to users' problems or, more to the point, avert problems in the first place. Initially, the plan must identify the problems and determine their causes and consequences. Institutional or cost-sharing problems must be given equal weight to problems involving the use or condition of transportation networks and systems.

From this standpoint, the MTQ believes that the transportation plan is the best tool to

- ☐ determine the main elements of a future regional transportation vision, consistent with land planning, economic development and environmental orientations;
- ☐ identify the means, measures and strategies for effective and optimal use of existing transportation infrastructures and equipment;
- ☐ encourage innovative solutions to problems;
- ☐ establish its medium- and long-term intervention priorities, i.e. from now until 2011.

Making choices and taking action

Preparation of a transportation plan includes two phases:

Phase 1: Making choices

In this first phase, the situation is analyzed, the main issues and challenges are identified and the orientations and broad action scenarios for highlighting the main elements of a regional transportation vision are recommended.

This ***Consultation document***[1] summarizes the analysis carried out by the MTQ in this phase.

The purpose of broad action scenarios is to stimulate ideas. Establishing the real priorities requires examining all hoped-for projects and actions in the harsh light of government finances.

Scenarios include proposed institutional and financial support. The cutting of grants in 1995 to the *Conseil métropolitain de transport en commun* and of the contribution for the deficit of the Deux Montagnes commuter train has added urgency to this examination of the organization and financing of public transit. A workable solution must be adopted soon for implementation in January 1996.

[1] The MTQ is also making available a ***Reference Document*** which contains a series of sectorial analyses used in preparing this consultation document.

This consultation document contains the essential items that will be covered in discussions and consultations between the MTQ and its partners. Important choices must be made both in the movement of people and the movement of goods.

The ***Metropolitan Transportation Advisory Committee*** was set up by the MTQ for the express purpose of studying every aspect of transportation in general and the transportation plan in particular. The Committee's principal mandate will be to move the studies along with a view to identifying the critical aspects of a shared future vision of transportation in the region. Thus, it will be a place where the MTQ and its partners will meet to discuss their findings, the issues and the regional transportation challenges and to express their opinions on the orientations and choices for the medium and long terms.

Phase 2: Taking action

Phase 2 of the transportation plan development will begin in fall 1995, with open debate of the advantages and shortcomings of the various solutions presented. The objective of this phase is to obtain a plan of coordination and prioritization of interventions.

The preferred intervention scenarios will be evaluated in light of their repercussions on the major thrust of the selected orientations: effectiveness of the networks and systems for transporting people and goods, institutional and financial support, economy, environment and land use.

As the work of the Metropolitan Transportation Coordinating Committee proceeds, a series of steps will be taken with

a view to defining future projects and where necessary, reviewing programs, regulations, policies and legislation.

Once adopted, the Montréal region transportation plan will guide MTQ actions regarding the transportation modes and systems for which it must ensure integrated planning, in line with its mission. The transportation plan will be presented to all regional decision makers to serve as a broad framework for their interventions not only regarding transportation, but also development and associated matters.

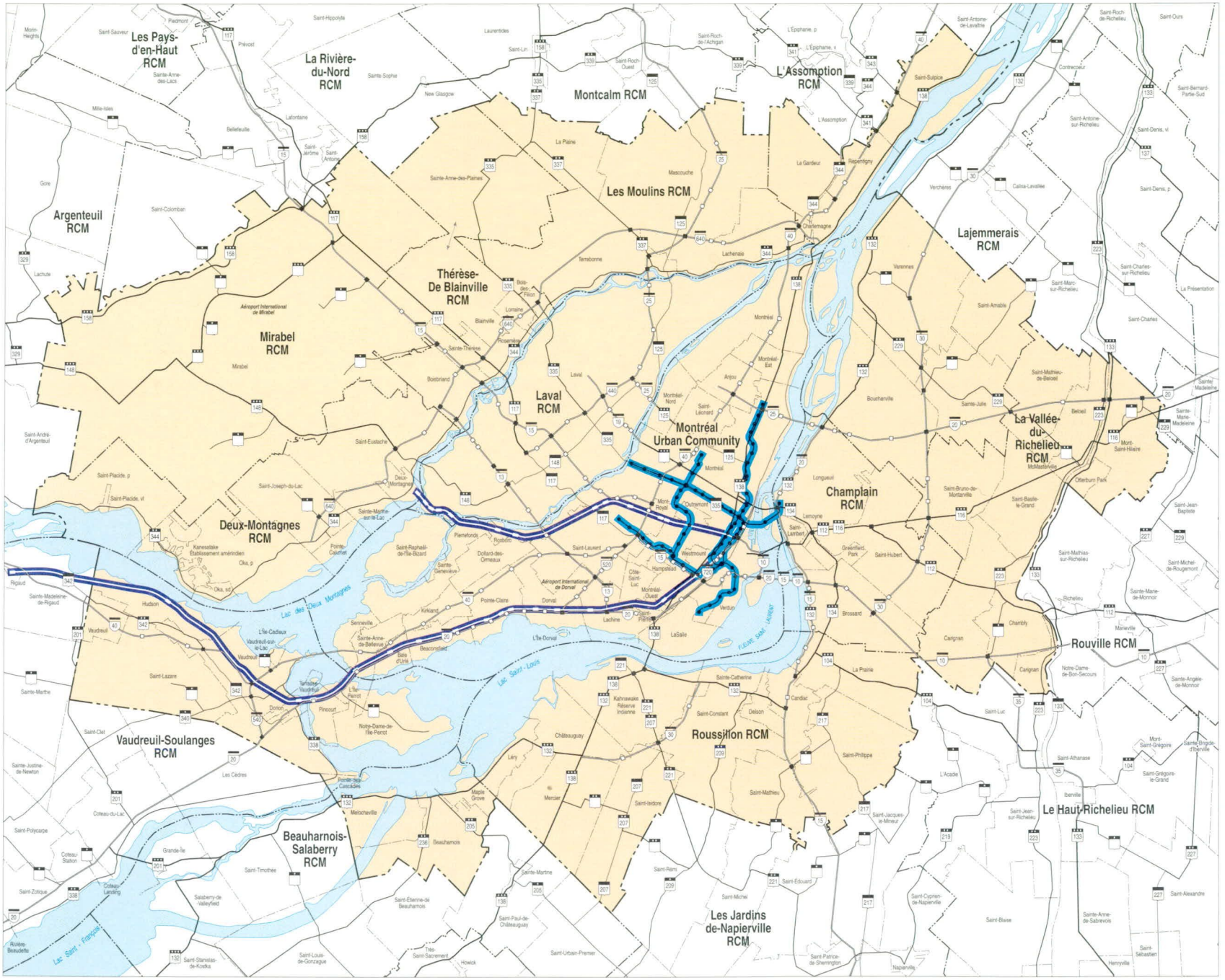
The territory studied

The territory covered by the plan corresponds to the Montreal Census Metropolitan Area (CMA),[2] which includes the CUM, 12 Regional County Municipalities (RCMs) and 100 municipalities. More than three million people reside on the territory.

Statistics Canada defines an CMA as the hub of a large urban area. Its boundaries are established based on a municipal population's activity rate and work locations. These criteria accurately portray the dynamics of people's movements in the Montréal region.

This territory has the added advantage of coinciding with a geographical entity that is known and referred to by the parties in the region.

[2] Because of the sources used, the data presented in this document often relates to territories that differ slightly from the CMA. However, the variances are marginal and cannot significantly affect the results or findings reported.



Gouvernement du Québec
Ministère des Transports

TRANSPORTATION PLAN FOR THE MONTRÉAL REGION

Territory under study

- Highway network
- National network
- Regional network
- Collector network
- Line and metro station
- Commuter train

- Territory under study
- Regional County Municipality (RCM)
- Municipality

0 5 10 km

February 1994

A transportation vision to be integrated and shared

The MTQ's mission obliges it to consider transportation on the basis of the Montréal region. More than any other sector of activity, transportation exposes the interdependence and complementarity of the various regional components. People live in one city and work in another, shop, seek entertainment and obtain medical care in a third. Additionally, they may study in one or more of the dozens of post-secondary establishments scattered throughout the territory.

The reality of the movement of people and goods reflects the more numerous and more complex connections between the core and its suburbs, and between other major centres of regional economic activity and the suburbs. It is becoming increasingly clearer that transportation choices must take into account the key role of the Montréal core, and at the same time support the strengths of the sub-regions which evolved in relation to the core over the years and which contribute to the dynamism of the entire region.

A poor regional perspective of the area's spatial organization coupled with the multiplicity of decision centres makes it difficult to arrive at a comprehensive and integrated vision based on the analysis of needs and the search for solutions.

Such a perspective is essential for transportation in order to maintain the Montréal region's specific vocation and optimize transportation services on a regional scale.

The region's specific vocation

The transportation choices to be made in the region go beyond meeting the immediate needs of its residents and the companies that operate there.

The Montréal region is the economic engine of Québec. Its outstanding geographical location, strong companies in leading-edge technologies, strong service sector and the quality of life it provides have made it one of the great urban centres of the world and a centre of international trade.

In today's open markets and global economy, the region's industries need to maintain and expand trade with the rest of Québec and major centres throughout the world, adding impetus for reaching agreement on the effective transportation of people and goods within the region. The effectiveness of infrastructures and transportation systems contributes more than ever to the region's role as economic powerhouse.

A variety of needs

Transit and road systems in the Montréal region must ensure easy movement for a population of over three million people—nearly half the population of Québec. This growing and shifting population is creating ever larger and more varied needs just when the scarcity of financial resources is limiting expenditures and investment in the region's transportation infrastructures and systems.

Regional systems must also facilitate the movement of goods consumed or produced in the region and of in-transit merchandise as well. They must also support the reliable and efficient supply of materials for manufacturers in the region. Transportation is a key factor in the production and distribution of goods.

Multiple functions create varied expectations. Some call for new transportation infrastructures and systems to meet the increased needs fuelled by urban sprawl and newly created centres of employment. Others are more concerned about the population and activity sectors affected by economic difficulties or competition. Still others believe that assets must be preserved and that priority must be given to the repair and improvement of existing transportation infrastructures and systems that are suffering from accelerated wear and tear from intensive use.

Conflicting interests to reconcile

The large number of public and private specialists who plan, finance, operate and manage transportation services in the Montréal region calls for coordinated action to ensure coherent results and appropriate responses to new requirements.

The extension of Highway 25 between Highway 40 to Montréal and Highway 440 to Laval is an example of conflicting interests to be reconciled. The parties did not initially agree on the project concept. The CUM's development plan called for an urban boulevard, while Laval's called for an expressway. If the project were completed according to the two plans, the resulting break in capacity would impair its effectiveness. The return on investment and anticipated benefits for the entire highway system would be reduced proportionally. To compound things even further, the project triggered environmental debates which polarized the community.

The fact is that transportation projects frequently arouse controversy. For example, the proposal to route a bus lane across the Nuns Island ice bridge is viewed by some as an effective solution to a transit problem, but others reject it on the basis of environmental impacts.

Controversy was also sparked by the plan to reduce long-term parking in downtown Montréal and the plan to install a reserved bus lane on avenue du Parc, where store-owners, motorists and public transit users had divergent opinions.

Reconciling conflicting interests can be just as difficult in the case of investment projects involving intermunicipal roads when the parties cannot agree on the road's function or how costs should be shared. The widening of Henri-Bourassa boulevard in east-end Montréal or the Cavendish boulevard extension in the west end are cases in point.

The organization and financing of public transit services also give rise to a variety of problems associated with equity of the financing, integration of services and coordination of fare policies among the numerous transportation companies.

Currently, CUM taxpayers alone support the net operating costs of the Métro system and suburban trains. But this rolling stock has an impact on the entire metropolitan area. It contributes to the vitality of Montréal's downtown core, the largest and most diversified centre of jobs and activities in the region. It also benefits the entire metropolitan region, since most public transit systems bring a significant number of their bus lines to the city centre. Although Longueuil is served by the métro it does not contribute to its financing. However, a large number of municipalities, whose citizens benefit from these services, do not contribute to their financing.

Rates in force for the various public transit services also foster a highly complex, even incoherent, environment which does not encourage use of these services. Suburban train rates escalate outside the area served by the three large regional transportation corporations. The monthly pass varies from $72 at Laval-sur-le-Lac station where it gives access to all three transit companies, to $134 at Deux-Montagnes station just 1 km further away where it gives access only to the suburban train.

Toward an integrated approach

Transportation choices will directly affect the economy, the environment and regional planning. These aspects are closely interwoven; achieving the desired objectives depends on the implementation of effective plans and strategies for each of the affected functions.

The transportation plan must cover all the region's transportation modes and systems, to ensure the compatibility and consistency that will ultimately produce an integrated intermodal transportation system for people and freight.

The MTQ invites its partners to contribute to a vision of a fully integrated transportation for the Montréal region.

Studies under way

The difficulties in planning and managing transportation in the region have been studied several times over the last few years. At the end of the consultative symposium on the future of transportation in the Montréal region organized by the MTQ in March 1991, the formation of a regional consultative group on regional planning and transportation and the adoption of a regional planning framework were recommended on a number of occasions.

Change today for tomorrow: a strategic plan for Greater Montréal tabled in December 1991 by the Cabinet's Standing Committee on the Development of Greater Montréal (CSCDGM) also confirmed lack of coordination and regional vision as an impediment to regional economic development, citing transportation as a key element in the hoped-for recovery.

In its December 1993 report titled *Montréal, A City-Region*, the Task Force on Greater Montréal recommended the formation of a Metropolitan Council to be responsible for providing the Montréal Census Metropolitan Area (CMA) with a metropolitan

development and planning framework and a transportation plan.

Faced with the reactions and questions of municipal authorities following the Task Force recommendations, an advisory committee formed of mayors and wardens from the region was created. Its main focus is on questions affecting the harmonization of development plans, economic development and transportation.

Thus, the MTQ initiative is part of an ongoing process and coincides with the concerns expressed by several of the regional parties. True to its mission, the MTQ intends to fulfil its role as a leader in transportation by mobilizing sectorial specialists to reach a consensus and achieve concerted action.

Common issues

Reconciling local interests and needs to better integrate them into a regional vision that is acceptable to the greatest number of parties is a major challenge. It is the principal challenge that the MTQ has given its partners in drawing up an integrated transportation plan.

Future decisions on the transportation of people and goods in the Montréal region will influence regional development and affect its planning, its environment and its economic vitality. The choices to be made must be weighed in light of scarce financial resources and with a view to sustainable development, that is, development that does not compromise the ability of future generations to meet their own needs and ensures resources are sustained. These considerations require establishing priorities for selected solutions and determining how they can be financed.

The Montréal region has much to gain from a well-integrated transportation plan. Failure to go forward with this initiative exposes the region to the risk of losing valuable assets in the strategic areas on which its future depends.

Four major issues are at stake:

- ☐ Ease of movement
- ☐ Economic competitiveness
- ☐ Quality of life
- ☐ Effective and equitable financing

Each of these issues incorporate major challenges on which consensus must be reached. To achieve this, the parties involved must be aware of the changes that have taken place in the Montréal region since the acquisition of its major transportation systems.

A changing context

Today, the Montréal region presents a much different profile than it did in the time of its great transportation systems, many of which were built in the wake of Expo'67.

Population growth, its location and fragmentation in the region, the nature of its activities, the diversification of its needs and its values are but some of the factors influencing the demand for transportation services.

Changes in the economic environment, the globalization of markets and stiffer competition have also altered transportation demand. These social and economic transformations coupled with the state of government finances have stimulated a re-thinking of government's role in the transportation sector and resulted in a new sharing of responsibilities among the different public authorities.

Demographic growth and urban sprawl

Over the last 20 years alone, 400,000 people have taken up residence in the Montréal region. Today, the population numbers over three million.

This growth has mainly benefited municipalities in the North Shore/Laval and the South Shore where population has increased by roughly 600,000 during this period. Thus, the centre of the Island of Montréal has experienced a major population exodus, principally young couples drawn by the environment and the easier access to property offered by the suburbs.

Over the years, municipalities farthest from the urban centre have seen the greatest demographic growth. Laval, for example, absorbed 28% of the growth recorded for the North Shore/Laval between 1986 and 1991 and 37% in the preceding five years.

More recent changes in the housing market confirm this trend. Since 1991, most new housing construction has taken place in municipalities farthest from the Montréal region. Thirteen municipalities[3] which accounted for 10% of the region's population in 1991 captured almost one third of the 40,000 single-family housing starts in the Montréal region between 1991 and June 1994.

[3] Blainville, Boisbriand, Chambly, La Plaine, Lachenaie, Mirabel, Repentigny, Saint-Constant, Sainte-Catherine, Saint-Eustache, Saint-Hubert, Sainte-Julie and Varennes.

Residential housing was generally more active in municipalities where house prices are lower. Over the years, increasingly higher fees have forced first-time home buyers to allocate a greater share of their savings to the cost of buying their homes. The amounts available for the down payment are reduced proportionally.

Urban expansion, which gave the Montréal region a new face, created a need for extended transportation systems and added to the complexity of public transit services.

Space remained available, however, in the centre of the region and adjoining sectors: suburbs nearest Montréal (Anjou, Saint-Léonard, Dorval, Pointe-Claire, etc.), the nearest South Shore suburbs (Longueuil, Saint-Lambert, etc.) and the centre of Laval. But consolidating the urban fabric is not always easy to achieve, mainly because of the higher cost of land and problems related to contaminated soil.

Areas allocated for urban development in the region as we know it today could easily absorb the demographic growth of the next 50 years. This horizon may even prove to be conservative, since the area over which the centre has an influence has continued to expand over the years.

This forecast accurately reflects the changes in the Montréal CMA, for while the population of the region increased by 14% between the 1971 and 1991 censuses, its area increased by 31%. From 267,000 hectares in 1971, the area of the CMA grew to 350,000 hectares in 1991!

Diversification of needs

The factors influencing people in their choice of location have contributed to a fragmentation of the population based on the types of household.

The departure of young couples to the suburbs has resulted in an aging population in the centre of the Montréal region, where today, the majority of residents are senior citizens, members of ethnic communities and young single adults. Two thirds of the households on the Island of Montréal live in rented accommodations and many of them are classified as low-income households.

