



## MAJOR ACHIEVEMENTS IN THE FIELD OF SUSTAINABLE DEVELOPMENT

### OVERVIEW







## COMBINING MOBILITY AND SUSTAINABLE DEVELOPMENT

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This brochure was prepared by the ministère des Transports du Québec's Service de l'environnement et des études d'intégration au milieu (environment and environmental integration studies service) at the Direction de la recherche et de l'environnement (research and environment division), in collaboration with the Direction des communications (communications division). The information presented was current as of October 2008.

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## ***Combining mobility and sustainable development: a challenge for the transportation sector***

The Québec government has made a resolute commitment to a sustainable development process. In addition to supporting the objectives of the Kyoto Protocol, it has produced a number of documents with a view to ensuring that Québec will continue along this path, including the following:

- The Sustainable Development Act (2006)
- The Québec Action Plan on Climate Change – 2006-2012 (2006)
- The Québec Energy Strategy – 2006-2015 (2006)
- The Québec Public Transit Policy (2006)
- The Government Sustainable Development Strategy – 2008-2013 (2007)

In addition, with the introduction of a carbon tax for the first time in North America in November 2007, the measures implemented in connection with the Action Plan on Climate Change are financed by a Green Fund.

The transportation sector is the largest emitter of greenhouse gases and the second largest user of fossil fuels in Québec, and therefore, any changes to the practices employed in the transportation sector will make a significant contribution attaining the government's sustainable development objectives.

The ministère des Transports du Québec (MTQ) is situated at the heart of these issues, and plays a determining role in terms of improving the performance of the transportation sector from the perspective of sustainable mobility.

The MTQ has been moving in this direction for a number of years. The first concern was environmental protection, and therefore, the MTQ introduced its Environmental Policy in 1992. Since then, it has gradually integrated the principles of sustainable development into its policies, programs and activities.

The focus has increasingly turned toward combining mobility with sustainable development, and its actions in the field of sustainable development have covered all the sectors in which it is active:

- Transportation planning
- Managing transportation networks and infrastructures
- Acting as an ecoresponsible government organization





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## Transportation planning

### A SIGNIFICANT CONTRIBUTION TO THE IMPLEMENTATION OF THE QUÉBEC ACTION PLAN ON CLIMATE CHANGE AND THE QUÉBEC ENERGY STRATEGY

In response to the Québec Action Plan on Climate Change – 2006-2012<sup>1</sup> and the Québec Energy Strategy – 2006-2015<sup>2</sup>, the MTQ has implemented a number of measures aimed at reducing greenhouse gas emissions and promoting energy efficiency in the transportation sector.

The MTQ's contribution has specifically included actions in the following areas:

- Promoting the development and use of public transit services;
- Encouraging the development and use of alternative transportation modes, such as walking, cycling and car-pooling;
- Promoting the introduction of intermodal projects for the transportation of goods;
- Establishing a program aimed at supporting the penetration of technological innovations in the area of energy efficiency in the goods transportation sector;
- Adopting regulations to make speed limiters compulsory on all trucks, and to set the maximum speed at 105 km/h.



The total budget for all of the programs designed to combat climate change that are within the jurisdiction of the MTQ amounts to \$166.5 million per year, including \$130 million for implementing the Québec Public Transit Policy.

The MTQ also works with the Agence de l'efficacité énergétique, which coordinates the comprehensive energy efficiency and new technologies plan that targets energy savings equivalent to 10% of the current consumption of petroleum products by 2015.

Finally, in an effort to deal with the effects of climate change that have already begun to make an impact, the MTQ is taking part in the joint governmental approach to minimizing the repercussions for the population and for the most vulnerable transportation infrastructures.

1. Ministère du Développement durable, de l'Environnement et des Parcs, *Québec Action Plan on Climate Change – 2006-2012, A Challenge for the Future*, 2006. [[www.mddep.gouv.qc.ca/changements/plan\\_action/index.htm#plan](http://www.mddep.gouv.qc.ca/changements/plan_action/index.htm#plan)]  
 2. Ministère des Ressources naturelles et de la Faune, *Québec Energy Strategy: Using Energy to Build the Québec of Tomorrow*, 2006. [[www.mrnf.gouv.qc.ca/energie/strategie/index.jsp](http://www.mrnf.gouv.qc.ca/energie/strategie/index.jsp)]

The MTQ's main areas of concern:

- Increased coastal erosion, along with coastal submergence and landslides;
- Melting of the permafrost, which threatens landing strips and access roads;
- An anticipated drop in water levels and flows in the St. Lawrence River, along with the consequences for the shipping industry;
- Winter road maintenance and the condition of pavement.



