GreenApple Canada 2007

SMART Transportation Ranking Report

SAUDER School of Business
UNIVERSITY OF BRITISH COLUMBIA

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The GreenApple Canada 2007 Ranking Report is available at www.greenapple.wikispaces.org and at www.appletonfoundation.org

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Daniel Muzyka – RBC Financial Group Professor of Entrepreneurship, Dean, Sauder School of Business, University of British Columbia
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Disclaimer

The GreenApple Canada 2007 SMART Transportation Ranking Report is an inaugural Report. Data constraints and limitations in methodology make this a work in progress. Further refinements to the GreenApple Ranking Report methodology will be made in subsequent editions of this Report. The Authors encourage feedback and suggestions about better data sources through our wiki site at www.greenapple.wikispaces.org.

The authors of the GreenApple Canada 2007 SMART Transportation Ranking Report assume all responsibility for any errors of misinterpretation or omission. The conclusions contained in this Report are those of the authors and do not necessarily reflect the opinions of the Expert Panelists nor of any governmental department, branch or agency providing information for this Report.

Executive Summary

Modern transportation systems provide a vast array of services to the people who live in urban areas across Canada and North America. Transportation also creates serious challenges for the politicians, planners and engineers who make the critical decisions that shape the destinies of urban areas. Air pollution loads within cities affect human health and the quality of the natural environment. Greenhouse gas emissions from transport are growing faster than any other sector and may have pushed Kyoto targets out of reach for many cities.

Accurate measurement of the sustainability of transportation systems is important if we are to make progress in improving Canada's cities. Unfortunately, until now, there has been no single place where urban transportation policy makers in Canada have been able to find urban transportation data that provides the information necessary for public debate and urban decision making. We believe that measurement systems combined with realistic performance targets will assist policymakers to enhance data monitoring and incorporate measurable targets into their urban transportation policies.

This inaugural GreenApple Canada 2007 Ranking Report attempts to address the issue of measurement and best practices. This Report is a work in progress and we hope to be able to utilize feedback from this inaugural Report as we develop successive annual versions in the coming years.

In developing the GreenApple Canada 2007 Ranking Report, we have used both measurement and expert panel recommendations. The GreenApple Canada 2007 Ranking Report has assessed urban transportation policies undertaken by Canada's largest urban areas against 17 indicators tracked in 4 policy categories:

- **Air Quality**
- **Public Policy**
- **Transport Activity**
- **Technology Adoption**

The GreenApple Canada 2007 Ranking Report assessed these indicators based on Statistics Canada geographic boundaries known as Census Metropolitan Areas (CMA's). It is important to note that these CMA's tend to extend beyond one particular named city to include a number of adjacent towns and cities that constitute an urban settlement. (For example the Toronto CMA encompasses 24 different communities.)

The GreenApple Canada 2007 Ranking team developed a methodology to assess sustainable urban transportation policy goals for 27 of the largest urban areas in Canada. These CMAs are home to around two-thirds of the populaton of Canada and 77% of the urban population. We also asked the expert panel to identify specific achievable medium term targets for the cities and then we assessed how close each CMA comes to meeting them. Our hope is that the GreenApple Canada 2007 Ranking Report will provide the context to enable the public and decision makers to evaluate sustainable urban transportation policy performance.

The real value of the GreenApple Canada Report is that it creates the ability to identify the leading municipalities who are best coping with the challenges of providing sustainable urban transportation. We hope that successive editions of the GreenApple Canada Report will prove to be a powerful tool for urban governments to evaluate sustainable urban transportation policy.

The GreenApple Canada 2007 Ranking Report top-four ranked cities are Victoria, BC, Vancouver, BC, Ottawa-Gatineau (Ontario – Quebec) and Winnipeg, Manitoba — all of these urban regions have demonstrated a commitment to directing significant public resources to address urban transportation in an environmentally sustainable manner. While none of these cities yet was awarded an "A" grade by the GreenApple Expert Panel – all of these urban areas have shown solid progress in most of the Repot's 17 policy indicators and are in a position to meet the 10 year benchmark targets advanced by the GreenApple Expert Panel.