Thus, we are seeing the impoverishment of the centre in relation to the other sectors of the region. Since buyers are often on the market for a second time, they can often afford a more costly property and are less restricted in their choice of location.

The population bordering Island of Montréal's central sectors is also becoming more fragmented. Residents of these sectors include a growing number of the elderly and members of ethnic communities, and families with children older than those in families living in the outlying suburbs. The rental housing market is expanding in these sectors while the market for single-family dwellings is dominated by second-time homebuyers. The average price of houses sold between 1988 and 1992 exceeded $120,000. This diversity, where the well-off and the poor often live side by side, generates a variety of needs.

These sociodemographic changes have resulted in progressively fewer people using public transit to reach their place of work or study. Aging of the population reduces

overall demand for transportation, since mobility tends to diminish with age. At the same time, public transit is being deprived of a portion of its clientele because a significant number of young families are moving to outlying areas. Although this compromises the viability of certain services, users require a broader choice of connections and expanded hours of service.

The aging population also points to an increase in paratransit for customers with reduced mobility.

According to a 1986 Statistics Canada survey on health and limitations on activity, almost one quarter of those aged 65 and over experience decreasing mobility. Extrapolating these figures to the year 2011, it is estimated that the number of mobility impaired persons will increase by 65% or 54,000 additional individuals.

By 2011, the region can expect nearly 312,000 mobility impaired persons, 45% of whom will be age 65 and over.

Medical progress and government policy of keeping the elderly at home could result in a greater need for specially adapted transportation a greater need for services.

Similarly, the need for social integration of people with disabilities will continue to exert pressure for development of paratransit services.

The demand for school transportation is stimulated not only by the presence of young families in the outlying areas but also by the need to transport students to schools in older residential areas, which otherwise would have low attendance. This is a growing demand, not only in the city centre but also in outlying areas. Closing of neighbourhood schools further stimulates the demand for school transportation.

Focal points of activity

Jobs have not relocated as fast as the population. With over 1 million out of the 1.5 million jobs in the region in 1991, the Island of Montréal remains the main destination for workers living in the outlying areas. Next are Laval and Longueuil, with 105,000 and 53,000 jobs respectively in 1991.

The 205,000 new jobs recorded in the region from 1981 to 1991 were distributed almost evenly among the Island of Montréal, the North Shore/Laval, and the South Shore. On the Island, industrial restructuring has shifted facilities from established industrial neighbourhoods to surrounding areas like Anjou/Saint-Léonard and Saint-Laurent. Since the population continues to move farther out, distances to work are increasing, fuelling the demand for road infrastructures and public transit services.

Industrial modernization and development of the service economy

Cradle of Canadian industry, the Montréal region ranks among the five major manufacturing centres in North America.

On the strength of this solid industrial base, the regional economy initiated a transformation that has modernized traditional industries, developed high-technology sectors and produced a vigorous economy-driving service industry sector. This sector, whose vitality reverberates throughout the entire Québec economy,

includes business and financial services, as well as institutions of higher learning and hospitals. The effectiveness of the interaction between the economy-driving service industries, the manufacturing industry, high-technology companies, higher learning institutions and research centres is a determining factor in the competitiveness of the region and, indeed, of Québec as a whole.

Changes in employment in the Montréal region from 1981 to 1991 account for this transformation. While total employment increased 16% during this period, business services soared by 64%, financial services and insurance grew by 32% and communications and other public services went up by 22%.

In Québec, roughly 50% of the employment volume is concentrated in the Montréal region. This percentage increases to 80% for research and development, 72% for the warehousing and transportation industry and 71% for business services. The region captures almost two thirds of the jobs in the financial and insurance sector, in communications and other public services, and in the manufacturing sector.

The centre of the region has particularly benefited from this boom. The growth rate in the service industries sector in the CUM has been at least double that of the remainder of the region. The Island of Montréal has 82% of all regional jobs in communications and public services, 81% of jobs in the financial and insurance sector and 78% of jobs in the warehousing and transportation industry; 200,000 of the 270,000 manufacturing jobs are concentrated here along with 81% of the high-technology jobs available in 1989.

Modernization and the development of the region's service economy are tightly intertwined phenomena with a direct impact on the demand for transportation services, particularly to facilitate service company/production company relationships.

More cars

Generally speaking, car ownership increases with the distance from the urban centre. In 1993, more than one out of two residents of the North Shore/Laval and the South Shore owned a car. In the central neighbourhoods of the Island of Montréal, the ratio was approximately one in three.

There has been a general rise in car ownership throughout the region. Between 1982 and 1993, the ratio of cars to the population grew by 28%, reaching a ratio of 4.6 cars for every 10 inhabitants in 1993. This increase was 37% for the North Shore, 33% for the South Shore, 29% for Laval and 21% for the CUM.

The sectorial differences within the region are mainly tied to the spatial fragmentation of the population by type of household: number of household members, ages, incomes, etc. If young families had been more numerous in the centre of the region, the number of cars per household would have been higher there too.

Several factors contribute to the increase in car ownership: the massive arrival of the baby boomers on the job market, the comfort and freedom afforded by the car and the distance between home and the workplace. Add to this the growing number of working couples for whom a second car makes it easier to reconcile the demands of work and the family.

The corollary of this growth in car ownership is a decrease in public transit use, a deterioration of the quality of life for the population and difficulty in meeting the demand for road transportation.

More trucks

The economic environment for goods transport in the Montréal region is undergoing a major transformation. These changes are related mainly to globalizing world markets, new distribution practices, restructuring of the regional economy and the development of activities that generate higher production or the entry of goods into the region.

Deregulation of the trucking industry in 1987 has also changed the rules of the game. Since 1987, Québec has harmonized its trucking legislation with that of the federal government. While beneficial for shippers, deregulation is creating problems for carriers who now face stiffer competition.

The adoption by manufacturers and distributors of a form of organization based on the tight flow *just-in-time* system, encourages development of a trucking industry more able to offer the reliability, timeliness and flexibility sought by customers hoping to adapt to unprecedented competition and reduce their costs.

Commercial trucking also gains from the growing intermodality of goods transportation systems. Already heavily used for the transportation of goods between regional economic agents, the industry is also involved in exchanges with the outside through local delivery and pickup.

Between 1981 and 1991, truck and rail transportation in Québec have undergone diametrically opposite changes. While commercial trucking recorded an increase of 70% on the interprovincial market and 16% on the intraprovincial market, rail freight grew by only 3% on the former and shrank 30% on the latter.

Whereas rail freight has been confined to certain long-haul markets where it is competitive, trucking now owns the short-haul business and is making major inroads on the longer-haul market.

New sharing of responsibilities

The municipal taxation reform adopted by the Québec government in December 1990 considerably altered the sharing of responsibilities between the MTQ and municipalities with regard to highway infrastructures and public transit services.

As a result of this reform, all local roads were transferred to the municipalities starting in April 1993 and measures were put in place to make this transfer as smooth as possible. Municipalities in the Montréal region became responsible for an additional 940 km of local roads. In total, they now bear the operating cost and capital expenditure of approximately 12,000 km of highway infrastructures.

The MTQ has retained responsibility for the construction, upgrading and maintenance of the major highways under its authority, or more than 1,000 km of express highways, provincial and regional highways and collector roads. The federal government and certain municipalities are assuming responsibility for a portion of the provincial

highway system, i.e. 17 km and 145 km respectively.

For public transit, municipal tax reform has meant the withdrawal by the Québec government, of the grant for the operating expenditures of public transit agencies. But the grant to the *Conseil métropolitain de transport en commun*, which covers the shortfall arising from the rate integration of the three major transit systems, has been maintained.

For the Montréal region's three transit corporations, the STCUM, the STL and the STRSM, this withdrawal of government support for the operation of public transit has significantly altered the sharing of costs among its three sources of financing: users, municipalities and the government.

Between 1981 and 1991, the government paid 42% of the public transit financing for services offered by the three transit corporations. During this period, users and municipalities contributed 33% and 25% respectively to the funding. Between 1992 and 1994, expenses of the three public transit corporations totalled over three billion dollars. The municipalities contributed 41%, a 68% increase in their share which jumped from $245 million in 1991 to an annual average of $411 million between 1992 and 1994. The MTQ share dropped to 24% and the users' contribution went to 31%. Motorists assumed 4% of the cost of public transit through their contribution to the *Fonds des contributions des automobilistes*.

With the December 1995 ending of grants to the *Conseil métropolitain de transport en commun* and of the contribution to erase the deficit of the Deux-Montagnes suburban train, and provided institutional and financial support for public transit remains unchanged, municipalities and users will have to shoulder an additional bill of $48 million. If fares do not increase on the Deux-Montagnes train, the contribution from CUM taxpayers will have to rise by 38%, while at the same time, off-Island municipalities will not contribute to the financing. Termination of these grants will force the CUM to carry an even greater share of the financing of equipment with a regional vocation and could lead to the abolition of the regional map as we know it.

The Québec government still takes part in the financing of capital costs of the transit corporations. Until the end of the 1980s, authorized investments were mainly in support of development and expansion of public transit networks. But the assets acquired over the last 25 years have aged; major investments are needed to preserve them.

The transit corporations lack the financial resources to meet these new and costly requirements, and the Québec government has recognized the need to support them. It has reviewed its program of assistance for public transit capital investment. Program amendments brought into effect January 1, 1992 were designed as a better response to the need for replacement and overhaul of rolling stock and facilities.

Government support for capital expenditure is greater for rapid transit than for the surface system. In this way, Transport Québec recognizes the regional vocation of these facilities and agrees to contribute a major portion of the capital expenditures involved in serving a population that lives outside a transit company's territory. This

same objective underlies the creation by the Québec government of the *Fonds des contributions des automobilistes au transport en commun*.

Cutting of the operating subsidy in 1992 also deprived the transit corporations of any financial assistance for school transportation. This contribution had been established in 1980 to strengthen public transit service, while avoiding the creation of a parallel system for students. Consequently, the school boards in the centre of the Island of Montréal were stricter than others in applying the rules governing access to school transportation, since STCUM services replaced it.

School boards are responsible for organizing and managing school transportation. The government funds the overall cost of transporting eligible students, morning and evening, whether they use a strictly student system or regular public transit. The choice of transportation is up to the school boards; they are free to sign agreements with public transit corporations or award contracts to private carriers. The abolition of the operating assistance program for transportation corporations thus transferred to Island of Montréal taxpayers the costs that the government assumes responsibility for almost everywhere in Québec.

The municipal tax reform has not, however, affected the program of assistance for the operation of municipal and intermunicipal transportation agencies which came into force in 1984 following creation of the intermunicipal transportation commissions. Given the fact that these bodies are relatively young and their capital assets are not subsidized, the government deemed it preferable to not impose any further financial burden on them. In 1993, of their expenditures of $36 million, 49% was paid by users, while government and municipal contributed 34% and 17% respectively.

Finally, the federal government, which has played a historic role in financing maritime, air and railway transportation infrastructures and services under its jurisdiction, is withdrawing more and more from these sectors and transferring them to private or public agencies.

Civil aviation has experienced major institutional changes. As of August 1, 1992, the management, operation and development of Dorval and Mirabel airports were awarded to a local airport authority, the *Société des aéroports de Montréal*, under a 30-year lease granted by Transport Canada.

The new directions made public by Transport Canada in 1994 will accelerate this privatization policy. The institutional and financial framework will be reviewed to obtain maximum regulatory flexibility and promote streamlining of activities. Transport Canada also intends to withdraw from purely operational activities. As well, in its February budget, the federal government announced its intention to sell CN Rail.

Major issues and challenges

The issue
EASE OF MOVEMENT

Challenge 1
Increase the effectiveness of transportation systems

Every day, some five million automobile trips take place on the highway network, which amounts to roughly 80% of the car and public transit trips by the population of the Montréal region.[4] Thus the volume of highway traffic is nearly four million cars daily. The morning rush hour accounts for 20% of these automobile trips and the evening rush hour for 26%. Pushed to the limit, the road network can no longer adequately support the transport of people and goods during peak periods.

In contrast, other transportation modes and infrastructures have a surplus capacity and a potential for the development of urban, interurban or international transportation. However, the diversity and meagre demand for several links weakens their viability.

- ***A critical link: bridges***

In ten years, nearly 260,000 vehicles have been added to the daily traffic between the Island of Montréal and its outskirts, an overall increase of 33%, thereby doubling the traffic on certain bridges and sections of highways.

Overall, the bridges across the Mille-Îles river between Laval and the North Shore recorded the largest increases in traffic with an average rise of 60%. This coincided with the rapid population growth on the North Shore. In general, the volume of traffic on autoroute bridges has risen more rapidly than that on highway bridges, a few of which even experienced a drop in traffic after tolls were eliminated in 1985.

Bridges represent one of the most critical links in the Montréal region transportation system, because the geography of the region is such that natural barriers must be crossed daily by a sizeable proportion of motorists. The 22 bridges linking the CUM with the North Shore/Laval and the South Shore lie mostly at the convergence point of several roads, which subsequently swells the volume of traffic on the bridge approaches. Ease of crossing the bridges is undoubtedly the indicator used most frequently by the public to assess traffic flow.

Pressed by a demand that exceeds capacity, bridges have become bottlenecks that slow down traffic considerably during rush hour and prompt users to change their travel schedules, which means longer rush hours. To eliminate the current tie-ups, some of which snake up to 10 kilometres long during the morning rush hour, the network would have to be supplemented by the equivalent of three highway bridges.

- ***Congestion along major routes***

Traffic has reached critical mass along most of the major routes in the Montréal region.

[4] Excluding school transportation

During rush hour, traffic flow begins to slow on the approaches to the Island of Montréal. On the island, all expressways are used at maximum capacity. In peak periods, the Metropolitan (Highway 40), the Décarie-des Laurentides autoroute (Highway 15) and the Eastern Townships autoroute (Highway 10) are congested almost constantly. In outlying regions, certain sections of highways such as the Jean-Lesage autoroute (Highway 20) near Boucherville are also clogged, problems that are independent of the capacity of the bridge-tunnel or bridges.

In general, the Metropolitan and Décarie expressways are used at full capacity morning to evening. The situation is all the more worrisome in that these routes carry the heaviest truck traffic in the region. The Metropolitan serves the CUM as a vast corridor heavily used for a wide range of economic activities. Moreover, it is a transfer point from one major highway to another. These combined functions make the Metropolitan the backbone of the regional highway system, for both passenger transport and trucking.

- ***Roadblocks to efficiency***

The problem of congestion translates into lost time for motorists and truckers, and overspilling of through traffic onto the local system.

This situation is exacerbated by the disjointed nature of the highway system, which remains incomplete and highly inconsistent in terms of capacity. For example, Highways 19 and 25 lead to urban boulevards that were not designed to accommodate heavy volumes of traffic. Other major highways overlap in places, such as the 15 and 40, between the Décarie and Laurentian interchanges.

The arterial system under municipal responsibility also suffers from problems of discontinuity or inconsistency. Because municipalities place the interests of their residents first, they sometimes tend to adopt policies that give top priority to minimizing traffic problems on their territory. Since road travel has no municipal boundaries, the flow of traffic throughout the system suffers.

The absence of alternative routes adds to the problems of bottlenecks and the effects of spillover onto the local system, leading to overly dense traffic, accidents and the need for frequent repairs. This is particularly true of the Metropolitan, which, as the only continuous high capacity east-west route, links all the north-south routes.

In addition, there are many other specific problems that hamper the efficiency of the highway system: the absence of service roads along certain major highways, the absence of shoulders on elevated infrastructures, the proximity of on-ramps and exits in densely populated urban areas, the complex design of certain interchanges and overly-short acceleration and deceleration lanes. Proposed solutions to these problems are mostly complex and costly.

- ***Saturation in the centre***

Every proposal to extend the regional highway system runs up against a major hurdle: the saturation of highways in the centre of the region, where most other major thoroughfares converge. To provide access for additional vehicles at a given

point on a fully utilized infrastructure, either an entry must be blocked at another location, or the capacity must be boosted.

However, building new expressways in urban areas or expanding existing lanes involves major difficulties in terms of planning, the environment and overall costs.

- *Underutilization of public transit*

In contrast, the region is served by public transit systems that were specifically designed to meet mass needs, particularly during peak periods. Currently these facilities are not being used to their full potential. The low population density in new residential neighbourhoods, the decentralization of employment and its failure to integrate with residential zones have given rise to increasingly complex travel patterns that are difficult to accommodate by means of public transit.

Compounding this are the attitudes toward public transit. Most people have a positive perception of the automobile, which they associate with independence, comfort and rapidity of movement. Conversely, people generally have a negative perception of public transit, which they associate with constraints on use (walking distance, waiting time, transfers and duration of the trip) and with conditions of use (vehicles jam-packed, slow, etc.). These perceptions mean that public transit users tend to overestimate the duration of their journey, while motorists have an even stronger negative bias toward public transit and underestimate the duration of theirs.

- *Resources to be harnessed*

To take full advantage of the overall transportation resources at hand, the system must be maintained in good working order and must be renovated when necessary. More efficient management and use of infrastructures and facilities calls for an integrated global approach that pinpoints the benefits and disadvantages of each mode of transport.

In order to meet this challenge, all components of the transportation networks and systems must be considered to be complementary to each other. Today, roads are used for urban and interurban transportation of both people and goods. In this context, increasing the efficiency of transportation systems implies not only making the highways accessible to a greater number of users, but also managing conflicts between various users.

In some cases, this challenge can be met by a shift from car travel to public transit for individuals, and truck to rail for goods.

Challenge 2
Promote intermodal systems of passenger transportation

Exploiting complementary modes of transportation is central to the challenges facing the Montréal region in its efforts to optimize passenger transportation networks and systems. Intermodal strategies involve efficient linking of various modes of transport: car, bus, train and Métro.

The acute problems of congestion on highways and expressways converging at the centre of the region cannot be resolved

without implementing measures to encourage motorists to switch to public transit.

According to preliminary data from the regional origin-destination survey conducted in 1993 by the MTQ and the STCUM, roughly 32,000 people used both cars and public transit in a single trip during morning rush hour. This represents only 9% of the 360,000 trips partially or fully made on public transit.

Over half of these users are passengers who make part of their trip with other motorists. The motorists in question generally park their cars near a Métro terminus or a suburban train station. Transfer parking lots may be private or public, and exist in various forms: incentive parking lots created specifically to encourage drivers to use public transit, roadside parking, shopping centre parking lots, etc.

