The Centre for
Sustainable Transportation

Le Centre pour un
transport durable

Sustainable Transportation Monitor

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In this issue:

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THE CENTRE MOVES TO THE UNIVERSITY OF WINNIPEG

This issue of the *Sustainable Transportation Monitor* marks a new phase in the life of The Centre for Sustainable Transportation. The Centre began work as a federally chartered non-profit organization in 1996 with start-up funds from two federal departments, Environment Canada and Transport Canada. During 2005, its centre of operations will move from the Toronto region to Winnipeg, where it will become a part of the University of Winnipeg with multi-year support from the Government of Manitoba.

The move provides an occasion to review what has happened so far during the life of The Centre, and to consider the importance of and prospects for attainment of sustainable transportation in Canada. These matters occupy this issue of the *Monitor*.

THE CENTRE'S MISSION AND ACTION AGENDA

The Centre was founded largely at the initiative of its current president, Al Cormier, then CEO of the Canadian Urban Transit Association. Another key person in the early development of The Centre was John Hartman of the Transportation Association of Canada. John died unexpectedly in August 1999. We miss him still.

Box 1. The Centre's definition of sustainable transportation

A sustainable transportation system is one that:

- allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations.
- is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy.
- limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise.

Note: The words 'limits consumption of renewable resources to the sustainable yield level' were added to the original 1997 definition in June 2000.

The Centre's mission is "to provide leadership in achieving sustainable transportation in Canada by facilitating cooperative actions, and thus contributing to Canadian and global sustainability". The Centre's work has concerned economic and social aspects of sustainability, as well as environmental aspects.

Among the first actions of The Centre's board of directors was adoption of an eight-point *Action Agenda* setting out what The Centre was to produce and achieve:

1. A vision statement for sustainable transportation in Canada.
2. A working definition of sustainable transportation, based on the vision, that is easily understood, mutually agreeable and will stand the test of time.
3. Quantifiable performance measurements, based on the vision and definition, that can be used to track progress toward sustainability.
4. Publication of an annual *Sustainable Transportation Monitor* that reports on progress in achieving the vision, including performance measurements, policy shifts, significant actions, etc.
5. A set of practical and realistic decision-making principles and strategies to assist governments, the private sector, and individuals in working toward a sustainable future.
6. Research into the evaluation of various measures—policies, regulations, economic instruments, technologies, etc.—and their effectiveness in achieving the vision.
7. Research into urban transportation systems and service offered to the public and how they can be managed and deployed over time to move in sustainable directions.
8. Educational programs combining all of the above to bring the message of sustainable transportation to government, industry, labour, students, and the public at large.

The Centre's achievements have included substantial outcomes in respect of the first four items of the *Action Agenda*, the first three of which are described in the next few sections. There has also been considerable progress with the last four items. Full information about The Centre's activities is available at our Web site: www.cstctd.org.

VISION AND DEFINITION

The document *Vision and Definition of Sustainable Transportation*, published in 1997, was the first substantive result of the Centre's work. The vision set the stage for the definition (Box 1), which has received considerable attention and use in Canada and elsewhere.

The major use of the Centre's definition is in Europe. A slightly amended version was adopted unanimously as a working definition by European Union Ministers of Transport in April 2001.[1] A later assessment by Rand Europe of definitions of sustainable transportation concluded: "Compared to many other definitions developed for sustainable transport, this definition is more concrete and comprehensive, in terms of the complex and multifaceted topic. It spells out individuals' and society's interests and takes account of human and ecosystem health. Finally it bases its regard on use of natural resources on the 'management principles' of Herman Daly, which are commonly accepted as the basis for sustainability. Furthermore, … it has been reviewed by political mechanisms and received general political acceptance."[2]

As well as in the European Union, The Centre's definition has achieved considerable acceptance elsewhere. This was noted in a thesis completed at the Massachusetts Institute of Technology, which included these words: "Discussions with leading transportation research institutions have highlighted a growing international acceptance of the definition of sustainable transportation developed by the Canadian Centre for Sustainable Transportation".[3]

A March 2005 report for Transport Canada, *Defining Sustainable Transportation*, at The Centre's Web site, sets out numerous examples of adoption or use of The Centre's definition and the EU's version of the definition.