The GreenApple Canada 2007 Ranking Report identified the four lowest-ranked Canadian cities: St. John's, Newfoundland, Greater Sudbury, Ontario, Moncton, New Brunswick and Barrie, Ontario. Each of these urban areas received a failing grade in this year's GreenApple Canada ranking due to their limited commitment to sustainable urban transportation. Of course, it is not too late for citizens in these areas. Each of these four urban areas could still take actions that could result in significant improvement in their scores in future years.

In spite of challenges created by data gaps and the methodological limitations of this inaugural Report, the GreenApple Canada 2007 Ranking Report demonstrates that sustainable transportation policy results can be measured and assessed.

The listing of the 17 sustainable transportation policy indicators used in the GreenApple Canada 2007 Ranking Report and the Table of Ranked Canadian City scores are set out below.

GreenApple SMART Transportation Policy Indicators

Indicator Data
Air Quality
CO_2 from retail fuel sales per capita, tonnes (2005)
Median of daily maximum observed CO, parts per million (2005)
Median of daily maximum observed O_3, parts per billion (2005)
Registered vehicles per capita (2005)
Public Policy
% population living in a municipality with an anti-idling by-law (2007)
% housing starts in row and apartment units (2006)
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)
Transportation Policy
Housing stock % row and apartment (2001)
Annual public transit regular revenue KMs travelled per capita, 000s (2005)
% labour force walking, bicycling or taking public transit to work (2001)
Free transit in the core? (June 2007)
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)
% of labour force holding employer-issued transit passes (December 2006)
Technology Adoption
% transit fleet using AFV (March 2007)
No. hybrid or AFV taxis / Total No. of Taxis. (2007)
% municipal road fleet using AFV (12/31/2006)

GreenApple SMART Transportation Ranking of the Census Metropolitan Areas

Rank	Census Metropolitan Area	Normalized Score
1	Victoria (B.C.)	78
2	Vancouver (B.C.)	74
3	Ottawa–Gatineau (Ont.–Qué.)	71
4	Winnipeg (Man.)	69
5	Montréal (Qué.)	68
5	Toronto GTA (Ont.)	68
7	Sherbrooke (Qué.)	60
7	Hamilton (Ont.)	60
9	Québec (Qué.)	59
10	Kingston (Ont.)	58
11	Halifax (N.S.)	56
11	London (Ont.)	56
13	Saguenay (Qué.)	54
14	Abbotsford (B.C.)	53
14	Kelowna (B.C.)	53
16	Kitchener (Ont.)	50
16	Calgary (Alta.)	50
18	Windsor (Ont.)	48
19	Edmonton (Alta.)	47
20	Saskatoon (Sask.)	46
20	Regina (Sask.)	46
20	Oshawa (Ont.)	46
23	St. Catharines–Niagara (Ont.)	44
24	Barrie (Ont.)	42
24	Moncton (N.B.)	42
26	Greater Sudbury (Ont.)	41
27	St. John's (N.L.)	40

The detailed Methodology used in the GreenApple Canada 2007 Ranking Report is available for download with the electronic version of this Report.

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Summary

Homo Sapiens first appeared on Earth about 200,000 years ago, stumbling out of the savannah of Africa, surviving a series of ice ages and rapidly colonizing every corner of the world. We stood out from the other apes for two reasons: we walked on two legs and we were smarter. In the modern world, these two characteristics manifest in our mobility and in our capacity to both change the world around us and to respond to new challenges and surprises. About ten thousand years ago the last ice age ended and vast ice sheets shriveled back to the polar ice caps. Human civilization has crept out across the globe, populating every corner by foot and by boat. Up until the industrial revolution people were more rural and were distributed all across the landscape, but rapid changes in technology and in the nature of economic activity have combined to nudge more people into settlements and cities. On 23rd May, 2007 a key threshold was reached: more than 50% of the global population now lives in urban rather than rural areas.[1] With a few more centuries of evolution, perhaps a new species—*Homo Urbanis*—will appear, adapted to the unique circumstances of our global cities.

