

# TOWARDS SUSTAINABLE DEVELOPMENT: BUILDING A BETTER FUTURE WITH PUBLIC TRANSIT



Greater Vancouver Transportation Authority, Société de transport de Montréal, Agence métropolitaine de transport, Société de transport de l'Outaouais

*Transit systems across Canada are contributing to sustainability by greening their own operations, from Greater Vancouver (main photo) to Greater Montreal (bottom left and centre) and Gatineau, Quebec (bottom right)*

Over the last two decades, sustainable development has evolved from an academic concept into a prominent international objective. Governments, individuals and businesses are increasingly aware of the global issues driving the pursuit of sustainability—climate change, resource depletion, social inequity—and the effects they have on quality of life in our own communities.

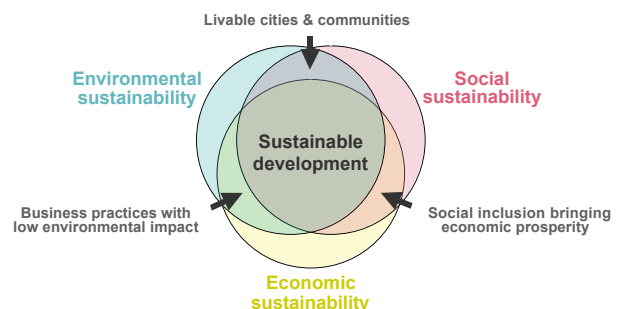
At issue is how humanity can sustain its economic and social progress. This is a question with global, national and local dimensions, but on all levels public transit is recognized as an important part of the answer. This issue paper explores how Canadian transit systems and suppliers are joining the international transit community as it pursues the goal of sustainable development.

## The role of public transit

Sustainable development represents a balance between the fulfillment of human needs and the protection of the natural environment, enabling those needs to be met indefinitely. Conceptually, it has three main dimensions: environmental, economic and social (see Figure 1).

Mobility gives individuals access to important services, and as such is a basic necessity of contemporary urban life. But cities all over the world face unsustainable patterns of mobility provision and consumption, with many suffering from congestion, pollution, community degradation and social dysfunction. Ultimately, sustainability will demand a new balance between collective and personal transportation. This kind of integrated response to major economic, environmental and societal concerns can only be achieved through a transformation of urban areas—one in which transit systems and suppliers will play a key role.

**Figure 1. A view of sustainable development<sup>a</sup>**



In 1992, the United Nations' landmark Rio Declaration on Environment and Development identified 27 principles of sustainable development.<sup>b</sup> Viewed through this framework, public transit's most important contributions are summarized below:

- **Protecting the environment** through greater energy efficiency and reduced emissions
- **Protecting ecosystems** through greater development densities and more efficient infrastructure
- **Improving health and quality of life** through cleaner air, greater safety and reduced noise
- **Improving equity** by maximizing opportunity for persons who do not have access to a car
- **Strengthening the economy** by reducing social costs, creating employment and raising land values
- **Ensuring responsible production and consumption** by balancing transportation services with demand

Transit systems and suppliers can achieve these and other benefits through community-wide impacts as well as through their own operational decisions.

## A global perspective

The Brussels-based International Association of Public Transport (UITP) has focused on sustainability for several years. Its Commission on Sustainable Development prepares sustainability reporting indicators for transit organizations, and organizes global conferences on sustainable development.<sup>c</sup>

The Commission also manages the UITP Sustainable Development Charter. The Charter was launched in 2003 as a way to encourage transit systems and suppliers around the world to integrate sustainability considerations into their operations. Signatories commit to adopting the social, economic and environmental principles of sustainable development, and to supporting sustainability through leadership, advocacy and information exchange.

About 120 UITP members—public and private operators, transportation authorities and suppliers—have either signed the Charter or pledged to do so. Full Charter members have made social, environmental and economic sustainability a strategic objective of their organization. Pledge signatories commit to begin or accelerate their implementation of sustainable development principles, with the goal of becoming a full Charter member. Associations that have signed the pledge or the full Charter commit to equivalent but different criteria.

To be accepted as a full Charter member by the Sustainable Development Commission, organizations must commit at the executive level to sustainable development as a strategic objective, and show that they monitor, measure and report on their performance. Applying for membership normally does not require extensive new work, and Charter members have found that the documentation process actually helps them inform and engage their own stakeholders.

## The Canadian perspective

CUTA, which is the voice of Canada's transit industry, is a signatory to the UITP Sustainable Development Charter. Three CUTA members have also signed on: Bombardier Transportation is a full Charter member, and the Société de transport de Montréal and the Agence métropolitaine de transport are pledge signatories. This issue paper offers profiles of these organizations and their related activities.