PERFORMANCE MEASUREMENTS

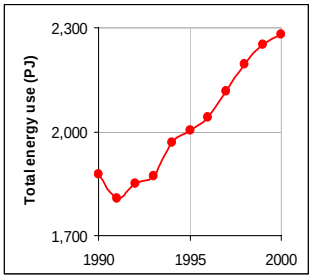
The Centre's definition was developed as a general description of sustainable transportation. Rigour came from work done in fulfillment of the third item of the Action Agenda: "[produce] quantifiable performance measurements, based on the vision and definition, that can be used to track progress toward sustainability".

This work was the Sustainable Transportation Performance Indicators (STPI) project conducted in three phases over the period 2000-2003 and supported by four federal government departments (Environment, Industry, Natural Resources, and Transport). Several reports on the project are at The Centre's Web site. Phase 3 culminated in the development of an initial set of 14 STPI, illustrated in Box 2 on the next page.

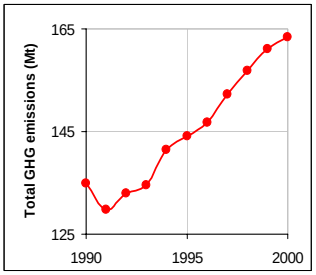
The STPI addressed energy use (Indicators 1, 13), emissions (2, 3, 14), safety (4), transport activity (5-8), land use (9), infrastructure (10), and transport costs (11, 12). In each

Box 2. The 14 indicators in the initial set of STPI

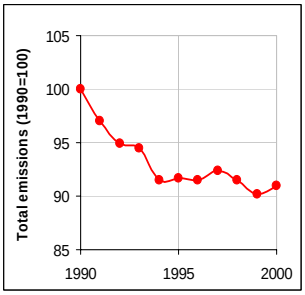
1. Use of fossil fuel energy for all transport



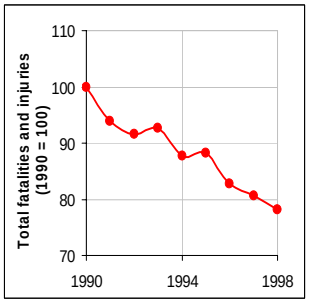
2. Greenhouse gas emissions from all transport



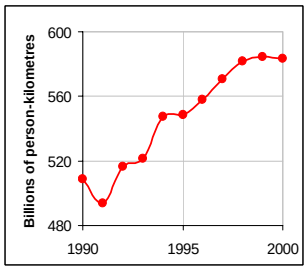
3. Index of emissions of air pollutants from road transport



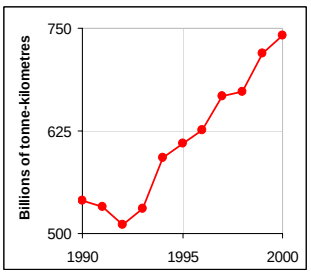
4. Index of incidence of road fatalities and injuries



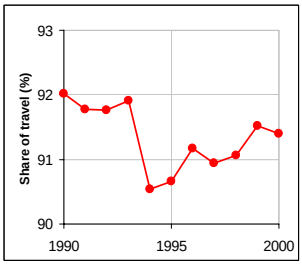
5. Total motorized movement of people



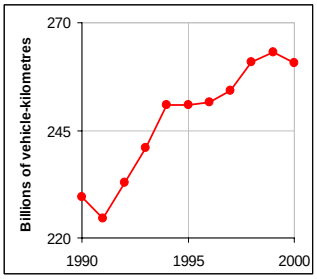
6. Total motorized movement of freight



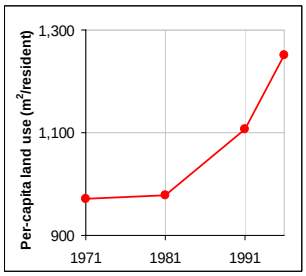
7. Share of motorized movement of people *not* by land-based public transport