Imagining a world without the mobility we take for granted every day is extremely difficult. We have become used to crossing vast distances by airplane and the shape and size of our cities is determined by the decisions we make about roads, public transit and residential development. Transportation networks are the arteries and veins of our cities; they allow us to access our workplaces, to share time with friends and to access a vast range of goods. A city only makes sense if we think about buildings and people connected by transportation systems.

Transportation has also created crises in cities. In the nineteenth century, horses were used as the main form of transport within cities and over time they created a massive environmental problem. The streets were crowed with horses, carts and, most problematically, horse manure.[2] The salvation came in the form of the car, which ironically emerged as a clean alternative to the horse. For much of the twenty-first century, the car came to dominate cities all over the world, displacing trams and buses. Once a city decided to allow freeways to run into the centre, they created a vast skeletal infrastructure, which made the greenfield sites surrounding the cities accessible for housing and development and made urban sprawl almost inevitable. In North America, the amount of weight given to the car as a form of transport has varied; cities like Vancouver resisted large scale freeways, and cities like New York built subway systems that have allowed them to have one of the highest housing densities in the world.

Other cities have become famous for their sprawl; flying into a city like Phoenix at night you see a carpet of light consuming the desert at its edges. Many people like living in these remote suburbs, and there is something to be said for allowing for diversity. But we now understand that while our modern urban transportation systems solved the problems created by horses, it has created a whole new class of problems. We recognize that the ingredients of photochemical smog are mostly spluttered out of the tailpipes of our cars. With the rise in gasoline prices in the last five years, we have become more acutely aware of the amount of oil required to lubricate and fuel our desire for mobility. In some cases, freeways create isolating suburbs where families and households have less opportunity to mix: suburbs may reduce social contacts and erode social capital. More than any other problem, climate change has focused our attention on the impacts of transportation on the sustainability of our cities.

This Report tries to do three things. First we set out to collect data on the sustainability of the transportation systems of the largest 27 urban areas in Canada. Secondly, we ranked these areas to show how some have adapted to the challenge of improving their transportation systems. We hope that by ranking in this way we can energize a spirit of adaptation and competition amongst the mayors and political leaders responsible for making decisions about the kind of mobility their citizens will enjoy in the future. Thirdly, our expert panel established performance targets for the variables, which they believe are achievable within ten years.

Climate Change

City planners have been struggling for decades to find the right balance between the convenience of mobility and the social and environmental impacts of transportation systems. Cities like Amsterdam and Curitiba, Brazil have shown leadership in developing integrated transit and land use systems that are being copied in other parts of the world. The problem of climate change has given new momentum to this challenge. Between 1990 and 2004, emissions in the 40 most developed (Annex 1) countries identified in the Kyoto Protocol decreased by 3.3% overall from 18.6 billion tonnes to 17.9 billion tonnes, but this hides real variation between countries. While Lithuania's emissions fell by 60.4%, largely because of the collapse of the Soviet Union, emissions in the US grew by 15.8% and emissions from Canada grew by 26.6% from 598,911 gigatons to 758,067 gigatons CO_2 equivalent. Overall, emissions in Canada are the third highest in the world at 23.5 tonnes per capita. While this includes industrial emissions, even direct emissions from

1 http://www.physorg.com/news99066556.html
2 "The Centrality of the Horse to the Nineteenth-Century American City" (with Clay McShane); The Making of Urban America, (Raymond Mohl, ed.), NY: SR Publishers, pp. 105-130, 1997

household and individual consumption are among the highest in the industrial world. Most worryingly, global emissions from transport grew faster than any other sector: 23.3% in this period. Emissions from the transportation sector in Canada grew by 32.8% (48.8 million tonnes) between 1990 and 2005, and emissions from light duty gasoline trucks grew by 109% in this period, a trend explained by the popularity of sport utility vehicles.[3]

We have focused on transportation in this Report because it is the fastest growing source of emissions and also because it is the sector where the capacity for change is greatest. From the hybrid vehicles developed by Honda and Toyota to the biodiesel and hybrid buses already being tested on Canada's streets, transportation emissions reductions are technically feasible and can be implemented quickly. In contrast, it is hard to quickly change electricity generation, manufacturing processes and industrial plants quickly. We think *Homo Urbanis* can move quickly if the incentives are right.