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## STRATEGIC SUPPORT FOR SUSTAINABLE MODES OF TRANSPORTATION

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### I. The Québec Public Transit Policy

Through the adoption of the Québec Public Transit Policy, which was announced on June 16, 2006, the government set the target of an 8% increase in public transit ridership by 2012, and stated that it would pay for 50% of the costs incurred by transit corporations in connection with increasing services.

The policy included financial assistance programs that targeted improvements in public transit and regional transportation services, the adaptation of taxis and intercity buses for wheelchair users, improved energy efficiency in road passenger transportation, and support for transportation modes such as cycling, carpooling and walking as alternatives to the automobile.

In concrete terms, in recent years,

- a suburban train line has been added from downtown Montréal to Blainville and Saint-Jérôme, with another line between downtown Montréal, Repentigny and Mascouche planned for 2010;
- starting in February 2007, electric and hybrid (diesel-electric) buses have been introduced in the city of Québec, Montréal and Gatineau;

- an incentive for employers to pay the cost of a monthly transit pass for their employees has been introduced, in return for a tax deduction of 200% of the costs incurred;
- \$4.5 billion will have been invested in public transit by 2011.



## 2. The Québec Marine Transportation Policy

Maritime transportation boasts excellent energy performance. On average, a ship can move 1 ton of goods 241 km for every litre of fuel, compared to 95 km for a train or 28 km for a truck. In light of this, the MTQ is actively working to implement the *Québec Marine Transportation Policy*, which was adopted by the gouvernement du Québec in 2001. In addition to contributing to maritime transportation, the MTQ is also helping to manage maritime and port activities in a manner that is consistent with sustainable development, including respecting ecosystems in the St. Lawrence.

## 3. The Modal Integration Assistance Program

In recognition of the fact that the optimum and integrated use of all maritime and rail-based transportation infrastructures and networks as a complement to road transportation constitutes one of the keys to sustainable development in the transportation field, the MTQ introduced the Modal Integration Assistance Program in October 2006. The program has a budget of \$21 million over five years (until 2010-2011).

One example of the potential economic, environmental and social benefits of integrating transportation modes is the initiative launched by the Alouette aluminium refinery on the Côte-Nord. Since April 2005, and with financial support from the MTQ, the company has been shipping a portion of its production for the North American market by barge and by ship via an aluminium transshipment centre in the port of Trois-Rivières. This new logistical arrangement has reduced truck traffic on route 138 between Sept-Îles and Trois-Rivières by 15,000 trips per year, resulting in:

- an improvement in highway safety following the 11% reduction in heavy truck traffic on route 138 in the Regional County Municipality of Haute-Côte-Nord;

- a 10,000 tonne reduction in greenhouse gas emissions per year;
- an estimated \$595,000-per-year decrease in maintenance costs for route 138 and Autoroute 40.

In the rail sector, more than \$15 million was allocated between 2000 and 2006 in order to restore secondary routes operated by local railway companies, in addition to close to \$4 million for the creation of infrastructures aimed at linking businesses with railway lines that have intermodal potential. These investments generated increased demand for rail transportation, resulting in approximately 14,000 extra goods wagons being used in Québec in 2006, which contributed to the reduction of greenhouse gas emissions.



#### 4. The Bicycle Policy and the Route Verte

In 1995, working in collaboration with the Société de l'assurance automobile du Québec, the MTQ adopted a *Bicycle Policy* aimed at guiding work on all roads within the jurisdiction of the MTQ in order to take into account the needs of cyclists. The Policy was revised in 2008 for the purpose of providing even more support for the use of bicycles as a mode of daily transportation in urban settings.

Thanks to the Policy and the actions implemented by municipal and regional partners, the Québec network of cycle trails reached a total length of more than 7,000 km in 2007. It is important to mention the Route Verte, which was an original idea proposed by Vélo Québec that was inaugurated in August 2007, now offers more than 4,000 km of trails in all areas of Québec. The MTQ offers financial assistance for the maintenance and development of the Route Verte, and for the extension of other cycling routes.