CUTA has encouraged its members to sign the UITP Sustainable Development Charter, and expects more to do so in the near future. Many Canadian transit systems and suppliers are active proponents of greater sustainability, and are reshaping their operations accordingly. Some of these national leaders are profiled on the following pages.

As the clash between human progress and the natural environment intensifies, the importance of sustainable development will only grow. It is clear that Canada's public transit industry will continue to play a key role in the continued health and prosperity of our cities, and indeed of our entire nation.

## Ontario

The **Toronto Transit Commission** is pursuing a range of sustainability initiatives, including:

- Increased vehicle fuel efficiency through the acquisition of more than 550 hybrid buses by 2008, the use of a 5% biodiesel blend, and exploration of green power sources
- Facility energy audits and retrofits to lighting and other building systems
- Waste reduction programs that divert 73% of waste from landfill
- A hazardous materials management program and development of a green procurement policy

**Hamilton Street Railway (HSR)** is working towards the creation of a more sustainable transit fleet. One strategy is the acquisition of hybrid diesel-electric buses, including new 18-metre articulated buses that boast fuel economy equivalent to a conventional diesel bus but with 30% greater passenger capacity. Another strategy is to reduce the operating lifespan of HSR buses from 18 to 12 years in

order to reduce costs and attract riders. Over half of the fleet is now five years old or less, with results including stabilized parts and labour costs, fewer outsourced repairs, less frequent road calls and reduced towing costs.

**Guelph Transit** is an example of how smaller systems can put sustainability into practice. Since 2003, it has been using a biodiesel blend of 20% vegetable oil that burns cleaner and produces fewer odours than conventional diesel fuel. Guelph Transit also requires bus operators to turn engines off while waiting at transfer points or layovers and when ending a shift, except in "load and go" situations or in temperatures below -20°C.



Toronto Transit Commission

## Quebec

The **Agence métropolitaine de transport** (AMT), which plans and coordinates public transit services across Greater Montreal, is a pledge signatory of the UITP Sustainable Development Charter.

The AMT is developing an internal Policy on Sustainable Development, and has been a partner in the City of Montreal's First Strategic Plan for Sustainable Development. For several years, it has supported Montreal's annual Car Free Day (« En ville, sans ma voiture ! ») and administered the *allégo* program that works to improve commuter options in partnership with transportation management associations and employers.

Within its operations, the AMT's network of five commuter rail lines has been very successful, with annual ridership growth exceeding 3%. In 2008, the agency will study the feasibility of converting the entire commuter rail network (now operated under both diesel and electric power) to electricity.

The **Société de transport de Montréal** (STM) is also a pledge signatory of the UITP Sustainable Development Charter. The organization revised its mission statement and business plan in 2006 to reflect a commitment to sustainable development. While it works towards ambitious five-year targets for service and ridership growth, STM is integrating sustainability throughout its business operations.

Initiatives include:

- SmartDriver training for bus operators, reducing greenhouse gas (GHG) emissions by more than 2,500 tonnes with a targeted annual reduction in fuel use of 4.5%
- Acquisition of eight biodiesel-electric hybrid buses in 2008, and eventual adoption of biodiesel across its fleet to reduce annual GHG emissions by 7,000 tonnes
- Energy efficiency retrofits to transit facilities, including electrification of a natural gas heating system to save \$545,000 and five tonnes of GHGs annually
- A new bus facility to open in 2009 featuring a green roof, green walls, wash water recycling, high-efficiency boilers, low-emission paints, and natural and energy-efficient lighting
- Installation of newspaper disposal bins to enable the recycling of 10 tonnes of newsprint each week

In the last decade, the **Société de transport de l'Outaouais** (STO) has increased its ridership by almost 60% and reduced community GHG emissions by 30,000 tonnes. Sustainable development is a theme of the STO's Strategic Plan for 2005-2015, which calls for a corporate environmental policy and further contributions through the following measures:

- A bus-based rapid transit system along an existing railway corridor that will reduce annual GHG emissions by 3,000 tonnes when it opens in 2010

- Introduction of a "Green Line" as part of Transport Canada's Urban Transportation Showcase Program, featuring a reserved bus lane with transit signal priority, new park-and-ride lots and enhanced passenger information and amenities
- Introduction of the first two diesel-electric hybrid buses in Quebec
- Continuing delivery of CUTA's SmartDriver training program for 300 bus operators, to reduce fuel consumption



Société de transport de l'Outaouais

*Hybrid buses for the STO's Green Line are unveiled by the Hon. Laurence Cannon, Minister of Transport, Infrastructure and Communities, and Louise Poirier, Chair of STO*

In 2003, **Bombardier Transportation**, a division of Montreal-based Bombardier Inc., became the first rail vehicle manufacturer to sign the UITP Sustainable Development Charter. As part of this commitment, Bombardier Transportation released its first comprehensive *Sustainability Report* in 2007 (available from [www.bombardier.com](http://www.bombardier.com)).