The incentive parking lot at Radisson Métro station and the one in Brossard, just at the approach to the reserved bus lane on the Champlain bridge, fail to satisfy demand. The parking lot at the Longueuil Métro station is used at over 80% capacity, but is difficult to get to, and the one at Henri-Bourassa Métro station was just as popular but has been closed for over a year.

One thing is certain: incentive parking lots are currently insufficient, and the problem will only be exacerbated by increased restrictions on parking along residential streets.

The qualified success of some parking lots highlights the need to offer motorists efficient public transit links, together with strategically located incentive parking lots, in order to avoid traffic congestion. The effectiveness of these measures taken to promote intermodal transport between private cars and public transit will clearly hinge on the appeal of public transit services. Therefore, it is essential to step up efforts to better integrate all of these services.

Challenge 3
Improve the integration of public transit services

Public transit accounts for 1.3 million passenger trips daily in the Montréal region.

For several years now, the volume of passengers using public transit has been declining due to the territory becoming more vast, the population density falling and employment becoming decentralized. After peaking at 419 million users in 1988, regional volume fell to 390 million in 1992, a drop of 7%, or below the 1981 levels.

This drop in usage is cause for concern, as services may be curtailed and revenue from public transit fares will surely decline.

The lack of harmonization of rate policies, the absence of cost-sharing mechanisms for joint use of infrastructures and the absence of centralized information services are other factors that may deter people from using public transit and may undermine the returns on investment in the system.

With the exception of the $72 regional transit pass valid on *Conseil métropolitain de transport en commun* territory and giving access to the three major transit systems, there has been no rate integration at the regional level. Thus, on a single trip, some transit users are obligated to pay fares to two transit corporations belonging to the

Conseils intermunicipaux de transport. Fares may vary considerably from one administration to another. Moreover, rate integration applies only to the monthly pass, not to single fares. In short, the use of demand management, which could be a genuine rate strategy, remains out of reach, mainly because of the way public services are organized in the region.

The centre of the CUM is best served by public transit, since this is where the public transit systems converge. The centre is served by the Métro system, which has 65 stations on CUM territory and one in Longueuil. In addition to 156 STCUM bus routes that crisscross the Island of Montréal, two suburban trains provide direct access to downtown. The STRSM and STL networks are also designed to link with the Metro. Five regional terminals interface with the regional intermunicipal transport networks and the STCUM.

In recent years many initiatives have enhanced the quality and flexibility of public transit. These include renovation of suburban rail lines, reserved bus lanes, express buses to Métro and train stations, and incentive parking lots. These measures checked the decline in public transit use, but not completely. In fact, the number of people who use public transit to travel to downtown Montréal during morning rush hour even fell in the 1980s. Given the level of services offered, road congestion and parking costs, downtown is still the destination better able to outperform the car.

Providing services in other large hubs of activity, particularly in Laval, Saint-Laurent, Longueuil and Anjou/Saint-Léonard is quite a challenge. Because the major routes were designed to lead to the centre of these communities, passengers must often transfer many times to reach their destination.

The integration of public transit services should therefore centre on facilitating use by the population as a whole, so as to make public transit more attractive than driving.

Challenge 4
Ensure better management of road corridors

Owing to construction of homes, businesses and industries alongside the road system, some highways originally designed for through traffic now bear an increased volume of local traffic, which exacerbates conflicts with commuters in transit. Residential access lanes are proliferating, along with traffic lights and local intersections. The smooth flow of traffic and the safety of individuals has been affected, necessitating in some cases the creation of a new highway link.

These problems affect nearly a quarter of the main thoroughfares on the North Shore/Laval and on the South Shore, i.e. around 180 kilometres of roads. If urban development continues as projected, the efficiency of an additional 140 km of roads may be undermined in the long term.

If their capacity and safety is to be preserved, highway corridors intended primarily for regional and interregional traffic must be the object of concerted planning efforts. The challenge consists in minimizing conflicts between local and through traffic. Urban development alongside highways must be planned with a view to limiting direct access, intersections and traffic lights.

Challenge 5
Improve transport service for people with disabilities and reduced mobility

Concerns about the social integration of persons with disabilities and, to a lesser extent, the deinstitutionalization of people with intellectual impairments point to a growth in demand for specially adapted public transit services.

In the Montréal region, these services are currently offered by thirteen organizations: the three major transport corporations and ten intermunicipal carriers. These organizations serve 84 of the 99 municipalities in the territory studied in the Montréal region transportation plan. With 68% of the eligible clientele, the STCUM is the main player in this sector.

There are currently few opportunities for persons with disabilities to transfer to a second system and access the entire Montréal region. However, paratransit organizations occasionally serve destinations located outside their territory, i.e. specialized hospitals. Each system gives service priority to its own residents and available financial resources prohibit fully meeting their needs.

The new policy governing eligibility for paratransit services, which came into effect in 1994, standardized the eligibility criteria within the province and should eventually enhance the mobility of persons with disabilities. Nonetheless, the major challenge is to facilitate transfers between the various organizations.

Given the anticipated increase in the number of people with reduced mobility and the support for social integration of persons with disabilities, regular public transit services must be reorganized to accommodate this clientele.

A number of people with reduced mobility are ineligible for paratransit, yet public transit services are still insufficient for certain of their needs. The main difficulties they encounter are: getting on and off buses, standing in line, keeping their balance in a moving vehicle, etc.

As for city buses, the renovation of the fleet should gradually result in the acquisition of new vehicles with dropped floors that provide easier access. Owing to greater demand, these buses may foreseeably become a standard product among manufacturers. Adaptation of heavy equipment will be more costly and will be undertaken in keeping with the provincial and municipal government's ability to pay.

A first step in this direction will be taken this year in a pilot project conducted in conjunction with the implementation of the modernized Deux-Montagnes suburban train line. The Roxboro station and Central Station will then become accessible to people with disabilities.

Issue
THE COMPETITIVENESS OF THE ECONOMY

Challenge 6
Facilitate access to downtown Montréal

Downtown Montréal is a hub of intense activity whose repercussions are felt throughout the region and the province. The magnitude of the city's financial and

commercial transactions along with a solid infrastructure of corporate services and the presence of numerous large head offices make Montréal a major centre for North American and international trade.

Many international organizations are based in Montréal, including three in the transportation sector: the International Civil Aviation Organization, the International Air Transport Association, and the International Society of Aeronautical Telecommunications. The city also boasts some 100 consulates and diplomatic missions, four universities, many cultural institutions and a broad spectrum of national and international organizations. In addition to having established itself as a business capital, Montréal is internationally renowned for its cultural, academic and scientific contributions.

In order for the downtown core to achieve its full economic potential, and thus benefit the entire region, access must be broadened for the thousands of people who work or study in the area, as well as for business people, tourists and other visitors.

Challenge 7
Adequately serve satellite centres of employment

By providing nearly three quarters of the jobs in the region, the CUM has preserved its status as a main economic centre. Car trips between the periphery and the centre for work purposes have increased and are slightly longer, leading to congestion on many highway sections and bridges during rush hour.

The CUM's relative share of employment has nonetheless declined over the past ten years. This is linked to the fact that certain categories of employment, such as retail sales, construction and services necessarily follow the population. Substantial job losses in manufacturing, an industry historically concentrated on the Island of Montréal, have also contributed to this trend. Furthermore, there has been a shift in employment from the Island of Montréal to the periphery of the region in the transportation and storage sectors as well as in the wholesale sector.

Economic modernization, coupled with new criteria governing industrial sites, has steered employment toward new secondary centres. The Anjou/Saint-Léonard and Saint-Laurent hubs in the CUM territory, together with Laval and Longueuil, provided nearly 300,000 jobs in 1991, i.e. one out of five jobs offered in the region. In fact, these four centres accounted for over a third of the net growth in employment in the region between 1981 and 1991, which corresponds to a net increase of 70,000 jobs. In 1991, there were 92,400 jobs in the city of Saint-Laurent alone, compared with a population of only 72,400.

The additional volume of rush hour traffic generated by these centres has put pressure on the highway infrastructure, because public transit is mainly geared to serving the centre of the Island of Montréal.

Serving these satellite points is unquestionably a major challenge. Workers commute from many different areas, and some must transfer several times to reach their destination. Nearly as many people commute daily from the North Shore and Laval to work in Saint-Laurent as do to downtown Montréal. Residents of the North Shore and Laval must take at least three buses to get to their workplaces in Saint-

Laurent. Furthermore, because of their location and layout, industrial parks are not always accessible by public transit.

To promote regional economic growth, we must come up with public transit solutions that address these new needs, or think of more flexible formulas for collective transportation such as ride-sharing by minibus, van or automobile.

Challenge 8
Preserve the flow of interurban passenger transportation

Many people travel from one region to another for business, tourism or to take part in cultural events. Since the Montréal region is a hub of interurban transportation, it serves Québec as the main transit point for foreign destinations. Because of its spinoffs on the economic vitality of the region and of Québec as a whole, interurban travel must be developed. Much of this travel is in the form of car trips, which adds to the local traffic. Around 20 carriers offer bus service linking Montréal with various destinations in Québec, Ontario and the United States. Unfortunately, this form of travel is also affected by road congestion that is most acute during peak periods.

In 1992, nearly 1.8 million passengers used railway links within Canada and between Canada and the northeastern United States, served by Via Rail and Amtrak respectively. After Via Rail services were streamlined, the volume of passengers bottomed out in 1990. Various measures have been launched since then to attract more passengers and have resulted in an increase in volume. An examination of bus and train itineraries reveals that the North Shore and Laval are not as directly linked with other urban centres as is the rest of the region.

With nearly 8 million passengers in 1992, air transportation is another major player in interurban transportation. In recent years, many factors have transformed the air transportation sector, including restructuring of networks around major hubs, the globalization of the international air transportation industry and the forging of new alliances between carriers. These factors collectively had a considerable impact on Montréal's airport system. Today, Montréal must make a concerted effort to carve out new niches in order to revive its airport operations. The location of Montréal's Dorval and Mirabel airports poses additional challenges, particularly with regard to reducing transfer time between airports and facilitating travellers' access to the downtown core.

In terms of interurban transportation, the overall challenge is therefore to facilitate transportation for travellers entering, leaving and passing through the Montréal region. It is essential to weigh the potential and advantages of each mode of transportation, in terms of quality of services and safety, and environmental considerations.

Challenge 9
Ensure the flow of road transport of goods

As mentioned above, many factors have spurred the expansion of the trucking industry over the past few years. The efficiency of this mode of transportation is nonetheless threatened by its very popularity, which has led to highway congestion and premature wear on the roads. Because thoroughfares are already heavily

congested with cars during rush hour, truckers must adapt their schedules accordingly.

A study conducted in 1993 on the major roads surrounding the Montréal region revealed that 75% of the trucks entering the region have a destination there, whereas 25% are simply passing through. Moreover, two thirds of the traffic flowing into the region is headed for the Island of Montréal.

It is therefore not surprising that the majority of truckers use the central corridor of the highway system, i.e. mainly the Metropolitan expressway and connecting highways, via the Champlain Bridge, the des Laurentides autoroute and the Louis-Hippolyte-Lafontaine tunnel.

The Metropolitan is the most widely used corridor for transportation of goods. Daytime volume amounts to over 1,000 heavy trucks per hour. Even during rush hour, trucks can monopolize an entire lane of the Metropolitan in each direction. Therefore, trucks significantly affect traffic conditions, especially during rush hour. This situation is due mainly to the size of the manufacturing and wholesale sector on the Island of Montréal. When trucks are added to the already high volume of car traffic, the Metropolitan is congested virtually all day long.

The lengthening of peak periods on roadways reduces carriers' profit margin and the resulting costs are reflected in the price of goods. While the main effect of clogged roadways for motorists is a decline in the quality of life, for cargo transporters, the competitiveness of their businesses and the vigour of the regional economy is at stake. Companies are motivated to base their operations in Montréal, and therefore create and maintain local jobs, mainly for economic reasons. Access to efficient transportation arteries is thus a determining factor in the choice of a site, especially for distribution companies and manufacturers.

On the other hand, many people view heavy traffic as a nuisance. Residents of a growing number of municipalities have imposed restrictive measures to mitigate the problems linked to trucking. This heightened awareness within the population, coupled with the need to protect the highways and the risks associated with the transportation of hazardous materials calls for rethinking of the means of managing heavy traffic.

Once again, it is essential to reduce the competition between the transport of people goods on the highways. Priority strategies must be established and their implementation must be ensured.

Challenge 10
Contribute to enhancing the competitiveness of maritime, air and rail transportation industries

Regional economic activities call for the transportation of extensive quantities of goods, to which are added in-transit shipments destined for elsewhere in Québec or North America. A true transportation hub, the Montréal region plays a major role in the transportation and distribution of goods.

To fulfil this role, the region has a complete set of infrastructures and systems based on a variety of transportation modes: ship, rail, air and truck transportation.

In 1990, over 50 companies active in maritime shipping in Montréal created more than 11,500 direct and indirect jobs in Québec, with economic spinoffs of $1.25 billion. The shipping industry thus plays a key role in the economy of the region and of Québec as a whole.

With 50% of all container traffic in Canada, the Port of Montréal ranks first nationally, and second only to New York on the Eastern Seaboard. Montréal's future as a major port of entry is nonetheless threatened. The modernization of maritime access would help preserve the advantages of being a seaport, even though it is 1,500 kilometres from the ocean. This would mean that the St. Lawrence would have to be a safe waterway, open 365 days a year and cost effective. Moreover, the flow of heavy traffic and adequate overland access would help maintain and strengthen the port's status in North America.

A Round Table bringing together representatives of organizations and companies associated with the maritime industry was launched in May 1992 to analyze the Montréal maritime sector and to recommend a course of action. The Round Table's report on the industry was made public in August 1994.

Dialogue between players in the maritime sector is a determining factor for the future of this industry, whose activities come under federal, provincial and municipal jurisdiction and the private sector.

Railway transportation is another key industry in the region, providing 15,000 direct jobs, including slightly more than 8,000 jobs related to cargo transport and some 2,000 to passenger transport. An additional 2,000 people are employed in the transportation manufacturing sector.

Because the vast majority of the overland transport of containers to the Port of Montréal is by rail, the railways contribute to the port's leading role in intermodal transfers.

This industry has nonetheless faced numerous problems in recent years, leading to the launching in 1990 of a Round Table on the railway industry. In a report filed in 1992, the Round Table acknowledged that the availability of efficient railway service was vital to the competitiveness of the Port of Montréal. Furthermore, the report stressed the impact of competition generated by the American rail and truck networks.

The report recommended that railway companies and their employees make a concerted effort to stimulate the industry and comply with market demands. As well, it recommended that the Québec and federal governments adopt measures to ensure a more balanced competitiveness between road and railway transportation. A subsequent study for the MTQ identified municipal taxation as the main factor penalizing the competitive position of Montréal's railway industry.

It is therefore imperative that intermodal transportation be promoted and supported, particularly maritime containers, and that Montréal's advantages be maintained in order to preserve its railway facilities, its jobs and the head offices of companies in the sector.

In the air transportation industry, air freight has increased over the last ten years. *Aéroports de Montréal* estimates that a total

volume of 144,000 tonnes of freight passed through Dorval and Mirabel airports in 1991. Items handled consisted principally of telecommunications equipment, computers and semi-conductors, aircraft engines and components, clothing and mail.

In total, 51% of this air freight involved the international market, 29% the domestic market and 20% the transborder market. The last is dominated by all-cargo services that consist in the delivery of goods by use of air freight in combination with another transportation mode such as commercial trucking.

In this context, i.e. continuity in the transport of a merchandise lot by combining two or more transportation modes, commercial trucking is very often called on to complete the movement of goods. This is particularly true in the case of local deliveries and pickups. Here, development of the maritime, rail, and air transportation industries depends on the road infrastructure's ability to effectively meet the needs of intermodal transportation. Intermodal transportation will grow in importance with the development of facilities and the appropriate methods. The ease and speed of connections will be the key factors for success. Over and above contributing to the region's competitiveness, intermodal transportation could reduce pressures on the highway system.

Given the strategic position of the Montréal region as a hub for the transportation of goods, the challenge lies in improving the interfaces between highway, rail, maritime and air systems and supporting the development of suitable new technologies.

Issue

THE QUALITY OF LIFE

Challenge 11
Control air and noise pollution

Quebecers generally believe that transportation creates noise and air pollution. The population's high expectations in this area have been backed by government commitments formulated under the UN *Agreement on climate change*, the agreement to reduce nitrogen oxides, Québec's energy efficiency strategy and the MTQ's environmental policy.

On the whole, the air quality in the Montréal region remains acceptable. Over the last 15 years, we have even seen a reduction in the concentrations of some common pollutants. This decrease is due in part to improved automobile anti-pollution technology.

Nevertheless, the transportation sector remains the largest polluter in terms of carbon dioxide, one of the main gases contributing to the greenhouse effect. It is also strongly linked to the production of nitrogen oxides and volatile organic compounds, two gases that contribute to ozone formation at ground level.

In recent years, technological improvements have lessened the impact of the rising number of vehicles on air quality. Nonetheless, there is reason to question the degree to which future technology developments can compensate for the projected rise in emissions linked to increased use of cars and trucks.

Many factors point to a continuation of the upward trend in the volume and distance of travel by car and truck: products that make driving more enjoyable and minimize the inconveniences of road congestion, the widening distance between home and work, demographic growth, the *just-in-time* delivery method, and increased trade with the United States. This is why transportation is a central issue.

A further challenge lies in controlling noise pollution. Residential construction alongside highways, combined with the rise in cars and trucks on the roads, has created new noise-pollution zones. According to current MTQ standards, this form of pollution affects thousands of roadside dwellings in the region and has necessitated the installation of noise screens along 100 kilometres of express and limited access highways.

A decline in the number of trips made by car and truck is an efficient means of controlling air and noise pollution and eliminating or reducing their effects on human health. As the current form of urban development makes the provision of public transit more difficult, this challenge also calls for an examination of how to consolidate the urban fabric and better integrate the various urban functions.

Challenge 12
Protect natural environments and farmland

All decisions in the area of transportation must take into account the impact on the natural environment and farmland.