These initiatives have borne fruit, as evidenced by the fact that Québec is by far the North American jurisdiction where cycling is the most popular, boasting 1.5 times as many cyclists as in Ontario or British Columbia, and twice as many as in the United States. Cycling is also gaining popularity as an alternative mode to automobile transportation. In 2005, 34% of cyclists, or approximately 880,000 people, used their bicycles for transportation purposes, which represents an increase of 62% compared to 1995.

## Managing the transportation network

### HARMONIZED INTEGRATION OF HIGHWAY PROJECTS INTO THE ENVIRONMENT

#### 1. Environmental impact studies

In general, before launching a highway project, the MTQ conducts studies of the impact on the biophysical and human environment. These studies constitute a key tool in transportation planning and land use. The data that are gathered allow the MTQ to take steps to ensure that the projects are managed in compliance with sustainable development objectives.

One example is the extension of the boulevard Robert-Bourassa in the city of Québec. Great care was taken to integrate an urban boulevard project into a specific environment. First, the road crosses the drainage basin of a river that is already significantly impacted by urbanization. In light of this, a number of retention ponds were built in order to regulate the run-off of surface water from non-permeable zones. Two of the ponds were designed as wildlife habitats. In addition, in view of the fact that the road crosses natural wildlife corridors, specific steps were taken to allow the Duberger river and Escarpement park to continue to function as biological corridors. Wildlife crossing points of various types were built under the roadbed, including a dry passage as part of a culvert and a continuous strip of debris as part of a pedestrian underpass. The pedestrian underpass provides for foot traffic through the linear park. Another tunnel-like structure was constructed at the intersection with another major boulevard in order to allow pedestrians and cyclists to cross safely. Finally, a special effort was made in terms of landscaping in order to integrate the highway into its urban environment. Thousands of plants, including 1,800 trees, 14,000 bushes and 16,000 shrubs, were planted on either side of the road and in the central divider, and special attention was paid to structural elements in order to ensure their visual integration.





## 2. Document governing the environmental management of road projects

The MTQ defines environmental management tools in order to help ensure that the environment is taken into account during both the design and construction of road infrastructure projects.

In March 2007, the MTQ published *L'environnement dans les travaux de construction et d'entretien des routes et des ponts* (the environment in road and bridge construction and maintenance). The result of many years of work, this document is designed to share the expertise that the MTQ has acquired over the years in the field of environmental management. It is also intended to demonstrate how the idea of protecting the environment can be included when road and bridge construction and maintenance work is prepared and carried out.

## 3. Ecological management of vegetation along autoroute corridors

The MTQ is responsible for maintenance of approximately 2,000 km of autoroutes. After observing that the traditional methods used to control vegetation created a bland landscape, led to a deterioration in ecosystems and generated high costs, the MTQ adopted a new approach that involves mowing only the first two metres from the roadway, and leaving local species of flora to flourish in order to provide road users with a multi-coloured landscape, except in the case of problematic colonies of reeds (*Phragmites australis*). If necessary, the remaining width can be mowed or cleared in order to prevent trees from seeding.

This approach improves ecosystems and the landscape, and contributes to driver safety, air quality, a reduction in greenhouse gas emissions, overheating during the summer, lower maintenance costs and the fight to eradicate ragweed.





#### 4. An ecological management method for roadside ditches that generates environmental benefits

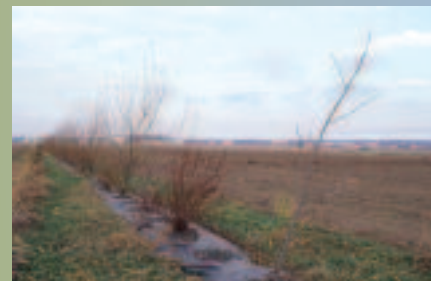
In an effort to reduce the environmental impacts associated with the maintenance of roadside ditches, the MTQ introduced a standard based on the “lower third method” (standard 6331-1) promoted by a group of associations that support the environmental protection of lakes and watercourses in the Estrie region and the upper Saint-François drainage basin (RAPPEL — Regroupement des associations pour la protection de l’environnement des lacs et des cours d’eau de l’Estrie et du haut bassin de la rivière Saint-François). This method reduces the need to dig out ditches, and uses nature as an ally. Only the bottom of the ditch is dug out, or in other words the lower third of the total depth of the ditch, and only if necessary.