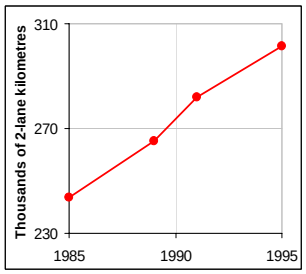
8. Movement of light-duty passenger vehicles



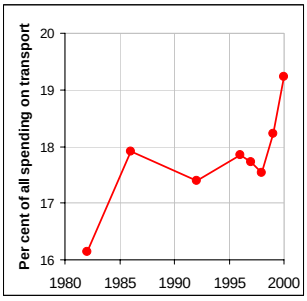
9. Urban land use per capita



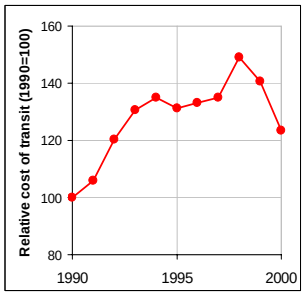
10. Length of paved roads



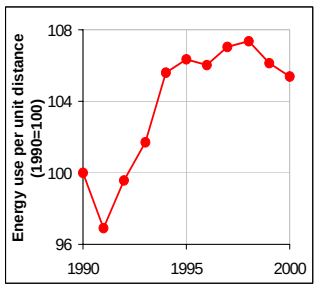
11. Index of relative household transport costs



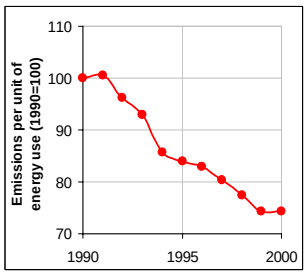
12. Index of the relative cost of urban transit



13. Index of the energy intensity of cars and trucks

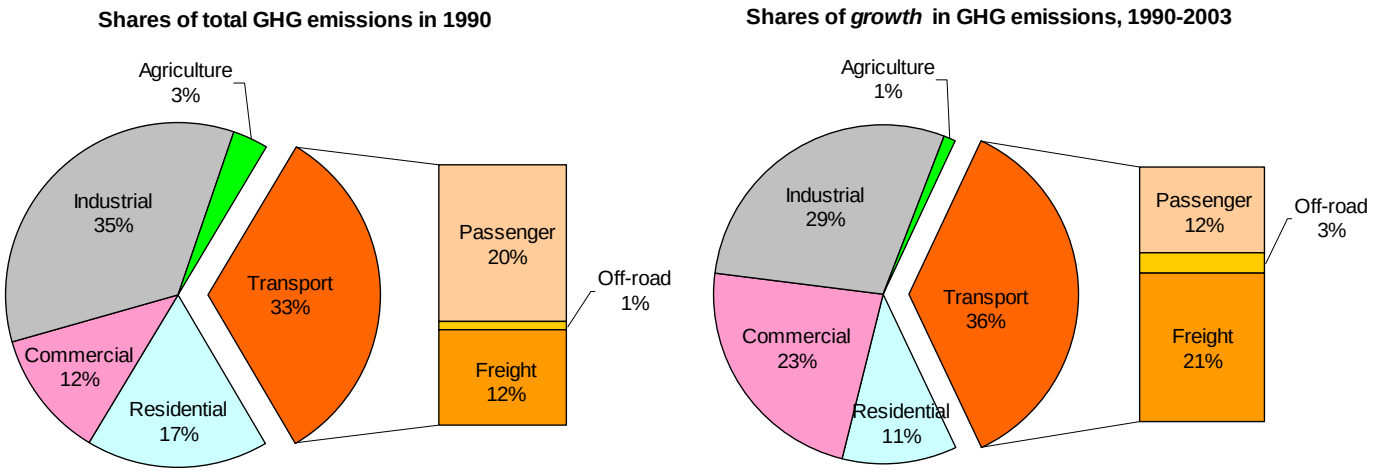


14. Index of the emissions intensity of the road vehicle fleet



Note that in each of the 14 charts a falling line represents progress towards sustainable transportation.

Box 3. Shares by sector of total GHG emission in 1990 and of growth in GHG emissions, detailing elements of the transport sector's shares, Canada, 1990-2003



Source: Based on data from Natural Resources Canada (see Note 4)

case, the indicator was constructed so that a falling curve shows progress towards sustainable transportation.

