

TRANSIT VISION 2040 — FROM VISION TO ACTION

TRANSIT VISION 2040 defines a future in which public transit maximizes its contribution to quality of life with benefits that support a vibrant and equitable society, a complete and compact community form, a dynamic and efficient economy, and a healthy natural environment.



THEME 4: GREENING TRANSIT

STRATEGIC
DIRECTION

4.3

Implement local greening
and energy initiatives

GREENING TRANSIT

Strategic Direction 4.3:

Implement local greening and energy initiatives

There exists tremendous scope for local greening initiatives that can be undertaken in parallel with the development of wider greening and energy strategies. This includes issues such as waste disposal, energy use, facility design and life-cycle management. The industry can have considerable influence in the area of green purchasing through its buying power and coordinated procurement.

A transition away from fossil fuels, energy uncertainty, and climate change concerns will increase the attractiveness of electric transit vehicles. The industry has made good use of electric grid-connected vehicles, particularly in large urban centres. Renewed interest in trolley buses and evolving technology may allow for more widespread use.

Transit systems should develop and implement **greening and energy strategies** for procurement, vehicles, energy, and maintenance.

Alternative sources of energy that offer reduced or eliminated emissions should be used wherever possible.



Programs developed as local greening and energy initiatives should be promoted to underline **transit's role in environmental sustainability**.

PERFORMANCE INDICATORS AND TARGETS

Indicator 1: Greenhouse Gas Emissions

Greenhouse Gas Emissions Targets:

By 2020, all transit systems will have adopted vehicle acquisition and replacement strategies aimed at reducing greenhouse gases produced in their operations.

In 2010, the average transit fuel consumption rate was measured at 3.0 litres of fuel per 100 passenger kilometres, with associated greenhouse gas emissions averaging 7.4 kilograms per 100 passenger kilometres¹. Comparatively, 2010 fuel consumption rates for new personal vehicles averaged 6.6 litres per 100 passenger kilometres, assuming 1.2 passengers per vehicle².

By 2040, **transit fuel consumption will average 2.0 litres per 100 passenger kilometres and will produce no more than 4.9 kilograms of greenhouse gas emissions per 100 passenger kilometres.**

Indicator 2: Environmental Management Policies

Environmental Management Target:

By 2020, all transit systems will have an environmental management or green procurement policy in place, designed to reduce the impact of internal operations and facilities on the environment. Policies will outline specific greening targets and how they will be achieved, covering:

- Maintenance practices and materials
- Facility design
- Driver training programs aimed at improving fuel efficiency

Indicator 3: Transit Facilities

Facility Energy Efficiency Target:

By 2040, all transit facilities will be energy efficient. LEED certification is encouraged.

¹Adapted from CUTA's *Canadian Transit Fact Book: 2010 Operating Data*.

²Adapted from Natural Resources Canada's *Fuel Consumption Guide 2010* data.

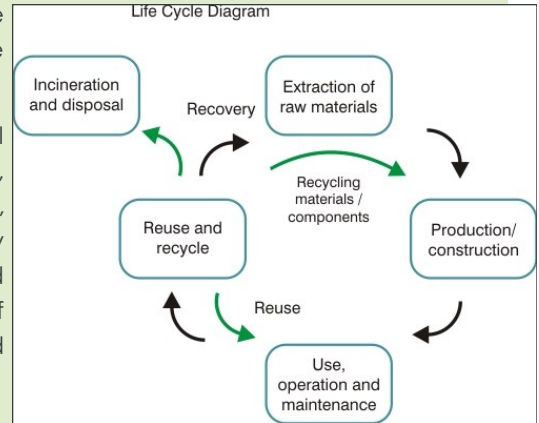
INITIATIVES AND BEST PRACTICES

Procurement Strategies can be used by transit systems to ensure that environmental sustainability is considered in the procurement of products and services wherever possible. Policies can outline goals or targets for the movement towards sustainable transit vehicles, facilities, and operating services.

Toronto, Ontario

The Toronto Transit Commission (TTC) was the first Canadian transit system to launch a Corporate Policy on Green Procurement in 2008, reflecting the system's commitment to integrating environmental considerations into every aspect of its purchasing process. The **Green Procurement Policy** works to provide a framework for the **purchase of environmentally preferred products**, encourage the inclusion of environmental performance criteria into supply chain procedures wherever possible, support the purchase of goods and services that will protect the environment while maintaining best value, and promoting a corporate culture that prioritizes environmental issues.

Through this Policy, the TTC's procurement decisions consider environmental and **total cost of ownership** along with traditional factors such as price, performance and availability. This involves a **life cycle approach**, as shown, that considers environmental impacts associated with the extraction of raw materials, production or construction, operation and maintenance, reuse and recycle, and disposal.



The TTC's Green Procurement Policy adopts a life cycle approach to procurement of products and services.

The Green Procurement Policy has received several awards and recognitions, including CUTA's 2011 Innovation Award.

Energy Efficient Transit Facilities can be implemented at many scales, reducing long term costs and emissions. Bus shelters, major transit stations, and operations facilities all present opportunities to maximize energy efficiency.

Edmonton, Alberta

Solar energy is being used by a number of transit systems to power bus shelters. In Edmonton, the system provided by Daytech Limited includes a roof-mounted solar panel and LED-illuminated display. It operates from dusk to dawn, providing illumination levels that are acceptable to the advertising industry. The system operates entirely off-grid and runs autonomously for up to five days.



Enseicom's solar powered bus shelters

Several other companies, including Montreal's Enseicom, provide bus shelters with solar panels for lighting (see left).