The advantages that have been observed after the introduction of this method include a dramatic reduction in erosion of the ditch banks and sedimentation on the ditch bed, the conservation of vegetation that is both useful and pleasing to the eye, better harmonization of the road corridor with the surrounding agricultural and forest environment, a reduction in the amount of debris that must be removed, and a decrease in the cost of ditch cleaning. Finally, the main benefit that is anticipated over the medium and long term is a significant reduction in the volume of sediment and pollutants (from agricultural and other sources) flowing into natural water bodies.

#### 5. Windbreaks

By reducing blowing snow and ice on the roadway, a windbreak planted inside or outside of a right-of-way can increase winter safety for the users of autoroutes that cross open land. In light of this, the MTQ has been studying this issue for a number of years, and has planted windbreaks of various types in several regions, including rows of deciduous, coniferous or mixed trees, hedges of tall grasses, shrubs or bushes, vegetation planted on earth mounds, etc.

E.g.: A 13 km windbreak of grasses, shrubs and bushes was planted within the right-of-way along Autoroute 15 in the Montérégie region. Another remarkably effective method is to leave several rows of corn standing in fields alongside the road. Based on an agreement with the farmers involved, 8 to 10 rows of corn are left standing, as can be seen along Autoroute 35 near Saint-Jean.



## 6. Road noise

The MTQ's road noise policy aims to improve quality of life for citizens living along highways in two ways. First, when road projects are planned, the MTQ attempts to prevent noise problems by assessing the sound environment and implementing sound abatement measures as required. Among the factors that are taken into consideration during the planning stage are traffic management methods, the location of the road, the vertical profile and the type of pavement.

The MTQ also makes the corrections that are required in order to reduce noise levels near existing road infrastructures. For reasons of efficiency, noise barriers are the most frequent type of noise abatement measure implemented by the MTQ, in the form of earth mounds, barrier walls or a combination of both.

Finally, the MTQ has monitored and managed sound levels at road construction sites in recent years with a view to limiting the negative impact of highway construction and reconstruction work.

Recent examples of corrective work include the noise barrier constructed along autoroute 20 in the Lachine borough of Montréal. An example of noise abatement work planned as part of a new highway can be seen along boulevard Robert-Bourassa in the city of Québec (mounds and combinations of mounds and stone walls) and on boulevard des Allumettières in Gatineau (mounds and noise barrier walls).



## 7. Active support for the development of innovative, effective environmental technologies

The MTQ is actively involved in a number of technological innovation projects in the area of vehicle and fuel substitutes.

For example, the MTQ is working with universities and research centres, including École de technologie supérieure de Montréal (ÉTS), École polytechnique de Montréal, McGill University, Université Laval, Centre d'expérimentation des véhicules électriques (CEVEQ) and Institut du transport avancé du Québec (ITAQ), with two main focuses: experimental and demonstration projects; and awareness-raising activities pertaining to clean technologies.

Recent experimental and demonstration projects include BIOMER, which involves an assessment of biodiesel use by a fleet of cruise ships in order to demonstrate its viability as a fuel, and projects aimed at building high-performance prototypes of low-fuel-consumption vehicles (the Supermileage project) and solar-powered vehicles (the Esteban and iSun projects).



## 8. Support for the Chair in Landscape and Environmental Design at Université de Montréal (CPEUM)

The MTQ has been providing support for the Chair in Landscape and Environmental Design at Université de Montréal (CPEUM) since its creation on June 1, 1996.

As part of this partnership, the MTQ has commissioned the Chair to conduct 16 research activities<sup>3</sup>, either alone or as part of a research group. The projects focus on the gateways to the province of Québec, to its national capital, to the city of Québec, to its largest city, Montréal, and to smaller cities; on heritage landscapes in the Laurentians; on the visual monitoring of the landscapes along autoroutes where ecological management methods are applied; on a method for studying landscaping along highways and autoroutes; on the creation of and a management framework for the status of man-made landscapes in Québec; and on the design of a planted noise barrier.