Box 2 suggests that, on balance, trends have been *away* from sustainable transportation. There are notable exceptions: emissions of local and regional air pollutants (Indicators 3 and 14) and safety (Indicator 4).

The initial set of STPI made the best use of available data to provide the broadest possible picture of transport trends relative to sustainability. A planned Phase 4 would strengthen the initial set of STPI, and extend their number and scope, particularly in relation to economic and social factors associated with sustainability. The Centre requires funds to deliver this phase.

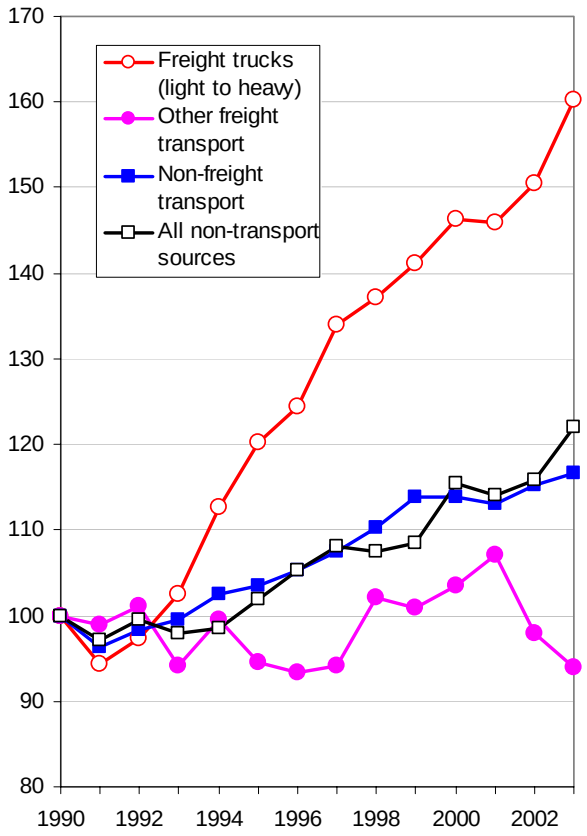
EMISSIONS FROM FREIGHT TRANSPORT

The Centre has continued to monitor progress towards sustainable transportation, particularly in respect of freight movement. Box 3 shows that freight movement has contributed a disproportionately large share of transport-related *growth* in greenhouse gas (GHG) emissions.[4] It contributed 21 per cent of the growth in GHG emissions between 1990 and 2003, even though it comprised only 12 per cent of total GHG emissions in 1990. Only GHG emissions from activities in commercial/institutional buildings had a higher rate of growth.

The growth in GHG emissions from freight transport has been entirely due to emissions from trucking. This is illustrated in Box 4,[5] which shows that GHG emissions from other freight transport—chiefly rail and marine—declined by six per cent between 1990 and 2003.

Box 5 shows actual data for these three freight

Box 4. Emissions of greenhouse gases: transport modes and other sectors, Canada, 1990-2003 (1990 values = 100)



Source: based on data from Natural Resources Canada (see Note 4)

Box 5. Actual tonne-kilometres performed and greenhouse gas emissions, freight modes, Canada, 1990 and 2003

	1990	2003	% change
Tonne-kilometres (millions)			
Marine	190,115	237,400	+25%
Rail	248,371	322,664	+30%
Road	106,555	234,022	+120%
Greenhouse gas emissions (megatonnes of CO_2 equivalent)			
Marine	8.1	7.8	-4%
Rail	6.7	5.7	-15%
Road	34.0	54.4	+60%
GHG emissions per tonne-kilometre performed (grams/tkm)			
Marine	43	33	-23%
Rail	27	18	-35%
Road	319	233	-27%

Source: Based on data from Natural Resources Canada (see Note 4)

transport modes.[6] Rail's GHG emissions declined by 15 per cent, even though its tonne-kilometres (tkm) performed increased by 30 per cent. Marine showed similar but smaller changes. Road freight increased greatly in both respects, although still performing fewer tkm than either marine or rail. All three modes showed a considerable decline in *unit* emissions, i.e., emissions per tkm. In spite of its decline in unit emissions, trucking showed a large overall increase in total GHG emissions because of the huge increase in the *amount* of trucking. Well over double the number of tkm were performed in 2003 than in 1990.