The company strives for profitability while delivering safe and competitive products, providing healthy and safe workplaces, and ranking as a preferred employer. Its commitment to sustainability encompasses its manufacturing philosophy and worldwide facilities, with 90% of the company's rail vehicle components being recyclable and more than 90% of sites certified and regularly audited according to the ISO 14001 standard for environmental management.

Bombardier Transportation has demonstrated its commitment to sustainable mobility through innovations related to high-capacity trains, advanced light rail and double-deck regional vehicles, and systems for train control and predictive maintenance. The company also strives to transfer knowledge and best practices to developing countries, and has been acknowledged by the United Nations Conference on Trade and Development for its health, safety and environment standards in transferring locomotive propulsion technology to India.

# BOMBARDIER

## British Columbia

The **Greater Vancouver Transportation Authority** (TransLink) is conducting a Bus Demonstration Project to test alternative technologies including compressed natural gas, low-sulphur diesel with particulate filters, biodiesel, and two types of diesel-electric hybrid. As part of this project, TransLink recently put two buses powered by a blend of 20% hydrogen gas and 80% compressed natural gas (CNG) into regular passenger service. Known as HCNG, this innovative fuel is used by only one other system in North America, and produces 40% fewer nitrogen oxides, 20% fewer hydrocarbons and 11% fewer GHG emissions than straight CNG.

TransLink also received the Excellence in Urban Sustainability award from the GLOBE Foundation and the Globe and Mail for its new Vancouver Transit Centre. The centre houses zero-emission electric trolley buses and incorporates recycled materials, Energy Star roof membranes, natural lighting and a state-of-the-art wastewater treatment plant.

Many **smaller transit systems in British Columbia** (i.e. those outside Greater Vancouver) are also pursuing greater sustainability. BC Transit is acquiring 20 new fuel cell buses, representing the world's largest hydrogen-based transit fleet, for the Whistler and Valley Express (WAVE) system in time for the 2010 Olympic Winter Games. Elsewhere, BC Transit's environmental fuel strategy involves 25 conventional transit systems in a phased migration from ultra low sulphur diesel fuel to a 5% biodiesel blend, reducing GHGs and other emissions.

## Alberta

**Calgary Transit** has powered its CTrain light rail system with wind-generated electricity since 2001, and is also the first transit system in North America to have all aspects of its operations (administration, operations and maintenance of buses and light rail cars) registered to the ISO 14001:1996 standard.

ISO 14001 is an international standard for controlling and improving an organization's environmental performance. To achieve ISO 14001 registration, an organization must possess a sound environmental policy, an effective environmental management system, and a commitment to comply with or exceed environmental legislation. An independent registering body conducts regular audits to ensure that facilities and processes meet the required ISO standard, and that environmental performance improves with time.

The **Town of Banff** supports Parks Canada's goal of achieving "no net negative environmental impact" for Banff National Park. Because diesel emissions contribute significantly to local air pollution, the town will replace Banff Public Transit's current diesel buses with four diesel-electric hybrid buses by mid-2008. The first all-hybrid transit fleet in Canada will achieve a variety of social and economic objectives while it reduces GHG emissions by more than 1,100 tonnes annually. The buses will run on a biodiesel blend, provide easy access for wheelchairs and strollers, and offer bicycles and ski racks to encourage active living.



City of Edmonton

**Edmonton Transit System** (ETS) is in the process of conforming to ISO 14001 standards, as part of City-wide environmental management system implementation. Related initiatives include:

- The Fuel Sense program that has trained hundreds of transit operators in fuel-efficient driving
- An evaluation of hybrid bus operation within the ETS service model
- A program to reduce air emissions by installing particulate filters in all diesel buses acquired since 1998
- A strategy to find alternatives to hazardous chemicals used in transit operations

### References:

- (a) Adapted from UITP, "Ticket to the Future: Three Stops to Sustainable Mobility" (available at [www.uitp.org/sustainabledevelopment](http://www.uitp.org/sustainabledevelopment))
- (b) See [www.unep.org](http://www.unep.org) for more information
- (c) See [www.uitp.org/sustainabledevelopment](http://www.uitp.org/sustainabledevelopment) for more information

The Canadian Urban Transit Association (CUTA) is the voice of Canada's public transit industry. For additional information including research reports, industry updates, news bulletins and more, please contact us or visit our website.



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