The river system, favourable climate, topography, and fertile soil give the region

high agricultural potential and favour diversified flora and fauna, including some rare species.

Nonetheless, natural environments are becoming increasingly rare as a result of encroaching urbanization. At present, the highest number of endangered species of regional flora and fauna is found in Québec.

Another repercussion of urban development is a decline in the amount of farmland. The region's agricultural zone, one of the richest in Québec, shrank by 26,000 hectares between the early 1980s and 1991, a drop of over 12%.

The challenge at hand is to protect the natural environments, a necessary condition for safeguarding biological diversity in the region. Farmland must also be preserved, since farming is a major economic activity. These concerns must figure in choices regarding the development and planning of the region.

Challenge 13
Reduce energy consumption

In 1992, nearly a quarter of the energy consumed in Québec was attributable to transportation, 82% of it road transportation. Despite the progress in vehicle energy efficiency, road transportation's share of energy consumption has been rising steadily for the past twenty years due to increased car ownership and more frequent use of cars.

Given that energy resources are nonrenewable, the government of Québec has adopted an energy efficiency policy aimed at reducing energy consumption in Québec by 15% between now and the year 2001. The transportation sector is expected to account for 29% of the overall energy reduction objective. Many solutions have been proposed to attain this objective, including measures to encourage consumers to switch in great numbers to public transit, and other strategies involving transport of goods by train. Reducing energy consumption is beneficial not only for the economy but also for the environment, since it helps control air pollution.

Bicycling and ridesharing may also contribute to reducing the number of car trips. A wide range of measures can be envisaged to support the growing demand for these travel modes, from a deliberate increase in the costs associated with automobile use to the creation of bicycle lock-ups and the installation of lockers and showers at places of work and study.

Challenge 14
Minimize the effects of traffic spillover on local roads

The severity of roadway congestion has triggered another phenomenon: traffic spillover on local roads.

Each day, motorists use local roads and residential streets to shorten travel time. In the same way, streets adjacent to Métro stations are often clogged with motorists looking for parking spots. This scenario was unforeseen when the roads were designed, and local residents are concerned for their safety and tranquillity.

However, the use of alternative routes to circumvent road congestion does have its advantages: it relieves pressure on sections of the expressways and major thoroughfares leading to the centre of the CUM.

To preserve citizens' tranquillity, it is essential to better manage road traffic, to install conveniently located and easily accessible incentive parking lots, and to devise ways to manage demand.

Issue

EFFICIENCY AND EQUITY OF FINANCING

Challenge 15

Preserve the value of investments above all

Given the aging and current deterioration of the transportation infrastructure as a whole, upgrading the road system and transportation facilities must take priority over implementation of new projects.

The transportation systems and networks in the Montréal region constitute a major asset which is the result of investments by the government and municipalities over the last decades. The replacement value of the highway system under MTQ authority is set at over $5 billion and that of the Métro at about $4 billion.

Because of their age, a number of these infrastructures and facilities, which form the backbone of regional transportation systems, require major repair and upgrading.

Since 1988, the average annual expenditure on upgrading of the highway system has increased fivefold and reflects the priority placed on repairs. Estimates for the next 15 years call for the expenditure of $50 million a year to repair the highway system. Municipalities contribute sizeable amounts to local highways and thoroughfares.

As for public transit, since the late 1980s the MTQ has given priority to maintaining and improving existing services rather than developing or expanding the networks. Considerable investment is still required given the age of the public transit infrastructures, particularly the Metro. The quality, reliability and safety of services hangs in the balance.

The Métro will require investments of up to $1.2 billion by the year 2011. Two thirds of this amount would be earmarked for the 5-year replacement of first-generation rolling stock which will reach the end of its useful service life in 10 or, at best, 15 years. Upgrading the bus fleets of the three transit corporations would call for an additional annual outlay of $35 million.

These are major investment needs. From the budget standpoint, the MTQ's manoeuvring room is limited by the fact that a large portion of its contributions are used to repay loans made to finance previous investments. Slightly more than $100 million a year goes to service the Métro debt, whose financing was spread over 40 years.

The upkeep of existing infrastructures is part of a sound financial management strategy intended to avoid the far greater costs that would result from a major deterioration of infrastructures and facilities.

The overall budget of the MTQ will be reduced by about 10% over the next three years. More than ever, it must review its methods, reassess its contribution in each activity sector and try to make most of existing transportation facilities and infrastructures.

Even so, the size of the budgets required to maintain, upgrade and improve the system considerably erodes the resources available for the development of new services. This situation must be taken into account when intervention priorities are set or new financing sources are studied.

Challenge 16
Share costs to optimize the use of resources

Efficient financing means making optimal use of the available resources and assets. Getting the highest return on expenditures and investments, in this case the existing infrastructures and facilities, is the first rule of sound financial management.

Each player in the Montréal region transportation sector has a responsibility to fulfil its mission. This includes better coordination in terms of planning and operating of regional services and infrastructures so as to yield maximum returns on expenditures and investments.

Whether it be with regard to highways or public transit equipment, the fact that several partners are involved makes it difficult to pool abilities, come up with financing and conduct dialogue on a regional scale. Management and rate-setting of the two major transportation modes should be part of a common strategy. Activities affecting one mode can have major impacts on the other, particularly on its utilization.

This challenge raises the complex issue of the effects of spillover from the use of certain transportation systems by nonresidents of the municipality that funds or contributes to the system. The moment this situation leads to decisions that go counter to optimal use of networks and systems, the equity of financing becomes closely linked with its efficiency.

Moreover, development is often valued higher than preservation and upgrading as a means of optimizing existing systems and networks. In the Montréal region, road work, particularly highway projects, often offer the possibility of added-value for nearby homeowners. Given the strong pressures toward urbanization in the Montréal region, this aspect takes on greater importance here than in most other regions of Québec. The numerous requests to extend highway sections and construct interchanges testify to this phenomenon.

At a time when multimodal and integrated planning, demand management and the need to increase public transit use are on the agenda, it is crucial that the same logic be applied to the financing of capital investments in both the highway and public transit sectors.

Challenge 17
Respect the population's and business's ability to pay

In the past, the public sector was chiefly responsible for the development, operation and maintenance of transportation networks and systems. However, the state of public finances has necessitated a rethinking of the fundamental issues surrounding the level of government funding for transportation, and the supplementary contributions that can be solicited from the private sector.

The main challenge in terms of funding for transportation is to adequately respond to needs while respecting society's ability to

pay, and refraining from burdening future generations with debt.

Today, the pressure on Québec taxpayers is such that substantial tax hikes would most likely stunt economic growth. Therefore governments have very little leeway to raise income tax and business taxes.

This situation is all the more constraining because individuals and businesses are increasingly being forced to adapt to new social and economic conditions. Despite being sizeable, budgets earmarked for transportation in the Montréal region fall far short of meeting these requirements. As already mentioned, the investment required to implement development projects under study by the MTQ or those requested largely exceeds the department's budgetary capacities.

Therefore, the choices to be made are subject to budgetary restrictions that call not only for the setting of priorities but also for consensus between decision-makers and users.

If expenditures cannot be brought into line with the available budgets, we must innovate and seek nontraditional sources of funding. A wide range of solutions have been applied in countries grappling with a transportation funding crisis.

Given that improved accessibility has been known to increase the value of real estate, certain countries have opted to levy an additional property tax, based on public transit or highway services. Other administrations have sought funding for transportation from businesses, particularly by means of contributions pegged to payroll, along with car pools or partial defraying of employees' public transit expenses. Further measures consist in additional fuel taxes, and hikes in the cost of driver's licences and vehicle registration. In fact, Québec adopted a similar measure with its creation in 1992 of the *Fonds de contribution des automobilistes au transport en commun* (Motorists' contribution fund for public transit). In addition, many forms of urban toll systems have been applied throughout the world.

Thus a range of mixed formulas bringing together the private and public sectors can be examined. Partial privatization of certain infrastructures or services is one such formula, although full privatization is rare.

The challenge at hand is to find fair and effective financing formulas that respect people's and business's ability to pay, and that enable both parties to reap the benefits of adequate transportation services.

Challenge 18
Make the costs of services more visible

It is essential that people be informed of the real costs of services and how they are funded. This will enable them to connect the services they use with the taxes they are asked to pay.

The financial situation of the Montréal regional transportation sector is currently difficult to convey because many public administrations share expenditures and most of the amounts paid by the government of Québec comes from consolidated revenue rather than from income directly collected for allocation to the transportation sector.

Awareness by consumers of the real costs of services should allow them to better understand the choices made and will promote responsible attitudes and behaviour in the area of transportation.

Recommended orientations

Several issues must be considered in transportation planning in the Montréal region. Of course, ease of movement is a major one, but just as important are economic competitiveness, the quality of life and equitable and efficient financing.

As we have just seen, the challenges related to these issues are many and complex. This analysis shows that, transportation priorities over the next few years must be set in the context of a comprensive view of regional development. Given the budgetary constraints with which the MTQ and its partners must contend, creativity is crucial, and the players must step up their efforts to provide the Montréal region with the transportation services that are essential for economic prosperity and the well-being of the population.

Based on its analysis of the situation, the MTQ is recommending a number of orientations to its partners, to guide them in choosing the preferred interventions for the next 15 years.

The orientations are:

- ☐ Place priority on preserving and optimizing existing transportation networks and systems.
- ☐ Favour interventions that support the economic competitiveness of the region and of Québec as a whole.
- ☐ Favour interventions that promote revitalization and consolidation of the central area of the city and facilitate attainment of environmental objectives.
- ☐ Adapt the search for financial solutions to clearly defined objectives and priorities.

Orientation 1
Place priority on preserving and optimizing existing transportation networks and systems

If current residential trends continue, road congestion should rise considerably over the next few years. Demographic growth and the dispersal of residential areas and workplaces, together with growth in car ownership, are contributing to the deterioration of road traffic conditions.

Trucking should continue to expand, at least over the short and medium terms. If nothing is done, the cost of road congestion will erode the competitiveness of the region and of Québec as a whole.

Over and above the scarcity of financial resources, development and environmental constraints make the construction of new infrastructures an increasingly unlikely possibility.

Because the most heavily used infrastructures are located in a dense urban

area, modifying them to increase their capacity is usually expensive. Plus the fact that the increased capacity would not necessarily produce significant gains in traffic flow, since many motorists who use alternative routes to avoid traffic congestion could return to swell the ranks of current motorists once the work was completed. In no time, these roads would be saturated once again and there would be little time saved elsewhere on the system.

In contrast, existing public transit systems and networks, such as reserved bus lanes, suburban trains and the Metro, have untapped potential, or can at least be developed at a relatively reasonable cost. The utilitarian value of these assets must be increased as driving conditions deteriorate.

Under these circumstances, a preferred option would be to focus on the efficiency of existing transportation systems and networks by maintaining them in good condition. These systems could thus be used safely and to their fullest potential, and the higher costs of subsequent reconstruction would be avoided altogether.

Furthermore, it is recommended that the necessary improvements be implemented so as to take full advantage of the existing infrastructures and transportation facilities, before undertaking more costly development projects. These improvements must encompass the management and coordination of transportation services as a whole.

Most of the time, the highway system is only unable to meet demand for a few hours a day. The most viable and effective solution, therefore, is to reduce car use, particularly at rush hours. Doing so means offering motorists satisfactory alternative solutions.

Without a doubt, in many cases public transit can replace the car, especially given that a second car is mainly used for travel to work. A key element of this orientation is any measure that encourages a transfer toward public transit.

First and foremost, public transit must be made appealing, reliable, comfortable and rapid. Transfers between transportation modes must be efficient and seamless. Adding reserved lanes, incentive parking and bus shelters will also contribute to optimizing collective transportation.

There must be an integrated equitable rate structure that gives access to all the region's public transit systems with the purchase of a single ticket.

Last, the question of public transit must be approached from a different angle at the regional level. The answer is not new costly infrastructures, but flexible and realistic solutions that are more easily adaptable to the changing demand. This would entail limiting the number of transfers between departure and destination points, and providing a direct route when justified by demand. It could even mean granting the different carriers access to the main poles of employment and activity.

For some types of movements, the car is still the most efficient and most practical transportation mode. However, we can try to increase the occupancy rate, i.e. increase the number of people per car without raising the number of cars and thereby reduce traffic congestion. This approach, which would enable more efficient use of roads,

could be extended to include *vanpooling*, a collective transportation mode by van or minibus. Before we can implement this, however, the population must be induced to change its ways.

In terms of the highway system, it would be timely to invest in improvements to allow smoother traffic flow on existing highways, e.g. modifying routes and infrastructure geometry and adding shoulders and emergency lanes. It is equally important to maintain the capacity and safety of major highways through sounder planning of urban development along these corridors. There is also a potential for dynamic traffic management systems.

At the same time, there is a need to promote the implementation of flexible schedules and the reorganization of work and study activities in order to reduce the number of car movements during rush hours. Strategies include changing travel times and/or altering the type and frequency of travel.

Orientation 2
Favour interventions that support the economic competitiveness of the region and of Québec as a whole

With nearly half of all jobs in Québec, the Montréal region is the province's largest job pool.

In addition to being a major manufacturing centre and a driving force behind Québec exports, the region is also a seat of innovation and higher learning.

Many jobs are concentrated in high-technology sectors, research and development, financial services, communications and specialized corporate services. In addition, Montréal is a cultural capital with a far-reaching reputation. The region is also a crossroads for commercial and international trade, mainly in the area of container traffic.

In order to fulfil these roles most effectively, the Montréal region must offer efficient transportation services at the lowest possible cost. Furthermore, if the region is to take advantage of market globalization, it must expand its contacts with other large cities in the world and external markets.

Transport of goods hinges on efficient links all along the transportation chain, including trucking, together with a full range of facilities and infrastructures to ensure interface between the various modes of transportation. Given the organizational restructuring within the manufacturing and trade sectors in accordance with the *just-in-time* delivery method, there is reason to consider giving priority to trucking on certain highways at specific times of the day.

More congestion and longer rush hours have added to the conflict between cars and trucks on the express highways. As the backbone of the regional highway system, both in terms of transporting people and goods, highways 40, 10 and 15, particularly the Metropolitan, are the most affected. Trucks cannot easily reroute, since most are headed into or away from the Island of Montréal. So for economic reasons, it is important to keep them flowing smoothly along these infrastructures.

In fact, it is easier to offer motorists practical alternatives in the form of public transit. This orientation corresponds with

the objectives of competitiveness and the quality of life.

It must be kept in mind that in the case of interurban transportation, the quality and efficiency of the structures catering to business people and tourists is crucial to the region's quest for external markets, dissemination of information and efficient trade—the mainstay of economic competitiveness.

For this reason, it is important to ensure efficient connections between downtown Montréal and the Dorval and Mirabel airports, for people and for goods.

Orientation 3
Favour interventions that promote the revitalization and consolidation of the territory at the city centre and facilitate attainment of environmental objectives

Land use planning permits comprehensive management of activities in a given area in order to develop and make the most of its resources.

However, land use planning is not the only tool for economic growth. The way space is used must also contribute to enhancing the quality of life, for example, the habitat, green spaces and services.

On the other hand, land use planning choices could entail significant costs. Among other things, urbanization requires major investments in new infrastructures—including transportation infrastructures.

Over the last few years, accelerated urban sprawl in the Montréal region has led to higher costs. To keep pace, the government and the municipalities have often been forced to neglect maintenance and repair of existing infrastructures. Today, these infrastructures call for massive investments to support revitalization of the oldest urban areas.

Consolidation of the urban fabric would facilitate allocation of financial resources to meet the need for reinvestment in existing infrastructures, including the Métro system. At the same time, it would reduce pressures to extend the existing road system and would create more favourable conditions for public transit service on the territory.

It is increasingly difficult for public transit bodies to provide quality service at a cost consistent with the public's and governments' ability to pay. The problem is all the more serious because a reduction of services could reduce the mobility of less affluent citizens.

Finally, consolidating the urban boundaries would support the attainment of environmental protection and energy efficiency objectives, the growing use of cars being counterproductive to their attainment.

All these findings suggest the time has come to promote urban planning that supports optimal use of existing transportation systems and networks by, for example, strategically locating poles of activity close to the least-used Métro stations. Intervention priorities should be defined in order to promote the consolidation of the urban fabric and the competitiveness of the regional economy.

This would make it possible to secure a renewal of customers for these publicly

owned investments and in this way reduce the net costs for society as a whole. Furthermore, an increase in public transit ridership would allow for better service, not to mention the benefits for the quality of life and the environment.

Far from opposing the interests of municipalities in the outlying areas, the revitalization of downtown Montréal can help to re-establish the crucial balance needed for economic growth and the preservation of the quality of life throughout the region. The deterioration of urban spaces can only harm the Montréal region's international standing. But the region's future depends in large part on the vigour of its centre and its ability to attract organizations and companies of international scope.

Globalization of world markets and changing economies have created strong competition among the major metropolitan centres. Each seeks to attract the leaders and acknowledged experts in activity sectors with good potential on international markets. The level of transactions conducted from a metropolis depends more and more on the presence of influential brainpower, and quality of life is often a determining factor in deciding where to locate. But quality of life is conditioned by such factors as the ease of getting around comfortably and safely.

Montréal already has several pluses to offer. The diversity and density of activities located there make its core one of the most vibrant. Public transit services contribute greatly to this vigorous activity. In return, this critical mass of movements enables public transit companies to maintain the quality of their services.

Preserving and strengthening the vigour of the centre will produce spinoffs of benefit to the entire region and even the whole of Québec.

Orientation 4
Adapt the search for financial solutions to clearly defined objectives and priorities

The financial crisis that is affecting the public sector has necessitated a closer look into the cost of public services and a search for innovative financing methods.

Enlightened debate on this issue demands thorough knowledge of the costs involved and an in-depth assessment of the financial impact of various transportation services. Users of these services, i.e. people and business, must be included in this debate.

The planning, management, rate-setting and financing of public transit and highway transportation must not be carried out as separate operations. Interventions in one area can have major impacts on the other.

The challenges and issues of the coming decades demand that planning be carried out in a multimodal perspective and integrated into a clear vision of regional metropolitan development. In particular, the management and rate structure of the two main transportation modes must have a common strategy.