The Centre has drawn particular attention to the potentially large gains to be achieved through better use of the existing truck fleet. A one-quarter-full truck uses *two-and-a-half times* as much fuel per tonne-kilometre as a three-quarters-full truck, and more than half of the trucks on Canadian roads are less than half full.[7] Inefficient loading seems especially likely within urban regions, which could be a worthwhile short-term focus.

Several measures adopted elsewhere would be worth assessing for Canadian circumstances. In Gothenburg, Sweden, trucks that are 60-per-cent full or more may use reserved bus and streetcar lanes and special loading bays.

The Centre has been almost alone in drawing attention to trucking's disproportionately large contribution to growth in transport fuel use and GHG emissions. This began in the first issue of this *Monitor* in April 1998 and has continued through several *Monitor* issues and other Centre publications.

THE FEDERAL GOVERNMENT'S CLIMATE CHANGE PLANS

Review of the federal government's plans to address the Kyoto Protocol suggests that they have not responded sufficiently to the extraordinarily large contribution of trucking to Canada's growth in GHG emissions, or even to the large share of transport as a whole. For example, the 2002 *Climate Change Plan for Canada*[8] allocated no more than about 12 per cent of proposed reductions to the transport sector, even though transport was accounting for about a third of total GHG emissions and more than a third of the *increase* in GHG emissions (see Box 3). Moreover, even though freight movement had contributed well over half of the increase due to transport, the *Plan* proposed that it contribute no more than a quarter of the reductions in emissions assigned to transport.

The federal government's *Moving Forward on Climate Change*,[9] its current climate change strategy, makes few specific proposals for transport. There is reference to the recent *Memorandum of Understanding* reached with the automotive industry, described in the next section. Another feature is a strengthening of the previously announced One-Tonne Challenge Program. Through this, Canadians are encouraged to reduce GHG emissions resulting from their individual actions from a per-person average of five to four tonnes a year. According to a program document,[10] half of these emissions arise from passenger road transport. The document adds that half of the one-tonne target could typically be achieved by reducing annual distance driven by about 10 per cent.

Why has transport been given so little attention in the federal government's climate change plans? This could have occurred because of concerns about the economic and social costs

of actions concerning transport, particularly freight transport. Freight transport appears to be more important to the economy than passenger transport, much of which appears to be discretionary.

Another reason for a focus on passenger transport is that personal vehicles contribute a larger share of total GHG emissions (see Box 3). This reason may soon not exist. If truck emissions continue to grow at the current rate, and personal vehicle emissions fall overall by just one per cent a year from 2005, GHG emissions from trucks will exceed those from person vehicles by 2014.

The Centre may well continue to press for more prominence to be given to transport in general and road freight transport in particular in plans to meet Canada's Kyoto commitment.

MOU WITH THE AUTOMOTIVE INDUSTRY

The April 2005 *Memorandum of Understanding* (MOU) reached between the federal government and the 19 companies manufacturing light-duty vehicles in Canada could represent a remarkable step towards sustainability.[11] The companies have undertaken, through a non-binding agreement, to reduce by 2010 GHG emissions from light-duty vehicles in operation—cars, SUVs, vans, and pick-up trucks—to 5.3 megatonnes (Mt) below a 'reference case' for 2010, deemed in the MOU to be 90.51 Mt.[12]

The reduction applies to all vehicles *in operation*. The industry's tool to achieve this is selling vehicles rated to produce lower amounts of GHG emissions. Roughly half the vehicles on the road will be replaced by 2010.[13] Thus, if the targetted reduction were to be equivalent to a six-per-cent reduction from all vehicles in operation,[14] new vehicles on average would have to be 12-per-cent better.