3. All of the MTQ's research activities at Université de Montréal in the various fields are described in the list of research projects at: [[www1.mtq.gouv.qc.ca/en/projet\\_recherche/choix.asp?typeindex=organisme&index=U](http://www1.mtq.gouv.qc.ca/en/projet_recherche/choix.asp?typeindex=organisme&index=U)].

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## THE USE OF RECYCLED MATERIALS AND OTHER CONTRIBUTIONS TO SUSTAINABLE DEVELOPMENT

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Over the last two decades, technological advances have introduced new high-performance materials, design techniques that are better suited to the environment in Québec, and better control techniques, including the use of infrared thermography to monitor the application of asphalt. These new developments have allowed the MTQ to double the life expectancy of its pavement, which has resulted in less construction work on the road network, fewer traffic obstacles and savings in terms of both resources and materials.

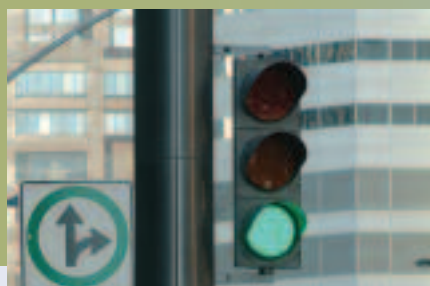
In the area of pavement management, the MTQ introduced a strategy that prioritizes corrective interventions that are highly cost-effective, as measured in terms of improvements in the condition of the pavement and increased life expectancy. The gains that have been made in recent years have had a positive impact on work sequences and costs for users (fuel consumption, vehicle wear, etc.).

The MTQ re-uses a significant percentage of the recyclable materials that it generates (asphalt, crushed concrete, etc.), along with certain industrial by-products, and also applies on-site recycling techniques. On average, it re-uses 30,000 tonnes of old asphalt in the production of new asphalt, and the quantity of materials generated by road reconstruction and re-used on site or in other projects is estimated at approximately 300,000 tonnes. The MTQ aims to increase re-use from the current estimated level of 15% to a target level of 20% in the coming years. In 2006, 13 projects based on the cold recycling of asphalt were carried out on 56.6 km of roads, using a total of 88,000 tonnes. Finally, approximately 82,500 tonnes of fill (crushed bitumen granulate and conventional granulate) were processed on site. Used tires are also used to form a compressible core in deep embankments over culverts, as part of a geotechnical design that reduces stress on the culvert and distribute pressure more evenly.

The MTQ has adopted an action plan aimed at ensuring that road marking work complies with the principles of sustainable development. Since 2007, the paints used for yellow road markings have contained organic pigments instead of lead chromate, which has reduced the amount of this substance released into the environment by 235,000 kg. In addition, the micro-beads that are used to increase night time visibility must now contain 90% of recycled glass from either Canada or the State of New York, avoiding the use of beads with a high heavy metal content of arsenic, lead or antimony. This also ensures that more than 2.5 million kg of waste glass is recycled rather than being used for landfill.

Within the context of the Hydro-Québec program aimed at optimizing the use of traffic signals, the MTQ modernized 1,629 intersections between 2005 and 2007 (of the approximately 1,830 intersections that are within its jurisdiction), replacing incandescent bulbs with LED units that use more advanced technology. This operation has led to a decrease in both energy costs and maintenance costs for the MTQ.

In terms of winter road maintenance, the MTQ ensures that road salt is used in a rational and optimal manner. The 35 MTQ weather stations that are installed along highways allow it to take proactive action by indicating with increased precision when and how roads should be de-iced. In addition, the MTQ has installed mobile road weather stations in approximately 60 winter maintenance patrol vehicles, which complement the information provided by fixed stations.



## CONSISTENT AND SUSTAINABLE MANAGEMENT OF HERITAGE BRIDGES

The MTQ pays particular attention to certain types of bridges that have heritage value in order to ensure that these examples of Québec culture and engineering stand the test of time. To this end, it has introduced two tools aimed at preserving the bridges: an assessment method and a ministerial guideline. In an effort to ensure that all heritage bridges are managed in a coherent and sustainable manner, the MTQ applies three main objectives in terms of conservation: identify heritage bridges, apply conservation measures, and help to enhance their heritage value.

One noteworthy initiative involves a book featuring covered bridges entitled *Les ponts couverts au Québec (Covered Bridges in Québec)*, which was published in 2005 at the instigation and under the supervision of the MTQ. It describes 26 existing covered bridges that are considered to be among the most distinctive bridges remaining in Québec because of their history or architecture.