Regional or local participation in the costs for both highway and public transit projects could lead to better coordination of choices as public officials draw up their transportation policies and strategies. It could also foster greater effectiveness of the interventions affecting each transportation

mode and greater complementarity between them.

Analysis of various sources of funding and cost-sharing must centre on clearly established intervention objectives and priorities that are shared by the largest possible number of players.

Given the state of government finances, there must be a maximum return on investment expenditures, that is, on existing infrastructures and equipment. The MTQ has made this one of its strategic objectives. Consequently, financing methods must be found to induce the parties involved to make decisions or promote projects that support the optimum use of networks and systems.

The principle of equity among the municipalities also underpins the search for solutions that re-establish a degree of balance between the municipalities and the region. The CUM cannot be expected to bear the full burden of the cost of public transit facilities and services which cover the entire region. Cost and revenue sharing should be reviewed in light of the financial impact of system utilization by non-residents.

Financing methods for transportation infrastructures must also be reviewed. The current public finance situation is tied to various factors, including the level of service that society has decided upon and the way it has chosen to finance this service. For example, while we are still paying for the costs of building the Metro, sizeable sums are being spent on its renovation. This approach significantly reduces the government's leeway to develop new services and adapt existing services to new social and economic realities. This situation must be remedied.

There is a pressing need for a reform of the methods used to organize and finance public transit in the Montréal region. Such a reform should lead to a framework for the planning and management of public transit systems in a metropolitan context and stable and equitable financing of their operations on a regional scale.

As top priority will be given to repairing and improving existing networks and systems, choices must be made regarding the development projects to be implemented. These projects will be ranked in order of priority and must ensure maximum spinoffs at the regional level as much for the mobility of people and goods and the quality of life, as for economic competitiveness. Cost sharing and new financing methods should therefore be used to achieve these objectives, while bearing in mind people's and business's ability to pay.

The Montréal region transportation plan : issues and challenges

Ease of movement

- Challenge 1 — Increase the effectiveness of transportation systems.
- Challenge 2 — Promote intermodal passenger transportation systems.
- Challenge 3 — Facilitate the integration of public transit services.
- Challenge 4 — Provide better management of highway corridors.
- Challenge 5 — Improve transportation services for disabled people and those with reduced mobility.

Economic competitiveness

- Challenge 6 — Facilitate access to downtown Montréal.
- Challenge 7 — Provide adequate service to satellite employment poles.
- Challenge 8 — Maintain a smooth flow of inter-city passenger transportation.
- Challenge 9 — Provide a smooth flow of road traffic for the transportation of goods.
- Challenge 10 — Contribute to improving the competitiveness of ship, rail and air tranportation industries.

Quality of life

- Challenge 11 — Control atmospheric and noise pollution.
- Challenge 12 — Protect green spaces and agricultural land.
- Challenge 13 — Improve energy efficiency.
- Challenge 14 — Minimize traffic spillover onto local roads.

Effective and equitable financing

- Challenge 15 — Above all, maintain the value of investments.
- Challenge 16 — Share costs in a way that ensures optimum use of ressources.
- Challenge 17 — Respect the ability of the population and business to pay.
- Challenge 18 — Make the cost of services used more visible.

Proposed orientations

1. Give priority to preserving and optimizing existing highway networks and systems.
2. Favour actions that support the competitiveness of the regional economy and that of Quebec as a whole.
3. Favour actions that help revitalize and strengthen the urban core and promote the attainment of environmental objectives.
4. Tailor the search for financial solutions to clearly defined priorities.

An integrated, shared vision

Potential action scenarios

Transportation efficiency in the metropolitan region is up against some fundamental hurdles. While researchers in the rest of the world are developing electric vehicles, intelligent remote-control systems and on-line travel management, some basic problems here remain unsolved. Yet, the necessary methods, tools and technology are within our grasp. We must make the appropriate choices and move into action — the region's prosperity, quality of life and success as an international player all depend on it.

A resolute step forward: adopt new ways of doing things

Motorists and public transit users are looking for better utilization of our existing infrastructures and facilities. Why should a resident of the region need to buy two transit tickets for a single trip? Fare structures should be more logical, easier to understand and a closer reflection of the distance and quality of service used. Similarly, why must motorists get stuck in a traffic jam before discovering that they should have taken another route? Why do motorists have to wait for the lights to change two or three times just to get across certain key intersections in the highway system? Information technologies and dynamic traffic management systems already exist that can substantially reduce these annoyances.

For a city the size of Montréal, we use too little of these technologies, since the need for such investment has not been understood. When it comes to transportation, the public looks for reliability, comfort, speed and safety. This requires infrastructures and facilities to be in sound condition. Users are intolerant of hold-ups caused by roadwork, so building new roads has often taken precedence over repairing the existing ones.

Business also needs fast, reliable flexible services if they are to remain competitive. Allowing traffic congestion and delays to multiply can only prejudice the region's economic vitality.

The issues in question highlight the need to reduce, or at least stabilize, the number of cars on the highways, particularly at rush hour. We must leave sufficient space on the highways for trucks and business travellers who must use a car. The vitality of Montréal's airports and the Port of Montréal are also at stake.

MTQ's preferred strategy

The MTQ believes the best strategy is to optimize existing networks and transportation systems. Huge, sustained investment will be needed over the next fifteen years to maintain and preserve infrastructures and equipment. This will call for a large portion of the MTQ's budget for the region. We must therefore use our creativity and imagination to find realistic and effective solutions to the other challenges.

Short of calling for new sources of funding, these constraints leave little room for development projects in the highway and transportation systems, ones that the public generally find the most appealing. We cannot, however, lose sight of the fact that funding from other financial sources will be just as tight, due to the fragile balance in the taxation system.

Meeting these unfulfilled needs and adjusting to the forecast medium- and long-term increases in traffic, public officials have no other option: they first must make better use of the existing facilities.

To succeed, the region must equip itself with demand management tools, so as to guide choices and ensure optimal use of the available infrastructures and facilities. This also implies more emphasis being placed on intermodal transportation, both for passengers and freight.

This strategy necessitates passenger and freight transportation being dealt with simultaneously and the various networks and transportation systems being planned and managed with complementarity in mind. More than ever, the MTQ and its public and private sector partners must form a common approach resolutely focused on movements within the metropolitan region, while leaving room for local initiatives to meet the needs at that level.

Success is conditional on consistency in transportation strategies and policies. This implies setting up institutional and financial mechanisms that will facilitate the implementation of the hoped-for actions. These mechanisms would necessarily include a form of arbitration between public transit fare schedules and the cost of using an car. There must also be more equitable sharing of the cost of public transit among municipalities and users, and an integrated fare schedule for the whole of the metropolitan region. In short, it is time to reform the way urban passenger transportation is organized and funded.

Under the circumstances, and taking into account the challenges facing us, the MTQ's preferred strategy should give the best results concerning the performance of the transportation networks and systems, the environment and the public's quality of life, regional economic competitiveness, and the revitalization and consolidation of the territory at the heart of the city.

Streamlining public spending is currently an essential condition for attaining economic growth targets and improving the public's well-being. The new ways of doing things and changes in behaviour demanded by the current situation should gradually enable the Montréal region, and Québec as a whole, to gain room to manoeuvre and give itself enviable international status. The Montréal region is the economic metropolis of Québec: the MTQ intends to work on developing an integrated vision of transportation that is worthy of the region's driving role in the Québec economy.

To stimulate ideas and open up debate, the MTQ is proposing three intervention scenarios.

In these proposals, the MTQ limits itself to capital expenditure programs that it can finance itself as manager and operator of transportation infrastructures, and to those in which it can contribute financially by way of capital expenditure assistance programs. The other types of intervention proposed by

the MTQ fall under its responsibilities linked to planning and to transportation legislation and regulations.

More exactly, they are broad outlines built up from the analysis and available knowledge of projects and measures. The timeliness and feasibility of these scenarios are not adequately explained in every case. This work will continue over the coming months, in close cooperation with regional decision-makers. In 1996, this will lead to the adoption of the MTQ's 1997-2011 intervention plan for the Montréal metropolitan region.

Scenario 1
ACCOMPLISH MORE using available resources

The first of MTQ's proposed scenarios is conditioned by its budget. This is a minimal scenario, one that reflects the reality of public finances.

First, the MTQ intends to optimize the performance of its own infrastructures by systematically carrying out the necessary maintenance and repair work, and then executing improvements to make them safer and more efficient.

The MTQ also recognizes the complementary role of certain major arteries under local responsibility in regional and intercity transportation of passengers and freight. It therefore proposes to help finance investment aimed at maximizing the carrying capacity of these arteries.

Moreover, the efforts required to optimize existing networks and transportation systems will demand that first priority be given to improvements that are likely to increase the use of public transit. The range of possible interventions is large, from action strategies aimed at altering people's perception of public transit, through improved conditions of use and area served, to the adoption of territory development standards that foster the establishment of quality public transit services that can compete with the car.
The MTQ will intervene in this sector by way of subsidies to finance public transit capital projects and for operating services taken over by the intermunicipal public transit councils.

Optimizing the networks and transportation systems will also raise numerous questions about the way urban passenger transit systems are planned, managed and funded in the Montréal region. This consideration along with the coming termination of certain public transit subsidies has caused the MTQ to rethink the way this type of transportation is organized and funded. The MTQ is convinced that the proposed reform will enable the region to resolve many problems and help it face future challenges.

Lastly, the MTQ gives special attention to every aspect of freight transportation, which is primarily a private sector activity. The federal government's new orientations have led the MTQ to reassess it role in this field, and urges all those involved in rail, sea and air transportation to join with it in developing an action strategy capable of sustaining the economic development of the region and of Québec as a whole. In regard to transportation by road, the MTQ intends to set up mechanisms that promote better management of the highway infrastructures and support the development of intermodal transportation.

Highway maintenance

Highway maintenance, aimed at keeping the highway network operational, comprises two facets: summer and winter. The MTQ assesses it will have to allocate some $22.4 million a year to maintain the 1,117 km of highways under its responsibility in the Montréal region.

Estimated costs

Annual average: $22.4 million
1997 to 2011: $336

Highway restoration

Highway restoration encompasses major projects aimed at maintaining or reestablishing the integrity of the roadway and structures, and prolonging their useful life. For the roadway, this mainly involves resurfacing, reinforcing and reconstructing, whereas the structures need maintenance work to preserve their condition or upgrade their carrying capacity.

Given the age and intensive use of a large number of infrastructures in the Montréal region, the forecast needs for restoration are relatively high. The budgets required to meet these needs are assessed at $49.7 million per year for the period 1997 to 2011.

Budget forecast

Annual average: $49.7 million
1997 to 2011: $745.5

Preservation of public transit infrastructures and facilities

The MTQ currently finances a significant portion of public transit corporation investment in asset maintenance. For example, it helps pay for the replacement of worn out buses, as well as fixed equipment in the Métro and the cost new rolling stock.

It is relatively easy to forecast the investment needed for replacing buses owned by the three transit corporations, based on vehicle age and technical characteristics. The investment will be huge: the MTQ estimates it will need to spend more than $600 million between 1997 and 2011, an average of $40 million a year.

However, it is more difficult to accurately assess the needs for preserving the Métro. This technology is still reasonably new to Québec, and there are few points of comparison in the world for establishing correlations between use, age and wear of the infrastructures and the equipment. Nonetheless, the MTQ and the STCUM conducted a joint study to assess the needs in the medium and long terms. According to this assessment, an annual investment on the order of $22 million will be needed to keep the Métro in good condition, not counting replacement of rolling stock. In ten to fifteen years' time, the Métro's 336 MR-63 cars alone will need an investment of some $800 million, an average of $161

million a year, if the whole fleet is replaced over a five-year period. The STCUM expects to have to start replacing the cars between 2007 and 2012, at which time they will have been in operation for between forty to forty-six years.

The MTQ forecasts its total budget will be close to $2.5 billion for capital expenditure between 1997 and 2011. The amounts it considers it will need servicing the current debt and financing capital asset programs to which it is already committed, excluded bus replacements, would eat up 58% of this budget. That leaves $1.1 billion for these new initiatives.

If the Métro cars have to be replaced within this planning horizon, the expenditure just to maintain assets could exceed $1.3 billion. Even without replacing the Métro cars, spending would still account for $1.1 billion, i.e. about the same as the MTQ's overall budget for capital assets.

Budget forecast

1997 to 2001
Annual average: $35.2 million
Total: $175.8 million

2002 to 2006
Annual average: $81.7 million
Total: $408.6 million

2007 to 2011
Annual average: $100.9 million
Total: $504.6 million

1997 to 2011
Annual average: $72.6 million
Total: $1,089 million

Improving passenger transportation systems and networks

The available credits for new improvement initiatives and development of the highway network are assessed at $376.5 million for the period 1997 to 2011, an average of $25.1 million a year. This amount is about the same as the average annual expenditure between 1988 and 1994 for highway infrastructure improvements alone.

In public transit, if the forecast investment for preserving the assets were implemented as planned, the MTQ's budget would not be sufficient to allow funding of new improvements or developments. This situation could eventually force the MTQ to transfer part of its budget for improving and developing the highway network to the capital budgets of the public transit systems and networks. In such a situation, it is difficult to visualize any expansion projects in the networks and transportation systems. We should instead be thinking in terms of making better use of existing equipment and infrastructures.

Budget forecast

Annual average: $25.1 million
1997 to 2011: $376.5

▪ Dynamic traffic light management

In 1996, the MTQ will offer those municipalities whose major thoroughfares border the Décarie and Metropolitan expressways a $2 million contribution to encourage them to install dynamic traffic light management systems on these arteries.

The funding would cover up to 50% of the cost. These systems minimize congestion by calculating the best traffic light sequence, based on traffic conditions on a given artery or network.

This technology is of particular interest at the regional level for at least two reasons. First, as the region's major highway system cannot cope with demand, the local network must take the overflow at certain periods of the day, and carry both regional and through traffic. Moreover, this spillover is regularly intensified by diversion of traffic onto local roads, directed there in peak periods by traffic management systems installed on the most congested sections of the highway network. There is reason, therefore, to maximize the carrying capacity of the local network and support the installation of systems to provide an interface between the expressways and the major arteries under local control.

These measures not only make better use of the highway system by facilitating traffic flow, but also help cut down on wasted time, fuel consumption and atmospheric and noise pollution.

The MTQ plans to continue subsidizing this type of investment beyond 1996. The assistance program targets key corridors on the Island of Montréal and on the North and South Shores which are of regional interest. The planning and management of these systems will be accomplished in cooperation with the MTQ's municipal partners.

On the basis of equally shared costs, the MTQ expects to give municipalities about $1 million each year, i.e. a total contribution of $15 million from 1997 to 2011. According to the MTQ's assessment, this investment, when combined with municipal contributions, would be enough to cover that part of the highway system presenting the test potential for this type on management.

- **Management of highway corridors**

The MTQ's studies and consultations from almost every corner of Québec have shown the need to establish a closer link between highway management and territory development. Urban planning and the development of land bordering on major highways pose serious problems for safety and traffic flow. These problems result from conflict between through traffic and local traffic, which wants more access points and intersections.

Techniques for managing highway corridors must be developed to preserve the conditions of use of the highway and ensure the quality of life of those living alongside these roads. To date, the MTQ approach has aimed at adopting concrete measures, based on seeking out a consensus among the authorities involved. In 1993, the MTQ applied this philosophy to an information and consultation program with several regional municipal counties. This initiative helped the municipalities become aware of this particular problem, established dialogue on understanding of the issues and identified ways of protecting and managing the highway corridors.

In the near future, in conjunction with municipal regional counties and municipalities, the MTQ proposes to examine changes to the *Act respecting land use planning and development* and the *Highways Act* to prevent future development alongside major highways from undermining its capacity and safety. This objective can

only be attained through better planning of the following aspects: structural uses that generate traffic and the hierarchization of the highways, physical development of land bordering on the highways (building set-back, private entries, parking, intersections, etc.) as well as the sharing of infrastructures among the various users (trucks, cars, public transit, cyclists and pedestrians).

Lastly, when restoring or upgrading a highway infrastructure, the MTQ hopes to get agreement with municipalities and roadside property owners on standardizing noncompliant accesses, and thus improve traffic flow. The costs of this corrective measure would thus be minimal.

- **Improvement of public transit services**

Despite the sizable anticipated benefits from improving the highway system, they will most probably be unable to keep pace with expected demand. Special effort must be made, therefore, to implement projects and measures that foster greater use of public transit services.

The bus is the mode of transportation with the highest occupation rate among vehicles and which consumes the least space on the highway infrastructures. Depending on the housing density on the territory to be served, the reasons for travelling and the points of origin and destination, the bus can be a valuable alternative to the private car.

An individual's interest for this mode of transportation will vary with his/her environment. In some cases, it may be more advantageous to make the entire journey on public transit. In other cases, public transit would be interesting for only part of the journey. In either case, installing reserved bus lanes has advantages, since they can reduce bus travel time and improve the flow and schedule regularity of the service, all of which encourages switching to this type of transportation.

The installation of express lines and bus priorities, such as systems allowing bus drivers to control traffic light cycles, are other means of achieving the same objectives.

These interventions carry advantages for both the clientele and the operator, in particular, they can cut down on the number of buses needed on any one route by evening out the occupation rate. Overall, they reduce operating costs.

Constructing incentive parking lots also helps improve public transit's conditions of use and relative performance. To this end, lots must be located upstream of the traffic congestion, as a complement to rapid public transit systems (suburban trains, Métro, reserved bus lanes and express bus lines).

Users are also sensitive to the conditions of where they wait for buses, the Métro or commuter trains. Redeveloping terminals, stations and bus stops can help improve the public's perception of public transit services.

Public transit corporations must currently support the operating costs and often part of the capital costs of the reserved bus lanes and incentive parking lots they use on the territory. However, these services generally have regional scope. The rules governing financing therefore tend to slow down the implementation of such initiatives. Accordingly, reform of the public transit institutional and financial framework should

ensure a more equitable sharing of costs. Once the situation is corrected, the MTQ is confident that the region will give greater emphasis to this type of investment.

According to the three-year capital expenditure plans submitted by the transit corporations to the MTQ, the projects for reserved bus lanes could require a total investment of $8 million. This amount does not include the costs of projects due for completion in 1995 and 1996, nor those linked to the completion of development projects on the MTQ's highway system. Improvement projects are also planned for certain incentive parking lots and bus terminals.