Dartmouth, Nova Scotia



View from terminal green roof

The **Metro Transit Bridge Terminal**, Metro Transit's busiest terminal, is a LEED Silver-certified facility. The terminal features a green roof with pedestrian pathways providing access to the facility without the need to cross bus traffic. The pedestrian paths and green roof also provide a spectacular view of the Halifax Harbour.

Saint John, New Brunswick

In 2010, Saint John Transit became the first transit system in Canada to build a LEED-certified operations centre. The LEED Silver building was designed to improve energy efficiency by 45%, as compared with a conventional building of similar size and function, through such measures as efficient insulation, lighting, heating, and cooling. However, with the addition of a solar wall system as well as a rainwater storage system that holds water to be used for washing buses, the building has reached a reduction in energy use of 65%, surpassing the initial target by a wide margin. These energy savings are estimated to translate to cost savings of \$250,000 annually.



INITIATIVES AND BEST PRACTICES

Alternative Fuels are now being used by many transit systems in Canada. Vehicles can be powered by electricity, biofuels, or wind energy. These alternative energy sources are renewable and can reduce or eliminate emissions. Noise pollution can also be significantly reduced.

Quebec City, Quebec

Réseau de transport de la Capitale (RTC) implemented the **Écolobus** project in June 2008 for the 400th anniversary of the founding of Quebec City. The system's eight **minibuses** are fully **powered by electricity** and can provide 100km or 8 hours of service before recharging, consuming only \$3.25 of electricity over one service day. Buses can accommodate up to 20 people at a time, operating along a 5.3 km route from Parliament Hill to the Old port through Old Quebec.

The project was carried out to improve transit service in Old Quebec while minimizing air and noise pollution. It has been successful since the start of the 2-year pilot project, with a rapid increase of service to a frequency of every 10 minutes. The system is now in permanent operation.



Source: Gris Orange Consultant Inc.

Hamilton, Ontario

The Hamilton Street Railway (HSR) fleet is among the newest, most diverse, and greenest in Canada. The fleet of 221 buses contains 20% **mini hybrids**, 16% **compressed natural gas (CNG)** powered vehicles, 13% **diesel/electric hybrids (DEH)**, and 32% **clean diesel**. Hamilton is the only North American city to have operated CNG buses continuously since 1985.

Hamilton was the first municipality in Canada to begin using **LED interior lighting** and the first to operate DEH articulated buses. HSR has "**right sized**" its service with DEH articulated buses on high capacity routes and smaller 26-foot clean diesel buses in lower ridership, noise sensitive areas.

HSR is working to continuously reduce its carbon footprint by developing a Business Case Analysis determining the viability of returning to CNG as the primary propulsion system. Key drivers in the report include the escalating cost of diesel fuel, low cost and stability of CNG pricing, and reduction of CO₂ emissions. In partnership with Metrolinx, Hamilton is also considering the retrofit of 25% of its fleet with Electronic Cooling Systems which can reduce fuel consumption on diesel buses 10-15%.

Calgary, Alberta

The CTrain light rail transit system is emissions-free, powered entirely by wind energy, using 12 wind turbines located in southwestern Alberta. The CTrain is North America's first **wind-powered transit system**.



Calgary Transit is also the first transit system in North America to have all aspects of its operations, including administration and operations and maintenance of vehicles, registered to the ISO 14001:1996 standard. **ISO 14001** is an international standard for controlling the environmental performance of an organization. It requires sound environmental policy, an effective environmental management system, and a commitment to comply with or exceed environmental legislation, determined through regular auditing.

Montreal, Quebec

Diesel-electric hybrid vehicles are being used by many Canadian transit systems, reducing fuel consumption by up to 40% if used on appropriate routes (low speed with closely spaced stops).

In recent years, Société de transport de Montréal (STM) has worked towards replacing its bus fleet with **hybrid buses**. This initiative began in 2008 with a pilot project wherein eight hybrid buses were purchased; through the pilot project, it was found that the hybrid buses reduced fuel consumption by 30% as compared to diesel buses.

Between 2014 and 2016, Quebec transit systems will add 509 diesel-electric hybrid buses to their fleets, which are expected to result in fuel savings of greater than the 30% previously experienced by STM. STM will receive 203 of these buses. The buses will primarily be funded by the province.

STM has also awarded a contract to DesignLine USA for seven **fully electric mid-sized low-floor buses** as part of its strategy to electrify its surface transit network.



GREENING & ENERGY INITIATIVES CHECKLIST

- Has the transit system developed an overarching strategy or policy document to guide sustainable practices?
- Is a life cycle approach to the procurement of products and services considered wherever possible?
- Does the transit system have a vehicle acquisition and replacement strategy that will reduce the use of fossil fuels?
- Are drivers trained to conserve energy through specific programs such as CUTA's *SmartDriver for Transit*?
- In developing new and rehabilitating existing facilities, does the transit system follow LEED principles?
- Is the transit system publicizing its local environmental sustainability initiatives to support its image as a green mode?

This guide is one in a series designed to assist CUTA members with implementation of *Transit Vision 2040* strategic directions for which they are in a leadership role. It incorporates performance indicators used in annual reporting at a national level to track progress towards 2040 targets. While CUTA is taking the lead for ten of these 27 strategic directions, the remaining 17 fall within the responsibility of other stakeholders, and these guides have been developed in order to provide support to CUTA members and encourage progress toward the *Vision*. The guides summarize the goals and objectives of each strategic direction, propose performance indicators and targets, illustrate best practices from transit systems across the country and provide a checklist to assist members in reviewing their progress.