Because little can be done for the 2006 and possibly even the 2007 model years, the reductions will have to be phased in. Vehicles produced for 2009 and 2010 would have to do considerably better than a 12-per-cent reduction in GHG emissions, if indeed the target for all light-duty vehicles in operation were to be a 6-per-cent reduction. Assuming reductions for model years 2006, 2007, 2008, and 2009 of 0, 4, 8, and 16 per cent, respectively, the reduction for the 2010 model year would have to be 32 per cent. This would be to ensure that the overall average for the five years would be a 12-per-cent reduction in GHG emissions from new vehicles, and thus a six-per-cent reduction from all vehicles in operation.

To put this level of reduction in context, new vehicles sold in Canada in 2003 rated GHG emissions per kilometre that were only four per cent below those sold in 1990.[15] A 32-per-cent reduction in five years would be almost the largest such change in history. Between 1975 and 1980, rated fuel use by—and thus GHG emissions from—new North American vehicles fell by 38 per cent. The reduction for the average vehicle was from a rated 18.0 to 12.3 litres per 100 kilometres.[16] Now, a 32-per-cent reduction would be from about 8.4 down to about 5.7 L/100 km.

Another key point from history is that the rapid decline in rated fuel use between 1975 and 1980 was a response to the oil price shocks of the 1970s and the prospect of more to come. In that context, consumers did not stay away when manufacturers provided small, lighter, less powerful cars. A similar context may now be emerging, as discussed below.

The effectiveness of the MOU will depend directly on the actual target to be negotiated by the industry and the federal government, as well as on the extent of industry compliance with this voluntary agreement. The Centre hopes to be able to contribute to a positive outcome to this process through its monitoring and advisory roles.

HEALTH AND YOUTH

As well as oil prices, aviation, freight transport, indicators, and sustainability generally, The Centre's research and publications, notably the *Monitor*, have dealt with numerous other topics, chiefly security, cities, vehicle technology, and children. The last topic has tapped a vein of concern among professionals, the public, and funders. The concern is that current transport and land-use arrangements are not serving children and youth well.

Alternatives mostly involve more active transport, notably walking and cycling, and also transit where appropriate. They give children and youth more independence and better health, and help build a later adult commitment to sustainable transportation.

Among the recent endeavours of The Centre has been development of a document entitled *Child- and Youth-friendly Land-use and Transport Planning Guidelines*. This 72-page document setting out and elaborating 27 guidelines was developed initially for Ontario. Draft versions for British Columbia and Nova Scotia have also been prepared. The Ontario version is available at The Centre's Web site. The other versions are available on request. Our hope is to produce a common Canada-wide set of guidelines in different versions for each province and territory.

THE REAL SUSTAINABILITY ISSUE?

Canada's relevant policy making, with justification, has become increasingly focussed on meeting our Kyoto obligations. Meanwhile, the Centre's work, almost from its beginning, has been increasingly influenced by what may be a larger and more urgent matter, namely the prospect of an early end to the availability

of low-cost oil.[17] The end of cheap oil could help attainment of the Kyoto commitment, but also it raises major sustainability issues about the viability of an economy and even a society profoundly dependent on transport fuelled almost entirely by oil.

The Centre has developed the view that reducing oil use for transport should become a major national mission because adjustment to very high oil prices will be much easier if consumption is falling, and more energy-efficient transport choices—e.g., urban transit, rail, marine—are available. Indeed, without this kind of preparation, a sharp rise in oil prices could be catastrophic.

Reducing oil consumption in preparation for very high oil prices could also result in greater reductions in GHG emissions than are required to meet the Kyoto requirement, if the reduction is achieved without switching to other fossil fuels. Moreover, preparing for a new oil-price regime may be a more saleable political objective than avoiding global warming. Working to avoid impacts of high oil prices could be seen as a more appealing objective than avoiding warmer winters, with greater immediate economic and social benefits.

GLIMMERS OF HOPE

Canadians have good intentions about transport, as well as high dependence on it, but lack institutions that can move the good intentions towards action. A symptom of the problem is the impoverished state of transport work at Canadian universities. The Centre's move to the University of Winnipeg is a small step towards remedying this.

High oil prices will tend to force action, but then it may be too late. The challenge is to act to reduce oil use in a timely manner.

In mid-2005, two of Canada's leading newspapers had major features on how world oil production will soon be unable to keep up with demand.[18] Such a startling prospect would not have been countenanced in this way even a year ago. Progress is being made.