Despite its limited budget, the MTQ intends to continue supporting these initiatives, whose costs are generally quite reasonable. These projects are likely to increase public transit ridership and enhance the self-financing ratio of the region's major systems, i.e. the Métro and suburban trains.

■ Access to regular public transit services by people with reduced mobility

The transit corporations' largest investment in improved access for persons with reduced mobility will be the purchase of urban buses with dropped platforms. The MTQ has already included this investment in its planned preservation expenditure, under replacement of worn out buses.

In 1991, the STCUM unveiled a 17-year (until 2008), $16.6-million investment plan to make services more accessible to people with reduced mobility. This amount excludes the cost of systematically replacing worn out buses by vehicles with dropped platforms.

Under its plan, the STCUM plans to replace the standard doors in Métro station entrances with butterfly doors. Two major projects were recently added to the 1991 plan to improve safety in the Métro for blind and partially-sighted passengers: a pilot-project to mark Métro platforms and ongoing research and development into a device to stop people falling into the space between Métro cars.

Based on the STCUM's most conservative estimates, planned investment would be on the order of $32 million over some fifteen years. Although no estimates have been made on how much of any specific project's expenditures would be eligible for the assistance program, the MTQ can fund up to 75% of these costs. Its contribution could therefore reach $24 million between now and 2011.

Reform of the institutional and financial framework of regional passenger transportation

The financial and institutional framework of urban passenger transportation in the Montréal region must be reviewed. The MTQ believes that a metropolitan agency should take over a number of responsibilities, particularly in the matters of public transit and highway transportation. A minimum of coordination and planning is necessary to ensure consistency in transportation policies and strategies, and to provide improved effectiveness from interventions affecting both of these modes of transportation and greater complementarity between them.

Various concerns dictate the need for integrated metropolitan planning of the transportation networks and systems.

For example, the choices and actions affecting public transit and highway transportation must take into account the proper functioning of the rail, sea and air activities that link the region to the rest of Québec and to other major urban centres across the globe. The highway system serving the port, airports and marshalling yards is a key element for the economic development of the region and of Québec as a whole.

Transportation systems and territory development interact in a number of ways. Where the implementation of transportation infrastructures and equipment encourages development in certain areas, it can also be seen that the type of urbanization, population density and location of various urban activities have a direct impact on the relative performance of the different modes of transportation. Optimization of the transportation systems and networks will therefore depend on regional policies adopted for development and urbanization. This requires only that regional decision-makers treat transportation planning and land-use planning in a more integrated manner.

Reform is now urgent. The decision taken by the Council of Ministers on July 13, 1994 not to renew its near $31-million subsidy to the *Conseil métropolitain de transport en commun* and the almost $19-million subsidy for paying off the remaining debt of the Deux-Montagnes suburban rail line means a rapid review is required of the way public transit is organized and funded in the Montréal region.

The current sharing formula used by the *Conseil métropolitain de transport en commun* covers both the regional receipts and the government subsidy. Under this formula, receipts from the regional pass are shared according to the user's place of residence. Accordingly, the STCUM received 11% of the 1993 receipts, although 89% of pass holders used its services. In compensation for the cost of travel by non-residents on its system, the STCUM received the whole of the government subsidy given to the *Conseil*. The approaching end to this subsidy will thus cut off all of the STCUM's income from the *Conseil* and leave it the sole support of the costs of travel by passengers who reside on the territory of the other corporations.

Ending subsidies to the *Conseil métropolitain de transport en commun* therefore risks abolishing the regional pass and returning to double ticketing, which would result in higher fares and higher municipal contributions.

To date, there has been no sign of any new agreement within the *Conseil métropolitain de transport en commun* on cost sharing among the current partners or on sharing the receipts from the regional transport pass. In this context, the current framework will not allow equitable and efficient sharing of the additional financial load among the municipalities and the users.

Ending the subsidy for paying off the remaining debt on the Deux-Montagnes suburban train should also lead to major changes. The STCUM would have to shoulder the costs of these services alone, even though they are used in part by residents who live off-island. In this context, the STCUM would be severely

tempted to raise fares, especially on the end of the line, while demanding higher contributions from CUM municipalities, since the off-island municipalities served by the rail line do not contribute to the cost of running the trains. Moreover, the STCUM has already expressed its wish to absolve itself of being solely responsible for running suburban rail services, including the Rigaud line, even though these services are regional in scope.

The modernization of this suburban line has made it even more urgent to settle the thorny problem of the fare structure before the service becomes operational in September 1995. A fare structure is required that would encourage more people living in the Saint-Eustache and Deux-Montagnes areas to use the service. Current monthly passes cost $72 from Laval and $134 from Deux-Montagnes.

These are just some examples of why it is imperative to overhaul the institutional and financial framework of the public transit system. The decisions to be taken in this area must not only result in solutions to the current problems, but also look to the future and lead to the emergence of a shared view of the role of the regional transportation systems and networks and the strategies to be adopted.

It is from this viewpoint that the MTQ is proposing a substantial reform of the regional framework of public transit systems. The financial and organizational problems of regional fare integration and the net operating cost of providing service to people who do not live on the territory of a transit corporation must be resolved. A solution must also be found for taking on responsibility for suburban train services. Lastly, the development of metropolitan public transit systems that complement the current services and thus ensure a lasting and equitable financing must be encouraged.

The observations made concerning the operation and use of the highway infrastructures requires a regional application of joint measures to manage traffic flow and demand. Such measures are necessary if we are to increase the carrying capacity of the main regional arteries, public transit ridership and car occupation rates.

The new sources of funding being envisaged are increasingly focusing on using the relative fare structures of each mode of transportation as instruments for controlling demand, so as to optimize the use of the systems and networks, and to meet social, environmental and economic objectives. To be able to manipulate fare structures, there must be greater coordination in the management and funding of highways and public transit systems.

The new way of organizing and funding metropolitan passenger services proposed by the MTQ is aimed at meeting these concerns.

The formulas studied take into account the need to adopt a solution that can take effect as of January 1996. Accordingly, we cannot wait for the coming reforms on municipal taxation now being developed by the municipal affairs department.

The proposed changes to the way transportation services are funded in the Montréal region cannot be viewed as a solution to all the problems of inequality and efficiency posed by the current rules on cost sharing. Rather, the changes aim at

involving citizens throughout the region in financing equipment that has a metropolitan impact and setting up funding mechanisms that will, in time, lead to a more balanced tax system in the metropolitan region for passenger transportation.

Given the urgency of acting on the institutional and financial framework of public transit, it will not be possible to conduct a simultaneous in-depth reform of the way highway infrastructures are organized and funded. A metropolitan transportation agency taking responsibility for highway problems is a new idea here. The responsibilities that the MTQ hopes to transfer to a metropolitan agency are specifically aimed at creating an openness toward integrated planning of regional transportation and giving it possibility of contributing to the costs of completing interventions of regional interest on the highways under local responsibility.

The proposed method of organization and financing is described in the following section of this document. This description includes the territory covered, the method of representation in the metropolitan agency, its mission, its responsibilities and the financing methods are described therein.

Improving the efficiency of air passenger and freight transportation

The federal budget brought down last February had a major impact on transportation, which is the second-largest item affected by cutbacks, after social programs. By their extent and speed of implementation, the new orientations imposed by the cutbacks are radically changing the operating methods used by sea, air and rail transportation.

Three central ideas guide the new federal policy: withdrawal, commercialization and privatization of activities.

The federal government is thus planning to withdraw from airport operations and management and to limit its role to legislative and safety aspects. It has defined a national system of airports control of which it wants to hand over to Canadian administrations that would include federal and provincial representation. The remaining federal airports will be transferred to local interests. To liberalize this sector, the federal government signed the Open Skies Agreement with the United States last February.

Transport Canada has also set 1996 for commercializing the air traffic control network. This major network, which provides air traffic control and related services, has 6,600 employees in Canada and spends $800 million a year. Transferring these activities to a non-profit organization will compromise 1,000 jobs in Québec, concentrated mostly in the Montréal region. To bring its activities into profitability, the new organization will have to restructure the whole of its operations. Air traffic control in Québec could, therefore, depend on a decision-making centre located outside the territory. If the rates for air traffic control are not stabilized, this reform could have a significant impact on the cost of air transportation services and on the competitiveness of carriers and operators working in the Montréal region. The MTQ will work closely with the sector to defend its interest and to formulate an action strategy capable of sustaining the economic development of the Montréal region and that of Québec as a whole.

The Montréal region, which is located close to major markets in eastern Canada and the United Sates, has the most up-to-date, albeit sometimes underused, air transportation facilities and infrastructures and has the necessary room for developing services.

Several air carriers already serve the region. Dorval and Mirabel airports, open day and night, could often easily receive more flights and offer numerous services, both to passengers passing through Montréal and air carriers wanting to serve the region and eventually establish a base of operations here.

The challenge consists in making the advantages of the Montréal region better known as an air transportation centre par excellence and as an urban centre offering numerous world-class tourist attractions. The MTQ is ready joining forces with players in the air transportation industry and the community to formulate an incentive program aimed at making these advantages known to passengers and carriers.

With regard to air freight, beyond the structure of the regional economy and the economic outlook, the number and frequency of connections offered are the principal obstacles to increasing the volume of goods transported. The popularity of this form of transport is directly tied to the frequency of the service offered.

There are various ways to increase the volume of air freight coming to Montréal, including service agreements that benefit Montréal, even if Canada does not receive reciprocal treatment in the other party's country, and the granting of unused routes to foreign carriers.

Improving the competitiveness of the air transportation industry

Sharing skills in freight transportation adds to the challenge of establishing a truly integrated transportation plan for the Montréal region. Such a plan requires that strategies be established in conjunction with all the players involved, since the efficiency of freight transportation depends on it. However, the context of this effort is currently undergoing radical change.

The federal government has begun abandoning a good many of its responsibilities in the air, maritime and rail transportation sectors. With a view to commercialization, it intends to hand over major responsibilities to government agencies, non-profit organizations and the private sector, and even set up new forms of partnership with public and private companies. This policy affects transportation systems and networks which are vital to the Montréal region's positioning in world trade and thus essential to its economic prosperity. These are major issues that must be acted upon.

In regard to highway transportation, the MTQ is primarily responsible for the economic and standardization framework of the trucking activities under its jurisdiction. It also impacts on the movement of goods by managing its own highway infrastructures. However, a certain number of problems linked to the highway networks are hampering the flow of goods on the territory. Thanks to the MTQ's interventions and those of municipalities, the conditions for truck traffic and the quality of the highway network serving the port, airports and marshalling yards in the Montréal region can be improved.

Adoption of a truck network

The MTQ expects to adopt a truck network during 1995 so as to provide better management of heavy traffic.

Various factors have created the need for such management: the increased use of the highway system and its effect on the state of the infrastructures, the transfer of responsibility for local roads to the municipalities, the public's growing awareness of the problems caused by heavy traffic, the bypassing of highway checkpoints, etc. Ensuring the flow of heavy vehicle traffic would, however, require harmonization of municipal restrictions with those planned for the truck network. This work needs the collaboration of all those involved.

The MTQ will produce an atlas of routes open and closed to truck traffic, by region and regional county municipality. These maps will give truckers all the information they need for planning the most efficient routes (closed roads, height restrictions, weight restrictions, tunnels closed to hazardous cargo, one-way streets, etc).

Improving highway safety

As a complement to heavy traffic management, the MTQ foresees the possibility of allowing B trains, up to 25 m long and weighing up to 62,500 kg, to use roads other than autoroutes on an exception basis. The current regulations do not allow these vehicles into the Port of Montréal, for example. This is a barrier to the transportation of container traffic, a fast growing market. The MTQ could also change the driving hours of road trains of over 25 m to adapt to the traffic conditions in the Montréal region.

The procedures dealing with requests for permits for oversize loads must also be reviewed, so as to ensure uniformity in this area, since these loads used infrastructures owned by federal, Québec and municipal authorities.

A large number of companies located in the Montréal region manufacture components that require oversize transportation. Since their market extends throughout North America, it is important that we reach reciprocal agreements with our neighbours concerning the movement of oversize vehicles.

Lastly, carriers and trucking companies must be made aware of the problems linked to the transportation of loads that exceed the norms and of the need to reduce the size of the loads.

Measures to support the development of intermodal transportation

Although the highway network may frequently be operating at full capacity, the same cannot be said for the sea and rail transportation systems. The region can help increase the use of these transportation modes by encouraging greater complementarity among all links of the transportation chain and by supporting the development of interfaces.

To support this initiative, the MTQ intends to pursue activities that support the development of information technologies linked to intermodal transportation: telecommunications, electronic payment, pre-customs clearance, goods tracing and

electronic data interchange. It will also encourage the application of the most promising new technologies.

Measures to support the competitiveness of the rail industry

To preserve metropolitan Montréal's role as Québec's major rail centre, the MTQ intends to ensure the railway network is streamlined in an orderly fashion. It will negotiate with the federal government to obtain financial assistance for upgrading these infrastructures.

The MTQ will continue its activities aimed at adapting the local rail network to market changes and will support restoration of the infrastructures. It will also work to relax the regulations, thus encouraging the joint use of certain lines and providing greater access to a larger number of connections with the local rail network.

In order to encourage the transfer of certain goods from road to rail transportation, the MTQ is proposing close cooperation with the appropriate regional authorities to assess the possibility, cost and financial means of connecting major shippers to the rail network.

Lastly, the MTQ, in conjunction with the rail companies, proposes to orient its research programs toward new rail facilities and to collaborate with the MICT (department of industry, commerce and technology) in setting up development programs in the major repair shops.

Measures to support competitiveness in the maritime industry

The federal government's disengagement has also dealt a blow to the Québec port system.

Transport Canada is of the opinion that downsizing the Canadian port system and the accompanying measures will also make it more commercially profitable.

As well, it considers the Canadian Coast Guard system too costly. As a result, the new orientations made public include a more rigid cost recovery and privatization of certain services. But this more rapid recovery of Coast Guard expenses from the maritime industry could compromise the future of that industry in the Montréal region. If the rates for using the St. Lawrence are set according to criteria that apply to all of Canada, the Port of Montréal will find itself at a disadvantage compared with ice-free ports elsewhere in the country.

This is why the MTQ, in conjunction with representatives of the Montréal maritime industry, intends to prepare an intervention strategy aimed at defending the interests of the maritime industry in Montréal and throughout Québec.

The MTQ also intends to take up the recommendations of the *Table de concertation* on the future of the maritime industry by, among other things, clarifying the role and mandate of the various government departments that deal with this sector.

Scenario 2

ACCOMPLISH EVEN MORE using additional resources

In the spirit of the proposed action strategy, the MTQ examined all possible interventions in the transportation systems of the Montréal region to improve quality of service. This exercise made it possible to single out a number of projects and measures with excellent potential to meet the challenges we face and which satisfy the requirements of the proposed orientations.

If new financing sources were dedicated to transportation, these projects could be added to those noted in the previous scenario. The MTQ, aware of the limits on taxation that can be levied on individuals and businesses in the region, limited itself to essential interventions that must be carried out to further optimize transportation systems and networks.

The proposed projects involve a total additional investment that could reach $567 million between 1997 and 2011, or an average of $37.8 million a year. To carry them out, citizens, business and the municipalities must agree, one way or the other, to contribute to their financing.

■ *Greater effort to develop reserved bus lanes and incentive parking*

Since public transit systems and networks are best suited to handle the predicted rise in travel over the next 15 years, the region should do its utmost to improve riding conditions.

The reform of the mode of organizing and financing regional public transit infrastructure and facilities will probably accelerate the pace of investment in reserved bus lanes and incentive parking lots. Given the size of this growth potential, it would be realistic to provide for $20 million in added financing capacity to support the implementation of these projects.

Additional forecast cost

Total cost:	$20 million
MTQ:	$15 million
Transit corp.:	$5 million

■ *Rebuilding the Longueuil terminal and road access to the Métro station*

Optimal operation of the Longueuil bus terminal and greater use of the Métro are restricted by factors such as traffic congestion in the area around the Métro station and bus terminal, operational deficiencies of the bus terminal, safety shortcomings for transit users and pedestrians, and problems with short-term parking ("kiss and ride") and the taxi stand.

To correct these access problems, the MTQ, STRSM and the City of Longueuil hope to redevelop the Métro station, bus terminal and peripheral road network. This project would encourage a shift from automobile to public transit and foster better integration of public transit services. It would also spur real estate development in the Place Charles-Lemoyne area in line with the City of Longueuil's master plan.

Investments in public transit infrastructure and facilities are estimated at $9.4 million, of which $7.5 million comes from the MTQ. The share of highway project costs assumed by the MTQ is $11 million out of total investments of $13 million.

Forecast costs

Total costs:	$22.4 million
MTQ:	$18.5 million
STRSM:	$1.9 million
City of Longueuil:	$2.0 million

■ *Extension of reserved bus lane on Highway 10 to Highway 30 and building of incentive parking lot*

Peak period traffic volume between the South Shore and the Island of Montréal clearly exceeds the capacity of bridges, especially in the Champlain bridge corridor. Because many South Shore residents work or study in downtown Montréal or neighbouring areas, Highway 10 is a favoured corridor for public transit. This is eloquently shown by utilization figures for the reserved bus lanes counter to the traffic direction on the Champlain bridge; more than 200 buses carrying about 12,000 riders use it every rush hour.

In order to improve customer service and enable the STRSM and intermunicipal public transit councils to attract new riders, the MTQ plans to greatly improve conditions in this public transit zone.

The MTQ project consists of creating two reserved bus lanes along the Highway 10 corridor extending from the Champlain bridge lane to the Brossard terminal on Panama. Estimated to cost $20 million, the plan involves rebuilding the Taschereau interchange. Access to the Brossard terminal would be improved, and users of the route would have a smoother interchange between Highways 10 and 134 as well as safer road conditions.

The project also calls for establishing a reversible reserved lane in the direction of traffic along the centre of Highway 10 between the 134 and the 30. Costing an estimated $11 million, this lane would link the reserved lane of Highway 10 to a regional incentive parking lot planned for the intersection of Highways 10 and 30. The parking lot would provide up to 1,200 spots and require an investment of almost $5 million. In combination with the reserved lane, it will let current public transit riders save ten to twenty minutes.