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## ROAD SAFETY

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Thanks to the efforts of all of the partners involved in road safety — government departments, the Société de l'assurance automobile du Québec, municipalities, police forces — Québec's road safety record has seen a considerable improvement in the last 30 years. Despite a continuous increase in the number of drivers, vehicles on the road and kilometres travelled, the number of deaths decreased from 2209 in 1973 to 608 in 2007.

It is generally accepted that the behaviour of drivers is a factor in 80% of accidents, whereas road infrastructures are a factor in only 30%. Working with all of the partners to introduce measures aimed at influencing driver behaviour, the MTQ ensure that all the transportation infrastructures that are within its jurisdiction are safe, in good condition, and functional.



In an effort to influence driver behaviour, the MTQ designs and implements information campaigns to raise awareness and encourage road users to adopt safer behaviour patterns. Various themes are addressed, such as collisions with animals, vigilance when driving through road construction sites, sharing the road with cyclists and motorists, off-road vehicle safety and winter driving.

With respect to infrastructures, several actions have been implemented to improve the safety of the 30,000 km of roads that are within the jurisdiction of the MTQ.

- First, the MTQ has made a commitment to conduct road safety audits. This process involves analyzing road construction or upgrade projects with a view to targeting elements that present a risk for users. The process is used to verify whether the needs of all road users (pedestrians, cyclists, motorists, etc.) have been adequately taken into consideration, and whether the road is suitably integrated into its environment. These audits not only help to prevent accidents, but also to avoid changes to projects at the last minute, or even after they have been completed, which generates high costs. It is extremely important to conduct audits, especially in a context where investments in the road network have reached an all-time high.
- The MTQ also regularly replaces safety equipment (road signs, guardrails, road markings, etc.) in order to maintain or improve upon the initial safety level of the road involved. Actions with recognized cost-effectiveness are given priority in order to optimize investments. Audible road delineators (“rumble strips”) between the roadway and the hard shoulder are not expensive to install, but are extremely effective in terms of reducing the number of vehicles that leave the road. This is one of the actions that has been prioritized by the MTQ.

Finally, the MTQ recently introduced amendments to the *Highway Safety Code* aimed at facilitating the work of municipalities that wish to reduce the speed limit within their territory. Similarly, it has implemented various actions designed to encourage the use of public transit and active or alternative modes of transportation. These measures help to improve the road safety record while simultaneously reducing greenhouse gas emissions.



## An ecoresponsible government organization

### ECORESPONSIBLE MANAGEMENT

The MTQ makes a special effort to promote sustainable development in its building projects. Elements from the LEED (Leadership in Energy & Environmental Design) program have been introduced in order to guide the drafting of the functional and technical needs and requirements for individual projects, and for final building specifications.

For example, during the construction of the service centre in New Carlisle, which was completed in December 2006 at a cost of \$2.4 million, the LEED approach was used for the following aspects:

- Water-efficient landscaping;
- The use of materials with low volatile organic compound (VOC) content in adhesives, paints and coatings;
- Natural light and views in 75% of spaces;
- Reduced water consumption;
- Reduced light pollution;
- Efficient, low-energy heating, ventilation and air conditioning (HVAC) system;
- The use of natural materials (linoleum floor covering);
- The inclusion of bicycle racks and showers in the design.

A series of measures on a smaller but still significant scale is applied in other building projects with a view to reducing waste at source, recovering or recycling materials wherever possible, reducing greenhouse gas emissions and reducing energy consumption. These measures include:

- locating new building in areas that are served by public transit;
- re-using rather than replacing existing elements (doors and windows, tiles, etc.) in renovation projects;
- installing videoconferencing equipment in rooms in 13 MTQ office buildings, which reduces travel requirements;
- installing washrooms with shower facilities in the buildings where close to 70% of MTQ employees work in order to encourage the use of active modes of transportation.



In recent years, the MTQ's rolling stock management centre (CGER — Centre de gestion de l'équipement roulant) has introduced measures aimed at improving the performance of the fleet of vehicles under its responsibility, in keeping with the principles of sustainable development.