Another positive change is the proposed amendment to Section 5 of the *Canada Transportation Act* (Bill C-44). It introduces "respects the environment" as a goal for transportation in Canada, and acknowledges that "regulation and strategic public intervention" may be necessary to achieve particular economic, environmental or social outcomes.[19]

The Centre's work may well have contributed to the growth in awareness about the oil situation. On the matter of Bill C-44, The Centre had made a formal submission suggesting that these kinds of changes be made.

MANY THANKS

A great debt is owed to the large number people, mostly volunteers, who have contributed to the work of The Centre over the last eight years. Because of them, The Centre is moving to the University of Winnipeg with a solid reputation, a large network of friends, and every expectation of making truly productive contributions to Canada's transport challenges, and encouraging such contributions at other universities in Canada.

The current Board of Directors and staff (until June 2005) are listed on the next page. Others who have served on the Board since 1997 are:

Marc Blanchet

Marc-André Charlebois

Christina DeMarco

Philip Green

Buzz Hargrove

John Hartman

Yvon Jobin

John Livey

Kelly Martin

David McKeown

Ginette Milord

Judith Patterson

Darryl Peck

Russ Robinson

Nola-Kate Seymoar

Brian Smith

Victor Thom

Frank Vena.

Research assistants have included:

Kathleen Nadeau (now acting manager, Climate Change, Transport Canada)

Lael Morgan (now co-leader, Climate Change Business Unit, The Delphi Group)

Hélène Tanguay (now Technologist, Public Works Department, City of Hamilton)

Andrea Lam (now an MS student in Occupational and Environmental Hygiene, University of British Columbia)

Hon Lu (now Manager of Special Projects, Hamilton Port Authority)

Nadia Brescasin (now Policy Analyst, Ontario Ministry of Transportation).

THE CENTRE FOR SUSTAINABLE TRANSPORTATION

The Centre is a federally chartered, non-profit organization.

The mission of The Centre for Sustainable Transportation is to work proactively in achieving the sustainable transportation of persons and goods in Canada through co-operative partnerships, relevant and timely research; projects; the communication and dissemination of balanced information; and the monitoring and supporting of sustainable transportation activities.

To achieve its mission The Centre provides reliable information, fills knowledge gaps through research, educates stakeholders and raises awareness among them, and offers strategic policy advice in selected areas.

The Centre's first publication was its *Definition and Vision of Sustainable Transportation*, published in mid-1997. You are reading the eleventh issue of the *Sustainable Transportation Monitor*, published once or twice a year since 1998. All issues of the Monitor are available at The Centre's Web site, as are The Centre's other publications (visit www.cstctd.org). The *Monitor* provides evaluation of progress towards or away from sustainable transportation and discussion of related matters.

This issue has been written by Richard Gilbert, The Centre's research director, with input from The Centre's Board of Directors. The content has been approved for publication by the Board of Directors acting as individuals rather than as representatives of the organizations with which they are affiliated.

Comments on this and other issues of the *Monitor* will be much appreciated. E-mail is the preferred mode of communication but feedback by any mode is welcome. Please see Page 1 for our e-mail address, fax and phone number, and mailing address. Contact The Centre to become a corporate or individual member of The Centre.

REFERENCE NOTES

1. The definition is contained in a resolution entitled *Strategy For Integrating Environment And Sustainable Development Into The Transport Policy*—also known as the *April Resolution*—adopted by the Ministers responsible for Transport and Communications at the 2340th meeting of the European Union's Council of Ministers, held in Luxembourg, April 4-5, 2001. The minutes of that meeting are available at the following URL:
   1. http://corporate.skynet.be/sustainablefreight/trans-counci-conclusion-05-04-01.htm. Accessed June 16, 2005.

2. The quotation is from Page 15 of Rand Europe et al, *SUMMA: Deliverable 2 of Workpackage 1: Setting the Context for Defining Sustainable Transport and Mobility*, June 2003, available at the URL below.
   1. http://www.summa-eu.org/control/reports/SUMMA-D2-Setting-the-Context.pdf. Accessed June 16, 2005.