Forecast costs

Reserved bus lanes and rebuilding Taschereau interchange	$31.0 million
Incentive parking	$4.8 million
Total cost:	$35.8 million

■ *Replacement of fare collection equipment*

Current fare collection equipment inhibits more effective management of operating revenues and expenses by public transit corporations. This situation not only affects profitability of the corporations, it also prevents a diversification of fares that could

be more effective and equitable for its clientele.

The cost of acquiring collection equipment using magnetic card technology (reading and writing) would be about $83 million for the three corporations. The MTQ's total contribution towards this investment could reach $51 million. The STCUM is also studying the possibility of using technology based on smart cards (memory).

In 1991, the STCUM evaluated the impact of using magnetic card collection equipment, taking into account fixed asset costs and the effect of such equipment on operating costs. It was found that the equipment could have generated net additional revenue of about $51 million for the period from 1992 to 2006. Benefits would come from a reduction in the cost of selling and collecting tickets in Métro and suburban train stations, the elimination of fraud, and an end to losses incurred when ticket agents must leave their posts.

Forecast costs

Total cost:	$83.2 million
MTQ:	$51.0 million
STCUM:	$28.7 million
STL:	$1.4 million
STRSM:	$2.1 million

■ *Access to the regular public transit system for reduced-mobility or handicapped persons*

Investment forecasts used in the preceding scenario for improving access to public transit for a reduced-mobility clientele are based on the STCUM's most optimistic evaluations. Its studies show that implementing the planned measures could require an additional sum of $31 million. This would mean an added MTQ contribution of about $23 million.

A pilot project to improve accessibility of the Roxboro station and Central Station is planned for 1996 as part of the modernization of the Deux-Montagnes suburban train line. The MTQ must provide for additional investment of about $3 million to generalize the concept if desirable.

Finally, if the drop-floor bus accessible to individuals in wheelchairs becomes the norm, demands for correctives can be expected, especially with regard to user infrastructures such as bus shelters and waiting areas. The financial impact of correctives needed to adapt public transit facilities to the special needs of the handicapped has not yet been assessed.

Forecast cost

Total cost:	$34.0 million
MTQ:	$26.3 million
STCUM:	$7.7 million

■ *Reserved lane network for buses and other high-occupancy vehicles*

The smoother traffic flow and time savings made possible by reserved lanes for buses and other high-occupancy vehicles can motivate people to change their behaviour if they suffer enough inconvenience due to congestion of the major highway system. Public transit ridership and the level of occupancy of automobiles would thereby increase. Under certain conditions, the establishment of reserved lanes can contribute to more efficient use of an infrastructure thanks to a rise in the number of users.

In corridors where high-capacity public transit systems must be paired with an expanded road infrastructure to adequately meet demand, the reserved lane solution has the advantage of satisfying the greatest number of needs at the least cost. In an environment where residential areas and activities are increasingly dispersed, reserved lanes can raise the quality of transportation services available while offering users a certain flexibility. Unlike an increase in highway capacity, which can be quickly absorbed by an additional influx of vehicles, a reserved lane generally offers residual capacity that can support forecast growth in travel.

The MTQ has therefore launched a study on the advisability and feasibility of creating a network of reserved lanes for high-occupancy vehicles in the Montréal region. Figures available on ridesharing in the region indicate that there is growth potential for this niche. Counts done in 1991 on Montréal area bridges showed that vehicles with two or more riders represented 19% of the traffic observed on the bridges. And based on a 1991 estimate of demand,[6] at least 135,000 vehicles with two occupants or more travel in the Montréal region during the morning rush hour.

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[6] This estimate is based mainly on results of a 1987 regional origin-destination study by the STCUM. It takes into account recent population trends by age group, based on the 1986 and 1991 censes, and changes in the attraction of different employment poles based on trends observed in regional origin-destination studies by the STCUM (1978, 1982 and 1987).

One simulation of morning rush hour travel on the existing highway system, and a second done under perfect traffic conditions (free flow) helped identify connections with the greatest potential attraction for ridesharers. Different scenarios of reserved lane networks were then tested and evaluated in terms of technical feasibility, related implementation costs, estimated potential volume and the forecast impact on traffic for both ridesharers and lone drivers.

The following highways present the best potential at this time for the creation of reserved lanes:

- ☐ the Metropolitan from Sources Boulevard in Pointe-Claire to the Laurentian interchange.
- ☐ Highways 15 and 13 between the 440 in Laval and the Metropolitan.
- ☐ Highway 40 from Larochelle Boulevard in Repentigny to Ray-Lawson Boulevard in Anjou.
- ☐ Highway 25 between the 440 in Laval and the 337 in Terrebonne.

Highway 10 on the South Shore offers excellent potential. However it was not chosen in order to avoid undermining public transit. This highway is the pathway to the heart of Montréal, the destination where public transit can best compete with the automobile.

The relevance of reserving certain lanes for trucks outside peak periods has not yet been adequately studied.

The creation of a reserved lane on Highway 13 and work on the Highway 15 reserved lane is already scheduled for 1995. Aside from benefits expected for the regional population, these lanes would have the advantage of improving links between Dorval and Mirabel airports (the 13), and between Mirabel and downtown Montréal (the 15).

Reserved lanes for buses and other high-occupancy vehicles can be set up in different ways.

Under one concept, an existing highway lane can be converted into a reserved lane. This is the approach favoured for Highway 40 in the east. Because the network configuration and geometric layout of the Metropolitan make it difficult and costly to establish an eastbound reserved lane, this would serve only westbound traffic. The same arrangement would be suitable for the section of Highway 40 reserved lane between Sources and the Côte-de-Liesse interchange, which presents a similar problem.

Another planning concept consists of adding a lane to the infrastructure to avoid too great a deterioration in traffic conditions on the regular lanes. The reserved lanes of Highway 40 between the Laurentian interchange and Côte-de-Liesse are designed in this manner. Even without a reserved lane, this widening along nine kilometres would be justified because this is the most nerve-wracking section of the regional highway system. To provide continuity and efficient operation of reserved lanes, major changes would also be needed at the Laurentian and Decarie interchanges. The work required on this section would involve a large investment estimated on a preliminary basis at $90 million.

The creation of reserved lanes on Highway 15 would also involve adding traffic lanes. Unlike the southbound reserved lane, which would connect the 440 and 40, the northbound reserved lane would begin at Highway 40 and end at the Médéric-Martin bridge. On the Island of Montréal, Highway 15 would be completed, with four lanes in each direction, to handle reserved lanes. In Laval, the reserved lane will be established on existing lanes. The loss of road capacity for users of regular lanes would be compensated by the building of service lanes. Construction of four access ramps for buses and an incentive parking lot is also anticipated.

In the case of Highway 25, the idea of a southbound reserved lane calls for adding a lane to the two existing lanes over the entire distance. The northbound reserved lane, like the widening, would begin at Highway 440 and end at the Mathieu bridge. This project would also require the widening of two bridges and rebuilding of two overpasses.

Based on a study of traffic volume at the busiest points of these lanes, it is estimated that more than 45,000 ridesharers could benefit in the morning peak period from the proposed network of reserved lanes for high-occupancy vehicles. Their average travel time would thus be reduced by at least five minutes while generally remaining stable for other users. The potential of this network is such that some flows would even approach peak capacity for a normal lane. In this case, the expected incentive effect may not be obtained. Further studies will reveal how access and exit points for reserved lanes might be modified to correct this problem. They will also examine whether the occupancy criterion should be raised from two to three persons per vehicle.

The advisability of reserved lanes for public transit has not yet been studied. This is a not insignificant segment of our target clientele, since 50 buses carry about as many people as 2,000 cars, which is the hourly capacity of an autoroute lane. Taking public transit service needs into account could bring about changes in the proposed network and facilities. The MTQ intends to examine this question with public transit authorities in the region.

The creation of a reserved lane network must be accompanied by control measures to ensure respect for the conditions for using the lanes. Experience in other countries shows that violation rates are closely linked to the severity of sanctions and the degree of surveillance exercised by authorities. In light of this experience, it appears that fines of between $100 and $200 for a first offence, and between $200 and $350 for subsequent offences, would have a sufficiently deterring effect. An offence should also result in demerit points in the driver's record.

Other incentive measures could also contribute to the success of this project. An information campaign to promote the advantages of using reserved lanes could increase modal transfer and facilitate its acceptance by non-beneficiaries. A budget of $5 million could be provided for this purpose.

Measures could also be considered to change the habits of workers, the clientele usually targeted by actions aimed at relieving congestion. Implementing such measures is often entrusted to management. With much

to gain from efficient networks and systems, business indeed has responsibilities in the area of transportation. A wide range of measures could be taken, including promotional activities, a service that brings ridesharers together, and granting direct or indirect benefits to employees.

Forecast costs

Total cost (MTQ):	$160 million
Capital spending:	$155 million
Info campaign:	$5 million

■ *Extension of highway traffic management system*

The highway system is one of the public services most heavily used by both individuals and companies. Every day the regional population takes more than five million car trips on the road network. Time lost by users due to congestion caused by accidents, breakdowns and demand exceeding infrastructure capacity generate costs and inconvenience for society as a whole.

The greatest congestion and incident frequency rates occur along autoroutes. Along with reducing user comfort and the reliability of services, congestion hurts the economic vitality of the region.

The MTQ will invest almost $19 million in 1995 and 1996 to complete the installation of a highway traffic management system on the network bounded by the 25, the Metropolitan, the Decarie and the Ville-Marie. Functions of the system include accident management, user information, and traffic control on autoroute exit and access ramps.

In heavy traffic conditions, a three-lane highway with one lane obstructed by an incident can have its capacity reduced by half. A quick reaction is therefore required for every event causing a traffic disturbance. Rapid detection and response reduces lost time and limits the risk of causing additional dangerous situations.

Thanks to the system now operating on sections of the Metropolitan and Décarie expressways, the MTQ estimates it reduced the length of incidents by 35 hours in October 1994 alone. During this period, 286 breakdowns and 138 accidents were reported.

The MTQ estimates that $43 million will be needed to extend this system to other problematic highway sections that meet the conditions for installation.

The system will be extended in two stages. The first covers the following sections: Highway 20 between the 13 and the Décarie; Highway 40 between the 13 and 520; Highway 15 between the Turcot interchange and the Bonaventure; and Highway 13 between the 20 and 40. This coverage consists of installing equipment for remote surveillance, automatic detection of incidents, user information, and control of access.

The second stage calls for installing remote surveillance and user information equipment at 13 major interchanges in Laval/North Shore and the South Shore.

Forecast costs

MTQ: $43 million

■ *Optimizing the Metropolitan corridor*

The Metropolitan plays a special role in the region because of the importance of economic activities on both sides of the corridor and its situation as a major hub.

It operates close to its peak capacity from morning to night. As the only east-west corridor crossing CUM territory, it is the backbone of the Montréal region highway system. Eleven percent of morning rush hour traffic is on this highway. Daily volume on certain sections is in excess of 143,000 vehicles.

The proposed interventions are intended to optimize the highway corridor. One aspect of the project consists of correcting problems of geometry and crossover traffic by moving the Saint-Hubert Est access and the Saint-Michel exit, and eliminating the D'Iberville exit and the Jarry access. This will cost $5.5 million.

Another aspect consists of adding a third traffic lane to existing service lanes at points where there are only two. The costs of harmonizing the geometries of services lanes will amount to $17.6 million. Proposed works also include rebuilding the Papineau and L'Acadie traffic circles, which would involve the construction of overpasses. This $24-million investment will greatly facilitate east-west and north-south traffic movement.

Smaller projects such as the redevelopment of the merge of Saint-Denis and Lajeunesse streets and changes to signage and lighting will require additional investments of $1 million.

Forecast costs

MTQ: $48.1 million

■ *Connecting the Ville Marie (720) to Highway 25*

Highway 720 starts at Highway 15 and ends at rue du Havre in Montréal near the Jacques Cartier bridge. Continuing east, rue Notre Dame provides the Highway 720 corridor as far as Highway 25. However, Notre Dame cannot adequately serve this role because it has many intersections and only two traffic lanes in each direction. Moreover, present access points to Port of Montréal terminals are inadequate and undermine the efficiency of the entire freight transportation chain.

Connecting the Ville Marie expressway to Highway 25 with a rapid, functional link would improve the efficiency of the highway system, reduce the effects of regional and through traffic spillover on local roads and provide more satisfactory service to the Port of Montréal. Safety in the corridor would also be greatly improved by reducing the number of intersections.

The concept as formulated about a decade ago provided for construction of an urban boulevard with three lanes in each direction, separated by a raised median, running from rue du Havre to rue Viau. From there, the

link to Highway 25 would be provided by a highway with three lanes in each direction. Implementing this concept would require an investment of more than $92 million.

With public spending restraint in mind, new approaches were recently made to partners in the Dickson industrial park to examine the possibility of modifying the initial concept and reducing project costs. This initiative led to the idea of extending the urban boulevard over the total length, which could reduce project costs to about $50 million. It would eliminate the need to build two structures. This concept would offer basically the same benefits in terms of highway performance. A study will be done shortly to determine its advisability and feasibility.

Forecast capital expenditure

MTQ (option 1):	$92 million
MTQ (option 2):	$50 million

■ *Rebuilding the interchange at Highways 40 and 520*

The interchange connecting the Metropolitan (40) and Côte-de-Liesse (520) highways includes several traffic crossovers and sharp curves. Signage is also inadequate. Traffic lights at the junction of these two major regional highways create congestion and waiting lines that impede exchanges between the road systems.

The proposed project consists of rebuilding the interchange between Highways 40 and 520 by constructing staggered accesses and eliminating traffic crossovers, sharp curves and traffic lights. The project would cost $14 million. Among its many benefits would be smoother and safer traffic flow, easier access to Dorval airport and the employment pole of Saint-Laurent and adjacent industrial areas, and better public transit service for buses using this route.

Forecast costs

MTQ:	$14 million

■ *Completion of Highway 440 between Highways 117 and 13*

At present the fast lanes of Highway 440 in Laval end at the interchange with Highway 117. Only service lanes link up with the 13. This results in a functional imbalance that creates problems of traffic flow and safety. These problems are attributable to crossover traffic and conflict between through traffic and local traffic due to adjacent businesses.

The service lanes between Highways 117 and 13 now handle daily volumes of about 70,000 vehicles. At rush hours, traffic flow reaches the full capacity of the service lanes, resulting in slowdowns. In addition, the discontinuity of the highway system leads to underuse of the fast lanes recently built between the 15 and Highway 117.

The proposed project calls for building fast lanes on this section and an interchange at 100th avenue in Laval. This infrastructure, costing $8 million, should handle between 2,500 and 3,000 vehicles in each direction at rush hours.

Completion of this project would optimize investments made in sections farther east, and would separate through traffic from local traffic, thereby increasing user safety. It would also create conditions more conducive to balancing traffic flow on the bridges linking Île Jésus with the Island of Montréal. Finally, it would create a continuous and functional link between the reserved lanes of Highways 13 and 15, promoting the efficiency and intermodality of transportation systems.

Forecast cost:	
MTQ:	$8 million

■ *Rebuilding Highway 337 between the 640 and Martin-Newman road*

Under pressure from strong population growth, traffic volume on highways serving the regional county municipality (MRC) of Moulins is growing at an accelerating rate. Daily volume now varies from 25,000 to 30,000 vehicles on Highway 337 between the 640 and Martin Newman road, on the outskirts of the municipalities of Mascouche and Terrebonne. This is an unusually heavy flow for a two-lane highway. In rush hours, traffic is congested for several hours, while in off-peak periods, volumes reach the full capacity of the road. The roadway is also in an advanced state of disrepair.

Rebuilding this section of Highway 337 as a four-lane divided highway would more than double its capacity. A $6 million investment, it would improve traffic flow as well as meet an urgent need to repair the roadway. Planned changes in road geometry would also make the infrastructure safer.

Forecast cost:	
MTQ:	$6 million

Scenario 3

ACCOMPLISH THE MAXIMUM to satisfy the greatest number of requests

If all passenger transportation projects under study at the MTQ or demanded by various parties were carried out, investments of $3 billion to $4 billion would be required. The bill for public transit projects could exceed $2 billion depending on the technology contemplated for high-capacity systems. As for highway infrastructure, expressed needs amount to more than $1.5 billion, a figure that includes the cost of several major highway extensions.

Demands are high, but there are pressures at work in opposite directions. Market globalization with the openness it requires has intensified international competition. Measures must be taken to secure a coveted place on the world stage for the Montréal region and Québec. Competitiveness has become the order of the day.

At the same time, the public is showing greater concern for the environment and quality of life. People have new demands, and they are reluctant to give up benefits and services gained over the years.

Reconciling these pressures and needs calls for making choices that respect the principles of sustainable development. How can the needs of today's society be met without jeopardizing the ability of future generations to satisfy their needs? This question is at the heart of current debate, and there is no escaping it in making transportation choices. We can always finance capital expenditures on transportation over several years, but this amortization period should not exceed the time when the infrastructures and facilities required major reinvestments.

The MTQ is recommending action scenarios that it believes can reconcile the interests of different groups in the region and respond to the greatest needs, taking a metropolitan viewpoint.

The department is open to other scenarios that may be presented at the consultations now starting. All solutions can be considered as long as they respect the limits of taxation than can be demanded of individuals and companies, and are equitable for all groups.

The transportation plan ultimately chosen must benefit the region's citizens and businesses as a whole. We have the time to choose to do the maximum to satisfy all demands. However, all parties must be prepared to do their part in line with the benefits the region will receive.

Proposed institutional and financial framework

Reform of the method of organizing and financing personal transportation in the Montréal region should begin by creating a framework that makes it possible to plan and coordinate public transit systems and highway infrastructures from a metropolitan perspective and to manage metropolitan public transit systems so as to finance their operation on a regional scale. It would not be fair to oblige certain municipalities in the region to bear the full burden of public transit services and facilities that extend over the whole metropolitan region.