The CGER has purchased several hybrid vehicles since 2001 in order to reduce fuel consumption and greenhouse gas emissions. With more than 135 active vehicles in the compact and sports utility categories, the centre now has one of the largest hybrid vehicle fleets in Québec. It has also assisted in testing electric vehicles for the Centre d'expérimentation des véhicules électriques du Québec (Québec electric vehicle experimental centre)

The maximum speed of the heavy trucks used by the MTQ has been set at 90 km/h by adjusting the electronic engine controls. Reducing the maximum speed from 100 km/h to 90 km/h is known to generate fuel savings of approximately 10%.

All MTQ heavy vehicles are now programmed to limit engine idling to a maximum period of 15 minutes, and similar technology is currently being installed in its light vehicles.

Over the last few years, the CGER has been studying vehicle telemetry in a small number of heavy and light-duty vehicles in order to extend its use to the entire vehicle fleet. This real-time or delayed-time technology allows for better management of vehicle movements, the establishment of programs aimed at eliminating unsuitable driving behaviour, the reduction of idling time and better follow up in the area of preventive maintenance.

Since 2007, the CGER has obtained ISO 14001 certification for its environmental management processes. The certification, which is rarely awarded in the public sector, is based on full compliance with environmental legislation and regulations and on ongoing improvement in environmental performance across all CGER activities, and particularly those related to the operations of its maintenance workshop.



Finally, a variety of internal MTQ measures have been implemented in order to help protect the environment and promote sustainable development, including:

- recycling ink cartridges and cell phone batteries;
- using paper made from post-consumer recycled fibre;
- donating surplus equipment such as computers and office supplies to schools, thereby extending their useful life.

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## INTELLIGENT TRANSPORTATION SYSTEMS

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Used increasingly by the MTQ, intelligent transportation systems (ITS) generate significant benefits for the environment and in terms of road safety by improving traffic flows, reducing response times in emergency situations, and facilitating the movement of passengers and goods.

According to estimates produced by ITS America, improved coordination of responders using an ITS reduces intervention times following an accident by 20% to 40%.

One of the most remarkable applications of ITS at the MTQ is the Québec 511 Info Transports hotline, which replaced the Inforoutière system in October 2008. This is an integrated, multimodal information portal that is user-friendly and accessible by phone (by dialling 511) or on the Internet ([www.quebec511.gouv.qc.ca](http://www.quebec511.gouv.qc.ca)). From a single source, it provides all of the information related to incidents, road conditions and construction work on the major highway network, along with waiting times at border crossings and information concerning ferry services. The system allows for safer, more efficient trip planning.

The traffic management centres in Montréal and the city of Québec are another conclusive example of ITS effectiveness.

The MTQ has introduced a new approach to winter maintenance based on innovation and the application of new technologies through the creation of its winter maintenance decision-making support system (SADVH – Système d’aide à la décision en viabilité hivernale) and an ITS application project (STI-Exploitation). The MTQ is the only road administration in Canada to have defined an indicator to measure the performance of the road network during the winter period.



## INFORMATION AND AWARENESS-RAISING ACTIVITIES

The MTQ has introduced a variety of activities designed to inform and raise awareness with respect to sustainable development among its personnel and the general population. These involve the use of information technologies (Internet, intranet); participation in events to pool expertise and experience (congresses, symposiums, specialized workshops, roundtables); joint work and discussions with partners; publications; and the distribution of awareness-raising documents.

On February 16, 2005, the day when the Kyoto Protocol came into effect, the MTQ added a subsection to its website in the “Environment” section to explain the notions of greenhouse gas and climate change<sup>4</sup>. This was the first site belonging to a department of transportation in Canada to address the issue of climate change and to make the general public aware of the challenges involved, in addition to making more specialized knowledge available.

Working in collaboration with the Société pour la promotion de la science et de la technologie, the MTQ has also established a school workshop called “Transports et changements climatiques en interactions” (“interactions between transportation and climate change”). The workshop is designed as an educational game to explain to Grade 5 and Grade 6 elementary school students the role played by greenhouse gases and the influence of transportation choices on emissions.



4. The “Climate Change” section is located at:  
[[www.mtq.gouv.qc.ca/portal/page/portal/ministere\\_en/ministere/environnement/changements\\_climatiques](http://www.mtq.gouv.qc.ca/portal/page/portal/ministere_en/ministere/environnement/changements_climatiques)]