3. The quotation is from Page 29 of Hall RP, *Introducing the Concept of Sustainable Transportation to the U.S. DOT through the Reauthorization of TEA-21*. MS thesis, Faculty of Engineering, Massachusetts Institute of Technology, 2003.

4. Box 3 is based on the downloadable version of the tables developed for Natural Resource Canada's *Energy Use Data Handbook 1990-2003*, June 2005, available at the URL below.
   1. http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/handbook_tables.cfm?attr=0. Accessed June 16, 2005.

5. Box 4 is based on data in the source detailed in Note 4.

6. Box 5 is based on data in the source detailed in Note 4.

7. The details of this estimate are in Issue No. 10 of the *Sustainable Transportation Monitor*, available at the URL below.
   1. http://www.cstctd.org/CSTadobefiles/STM10E-final.pdf. Accessed June 16, 2005.

8. The 2002 *Climate Change Plan for Canada* is available at the URL below.
   1. http://www.climatechange.gc.ca/english/publications/plan_for_canada/plan/pdf/full_version.pdf. Accessed June 16, 2005.

9. The April 2005 document *Moving Forward on Climate Change* is available at the URL below.
   1. http://www.climatechange.gc.ca/kyoto_commitments/report_e.pdf. Accessed June 16, 2005.

10. The document is *Your Guide to the One-Tonne Challenge*, Government of Canada, available at the URL below.
    1. http://www.climatechange.gc.ca/onetonne/english/OTCTipsGuide-e2.pdf. Accessed June 17, 2005.

11. The *Memorandum of Understanding between the Government of Canada and the Canadian Automotive Industry Respecting Automobile Greenhouse Gas Emissions*, dated April 5, 2005, is at the URL below.
    1. http://www.nrcan-rncan.gc.ca/media/mous/2005/20050405_e.htm. Accessed June 16, 2005.

12. The reference case for 2010, as agreed by the parties to the MOU, is based on the 2010 forecast in Appendix C of *Canada's Emissions Outlook: An Update*, December 1999, available at the URL below.
    1. http://www.nrcan.gc.ca/es/ceo/outlookc.pdf. Accessed June 16, 2005.

13. This estimate of the share of new vehicles in the total fleet of light-duty vehicles is based on data in the source detailed in Note 4. Actual values from 1990-2003 were extrapolated to 2006-2010 and summed to provide the estimate of 50%.

14. During his presentation at the AUTO21 Scientific Conference, held in Toronto on June 21, 2005, Tony Taylor, Director, Transportation Energy Use, Natural Resources Canada, said that implementation of the MOU would mean a reduction in GHG emissions from light-duty vehicles in operation in 2010 totalling six per cent below what the emissions otherwise would have been.

15. This estimate is based on the source detailed in Note 4.

16. These are data on the U.S. fleet of light-duty vehicles, from Table 2 of *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 Through 2004*, U.S. Environmental Protection Agency, Washington DC, 2004, available at the URL below. Canadian data for the period are not readily available, but are likely similar.
    1. http://www.epa.gov/otaq/cert/mpg/fetrends/420r04001.pdf. Accessed June 16, 2005

17. The Centre's first major expression of concern about oil futures was in the second issue of the *Monitor* produced in February 1999, under the general heading 'Sustainable transportation and the end of cheap oil'. The expression of the position advanced here—that dealing with impending high oil prices may be more important than, although not an alternative to, reducing GHG emissions—was first put forward in Issue No. 8 of the *Monitor*, produced in April 2003, available at The Centre's Web site.

18. The items were (i) Cattaneo C, Oil tapping out: Crude shortage looms: Discoveries dwindle: Global production seen falling in two years. *Financial Post* (*National Post*), April 21, 2005; (ii) McKenna B, Crude Awakening. Oil supplies peak this year. What's next? *Globe & Mail*, May 21, 2005. The second article introduced a seven-day series of articles on numerous aspects of energy and related futures.

19. The present version of the text of Bill C-44 is available at the URL below.
    1. http://www.parl.gc.ca/38/1/parlbus/chambus/house/bills/government/C-44/C-44_1/C-44-4E.html. Accessed June 16, 2005.