To this end, it is important to:

- ☐ Bring a metropolitan-wide, integrated point of view to bear in planning transportation systems and infrastructures.
- ☐ Ensure coordination between transportation modes in the areas of management and fare-setting.
- ☐ Place suburban trains under a metropolitan agency.
- ☐ Secure stable long-term financing for public transit by drawing upon funding sources within the region.
- ☐ Ensure the financing of public transit operations by drawing upon the participation of users, property owners and non-users who benefit from the system.
- ☐ Divide among all municipalities in the region their share of the cost of regional public transit infrastructure and facilities.
- ☐ Increase fare integration among public transit systems in the region and harmonize fare policies of the various transportation agencies.

Proposed institutional framework: a metropolitan agency

Several different approaches can be imagined to achieve the desired objectives. The MTQ believes the most appropriate course would be to maintain responsibility for organizing and managing services within public transit commissions and intermunicipal transportation councils, but to entrust matters of joint interest to a metropolitan agency.

The organization and operation of road infrastructure would remain a local responsibility, but the metropolitan agency would have certain responsibilities in the area of planning and coordination of work done on the regional highway system.

Under this approach, the metropolitan agency would be responsible for defining the metropolitan public transit system[7] and financially supporting the services offered on this system; namely, trains, the Métro and certain bus services. With regard to the highway system, the metropolitan agency could help finance certain works on the major regional system, to improve traffic management for example.

■ Territory

The Montréal Metropolitan Census Region is the most appropriate territory for establishing a regional agency responsible for public transit and certain highway transportation functions.

■ Composition

Various possibilities exist for constituting the Board of Directors of the metropolitan agency. It could be made up of municipal elected officials with a chairman appointed by the government. Or it could consist of individuals elected by universal franchise on a district basis, or else commissioners appointed by the government.

First option: municipal elected officials

The advantage of calling upon municipal representatives lies in the fact that this form of representation is familiar in Québec, thereby minimizing the need to change existing rules.

The distribution of these elected officials within the metropolitan territory would be determined from authorities such as RCMs or transit commissions. The main drawback of this form of representation is that it could set up a dynamic of compromise among competing municipal interests rather than the development of a vision appropriate to the region. Because municipal officials are primarily accountable to the citizens who elected them, it would be hard to foster the emergence of a regional dynamic.

Second option: regional elected officials

The direct election of members of the Board of Directors of the metropolitan agency by universal franchise, on the basis of districts, would secure a clearer mandate. The fact that members were elected strictly for metropolitan functions would facilitate the task of developing a regional vision and representing regional interests. Direct election by citizens of representatives to perform special functions is a common formula in the United States, where it has had good results.

To minimize formalities associated with this type of representation, it would be advisable to elect members of the metropolitan agency's Board of Directors when municipal elections are held. But municipal elections are not all held at the same time and each electoral list is distinct. It would therefore be necessary to modify municipal electoral processes to have all elections in the region held concurrently. Regions would also have to be provided with an overall electoral list, since some Board members would be elected from districts covering more than one municipality. A permanent electoral list would facilitate the holding of regional elections.

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[7] The name chosen to designate provincial and regional highways, and major arteries such as Pie IX and Saint-Martin boulevards. This system provides high capacity and handles long-distance traffic.

On the downside, a metropolitan agency thus constituted might not have the legitimacy to make municipalities and public transit commissions contribute to a deficit over which they have no control.

In addition, problems could result from the fact that regional fares for public transit service would be set by a metropolitan agency composed of regional elected officials. If public transit commissions continue to collect regional fares, which constitute a sizable share of their income, regional elected officials will have a determining influence on the level of municipal shares. However, because transit commissions receive financial assistance for services on the metropolitan system, this may be justified, since most if not all travel needing a regional pass is done on the metropolitan system.

Third option: Commissioners

A third option consists of appointing non-elected officials, or commissioners, to the metropolitan agency's Board of Directors to manage regional public transit.

In this case, the role of the metropolitan agency would focus more on planning, coordination and management functions than on giving political leadership. The role of commissioners would be to express a regional vision of transportation development and defend the regional interest. On the other hand, a formula based on commissioners has the same drawbacks as those mentioned in connection with regional elected officials.

The commissioners could be experts in the transportation field or else come from the business or user environment. They would be appointed by government. The metropolitan agency would have basically the same responsibilities as in the two other scenarios.

Number of members

The Board of Directors of a metropolitan agency would have 20 members under this hypothesis. Each territorial component would name its representatives. This would provide representation in proportion to the population, while maintaining effective operations. However, if the Board were composed of commissioners, the number of members should be limited to 3.

MTQ's preferred approach

The future of transportation in the region requires a clear vision of strategies and methods to implement to improve connections between different areas of the region, improve coordination among transportation systems, especially public transit, and improve complementarity between transportation modes. Increased ridership and viability of the services depend on it.

Only a metropolitan agency endowed with a distinct and specific leadership will be capable of meeting the challenge of expressing such a vision and putting it into action. In this regard, since it would appear difficult to organize the election of regional representatives by universal franchise in the short term, the MTQ favours the appointment of commissioners to sit on the metropolitan agency. It will then be up to these new regional leaders to define a new way of doing things and to plot out a path for future action.

■ *Mission of a metropolitan agency*

The metropolitan agency would be responsible for defining the metropolitan regional systems of both highways and public transit, and for providing financial support for services offered by the major public transit system (Métro, train, and some bus services). It would also be responsible for management and operation of suburban trains. Also, it could contribute to financing certain investments to facilitate passenger traffic on the region's metropolitan highway system.

Under this approach, the field of action in transportation matters on behalf of regional interests should encompass facilities and services which have spinoffs on the entire region or the territories of at least two public transit agencies. The region will concretely express this interest by financially supporting services offered by the metropolitan public transit system and contributing if desired to financing certain works on the metropolitan highway system.

Until now, planning, management and fare-setting for public transit services have been conducted in a local and isolated manner. Similarly in highway transportation, the federal and Québec governments and the cities do not work with a attitude of complementarity. As a result, the region will have difficulty coping with the challenges and issues in coming decades.

In this situation, financial support provided to regional transportation services could be a tool for coordinating, planning and developing the metropolitan system. This would promote the introduction of reserved lanes and prompt the identification of priority travel routes in the region and develop volume along in certain routes. It could even become a longer-term planning tool for cities and RCMs.

This approach calls for replacing the *Conseil métropolitain de transport en commun* with a new regional agency possessing greater powers in regional transportation matters throughout the Montréal Metropolitan Census region. The STL, STRSM, and STCUM and intermunicipal transportation councils would continue organizing and financing services on their own territories. The STCUM would remain wholly responsible for managing the Métro, which it would continue to own and finance (after the contribution of the metropolitan agency). It could thus continue coordinating bus and Métro services, which are highly integrated, all the while ensuring effective service. The division of jurisdictions in operating and financing highway infrastructure would also remain unchanged, given the metropolitan agency's contribution.

■ *Responsibilities of a metropolitan agency*

The metropolitan agency would exercise the following responsibilities:

- ☐ Define the metropolitan public transit system. It would include the Métro, suburban trains and bus routes using reserved lanes, especially lanes connecting major areas of the metropolitan region and which are used by several carriers, such as lanes on the Champlain and Viau bridges.

- ☐ Define the metropolitan highway system.

- ☐ Provide financial support for services offered on the metropolitan public transit system.

- ☐ Provide financial support where appropriate for work to smooth personal traffic on the metropolitan highway system.

- ☐ Allocate among the municipalities of the Montréal Metropolitan Census Region the costs associated with financial support of the metropolitan public transit system.

- ☐ Plan and decide on building infrastructures and facilities associated with the metropolitan public transit system, including the Métro and suburban trains.

- ☐ Assume the costs of fixed assets (after subsidy) and operations of the following public transit services: reserved lanes and terminals used by two or more operators, incentive parking lots, and other facilities and infrastructure with a regional use.

- ☐ Define the fare system for public transit services: set inter-system fares and share inter-system receipts; define forms of fare differentiation (i.e., based on distance or time of day); ensure compatibility of tickets (e.g., eligibility for reduced rates) and collection equipment, and finally, harmonize fares between trains and bus systems in parallel corridors with a view to complementarity between the two modes.

- ☐ Coordinate subsidized public transit services, in particular concerning connection points and schedule synchronization.

Infrastructure and facilities planning by the metropolitan agency would be conducted in line with the transportation plan established by the government in collaboration with regional decision-makers.

In addition, the metropolitan agency would have the job of defining the conditions for financial support of the metropolitan system and, in particular, for selecting the criteria to be used for access to financial assistance for bus service (corridors used, ridership level, quality of service, connection on high-capacity facilities or a terminal) and the amount of subsidy to be given.

The metropolitan agency would also be responsible for full financing of incentive parking lots, terminals, and jointly-used reserved lanes. This could facilitate the building of infrastructure used for the region as a whole. It would be in the region's interest for the metropolitan agency to have determining influence over municipal powers in creating reserved lanes.

Responsibility for suburban trains would also be entrusted to the metropolitan agency. In this role, the agency would plan and organize services, award contracts and shoulder the operating deficit. Giving responsibility for trains to the metropolitan agency would make it easier to develop new lines, since potential development lies mostly outside the CUM territory.

Proposed financing framework

Public transit commissions and Conseils intermunicipaux de transport en commun

Public transit commissions and intermunicipal councils would retain responsibility for financing their own regular systems. On the other hand, inter-system revenue would be shared among organizations based on usage. Each network would thus be compensated on the basis of service rendered. Operating deficits for service provided on the metropolitan system, after deducting financial aid provided by the metropolitan agency, would be charged to the transit commissions and intermunicipal councils.

The metropolitan transportation agency

The metropolitan agency would be responsible for financially supporting the metropolitan public transit system, and financing the creation and operation of reserved lanes, incentive parking lots and terminals, for capital expenditures not covered by subsidies paid under the government assistance program. It would also be responsible for operating suburban trains and financing their deficit after municipalities served have made their contribution. These responsibilities amount to about $150 million a year for the metropolitan public transit system alone, assuming financial assistance of 50 cents per journey for travel on this system. The metropolitan agency could also provide financial support to municipalities that introduce measures to facilitate the movement of people on the metropolitan highway system. In doing so, they effectively improve the performance of the entire metropolitan transportation system.

To carry out its responsibilities, the metropolitan agency would have access to sources of financing collected from within the Montréal Metropolitan Census Region. In particular, the revenues of the *Fonds de contribution des automobilistes au transport en commun*, which amounts to about $38 million a year, would be turned over to the metropolitan agency. Other sources under consideration are a tax on non-residential parking spaces that would be collected over the entire territory of the metropolitan entity, and a gasoline tax also collected throughout the territory. Municipal participation in financing the new entity should also be considered.

There are reasons justifying the use of revenue sources noted above.

The tax on non-residential parking would make car drivers and businesses contribute to financing public transit. Use of a car is necessarily conditional on access to a parking spot and, the number of parking places within a territory is closely tied to the form of urbanization and the presence of indirect beneficiaries of transport systems such as merchants and employers. The gasoline tax imposes a contribution based on use of the vehicle and makes the driver participate as an indirect beneficiary.

Furthermore, municipal participation would reflect the fact that regional facilities and infrastructure have a shaping function and are a tool for developing the territory and making certain zones viable. Although citizens from across the region benefit directly or indirectly from passenger transportation systems, their contribution

varies appreciably depending on which municipality they live in. A contribution to the metropolitan agency, raised in municipalities where transportation charges are presently lowest, would be one element in a tax system that makes all citizens contribute equitably to financing transportation systems.

The municipal contribution to financing train services must be equivalent to the amount they pay for their regular public transit systems, namely about 40% of total costs. Municipalities where transit users originate would be asked to contribute based on their property tax base and level of service received.

The financial framework which is adopted must seek to better reflect benefits received and let the region tap resources needed to reach defined objectives, all the while securing equitable sharing among different partners.

In return for cancelling the subsidy to the *Conseil metropolitan de transport en commun* and the subsidy to absorb the deficit of the Deux Montagnes suburban train, the government is setting up a financial framework that ensures stable and more equitable financing of public transit. This new method of financing public transit will make it possible for get past the aspect of spillover effects and lend a metropolitan perspective to the financing of a regional transportation system.

Regular bus systems with local scope would be financed solely by their respective transit commissions and intermunicipal councils. Suburban train services would come under the metropolitan agency and financing would be handled similarly to other components of the metropolitan system. They would thus benefit from financial aid from the metropolitan agency, and the operating deficit would be shared among the municipalities served.

Urgent need to act

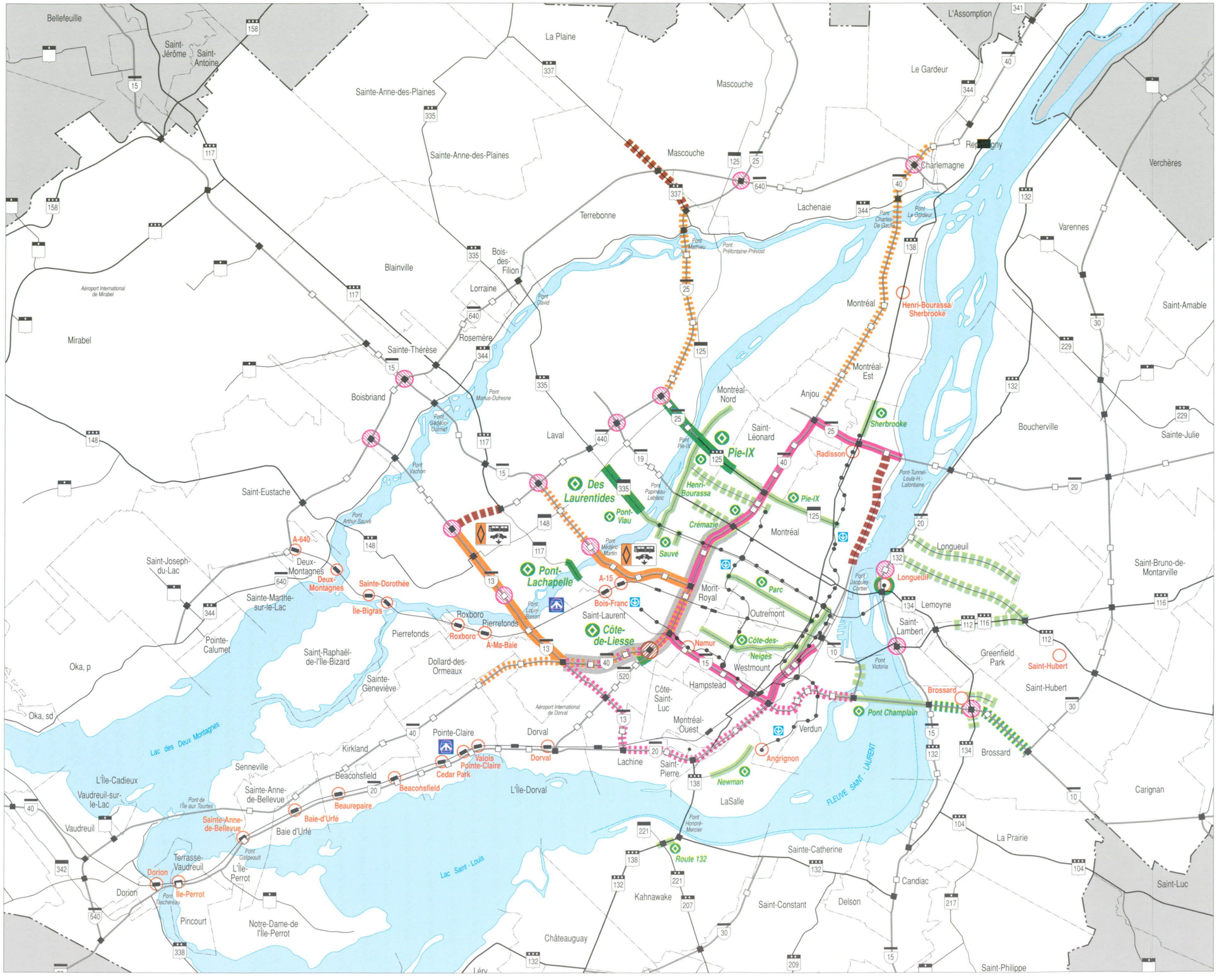
The primary objective is to improve the performance of transportation systems in the Montréal region. The proposed solution would contribute to this objective by having the metropolitan level take charge of certain responsibilities. A metropolitan agency in charge of the metropolitan public transit system would enable the region to adopt a vision of development and operation of services, and to more equitably share the cost of metropolitan facilities and services.

It is vital that the organization and financing of public transit reflect social and economic ties that have been woven over past decades within the region as well as the dynamic of traffic that has developed.

For many years, the government has attempted to fill gaps in an institutional and financial framework that was no longer appropriate. Subsidies have been paid and investments made to support a transportation system better adapted to serve increasingly regional traffic movements. We are now at a turning point. The cancelling of certain subsidies forces a review of this arrangement. Even more so, the reality of social and economic links within the region makes it necessary to redefine the roles of the different partners. The organization and financing of public transit as we have known it now constitutes a brake on regional development.

All elements are converging to underscore the urgent need to establish an institutional and financing framework that reflects regional reality. This new framework is indispensable to improving fairness among different partners and the efficiency and effectiveness of travel within the metropolitan region.

The proposed solution is based on several principles. First, a lasting and fair solution requires all parties to finance public transit facilities and infrastructure since they benefit the entire region. Next, existing travel patterns must be reflected in the definition of the territory under a metropolitan agency responsible for coordinating it. Last, the sharing of responsibility at the regional level must be sufficiently clear to avoid overlaps of local and regional responsibilities.



Gouvernement du Québec
Ministère des Transports

TRANSPORTATION PLAN FOR THE MONTRÉAL REGION

ACCOMPLISH EVEN MORE using additional resources

Main interventions of scenario 2

Reserved bus lane

- Existing reserved lane
- Reserved lane in the 1995-96 program
- Planned reserved lane
- Reserved lane under study by transit authorities

Improved access to public transit

- Longueuil terminus redevelopment

Reserved lane for buses and other high-occupancy vehicles (HOV)

- Reserved lane in the 1995-96 program
- Planned reserved lane

Highway traffic management

- Corridor in the 1995-96 program
- Planned corridor
- Monitoring and data collection equipment

Intervention on the highway system

- Construction or improvement
- Interchange upgrading
- Improvements to the Metropolitan highway corridor

- Montréal metropolitan region
- Incentive parking (existing)

0 1 4 8 km

March 1995

Transports
Québec