Canada's Cities

People traveling to Canada are surprised to learn that despite it being the second largest country in the world, with vast areas of cheap undeveloped land, most people live in cities and towns. Canada is one of the most urbanized countries in the world, with 81.1% of the population residing in urban areas.[4] Over 85% of the population lives within 350km of the US border, mostly in medium and large cities.[5] This survey focuses on the 27 largest urban regions in Canada that are home to about 20.7 million people, or 77% of the total urban population. In defining the city we focus on what is called the 'Census Metropolitan Area' (CMA), which may include a number of distinct municipalities. Vancouver CMA, for instance, includes a number of distinct municipalities including Richmond, West Vancouver, Langley, Delta and New Westminster. The Toronto CMA contains twenty-four separate entities and the Montreal CMA comprises ninety. In selecting these boundaries we had to find a balance between the size of the city, the geographic coverage of the survey and the availability of data. The smallest urban region on our list is Moncton, with 126,000 residents and the largest is Toronto with 5.1 million. The cities are spread across the country with a number of representatives from most of the provinces, and they have very different histories and economies. The full list of census metropolitan areas included in this study can be found in Table 1.

The argument for focusing on cities is simple: density makes transportation policy easier to implement. While rural areas have their own challenges to face, if policy makers in cities, provinces and in the federal government focus their efforts on urban areas, they can have the biggest influence on energy use, greenhouse gas emissions and on innovative land use policies. It is for this reason that the Clinton Foundation has brought together about forty cities to develop strategies for reducing greenhouse gas emissions.[6] The GreenApple Canada 2007 Ranking Report looks beyond greenhouse gas emissions to consider the overall sustainability of cities: we need to reduce emissions and create liveable urban centres for the new millennium. The variables we selected focus on air quality, innovation and best practices in Canada.

As will become clear, there is a great deal of variation between the cities selected for this Report. International comparisons are always difficult because of variation in measurement protocols, but Australian researcher, Jeff Kenworthy, has reviewed around 100 cities globally and has compared their performance across a shared list of variables.[7] Focusing just on carbon dioxide emissions, the highest emissions of carbon dioxide per capita from private transportation can be found in Atlanta, at 7.5 tonnes per annum, followed by Houston, at just over 6 tonnes per annum. Emissions per capita are broadly related to wealth, but a number of countries defy this convention: emissions per capita are around 0.5 tonnes per annum in Hong Kong and around 0.75 tonnes per annum in Barcelona. Cities in developed countries that keep their emissions below 1 tonne per capita include Seoul, Tokyo, Helsinki, Singapore, Osaka and Prague. Emissions in London, England are around 1.25 tonnes per capita. Of the top nineteen cities, all of whom emit over 2 tonnes per capita, most are in North America, while the remainder are in Australia. North America faces unique challenges when it comes to tackling the sustainability of its cities. And while average emissions in the American cities Kenworthy studied were almost double the emissions of the Canadian cities sampled, our average emissions per capita are still double or triple the figure for comparable European cities.

Many of the causes of unsustainability are built into the structure and layout of the cities. Once suburbs and freeways have been built, it is hard to reduce travel and emissions. Alternative mass transit options become essential and efforts to increase density using in-fill and

3 UNFCC, 2003, Report on the in-depth review of the third national communication of Canada and UNFCC, 2006, GHG 2006 Data: Highlights from the GHG data for 1990-2004 Annex 1 Countries.

4 http://globalis.gvu.unu.edu/indicator.cfm?Country=CA&IndicatorID=30#rowCA

5 UNFCC, 2003, Report on the in-depth review of the third national communication of Canada.

6 Launched in August 2006, the Clinton Foundation's Climate Initiative (CCI) is working with the C40 Large Cities Climate Leadership Group, an association of cities dedicated to tackling climate change to develop and implement a range of actions that will accelerate greenhouse gas emissions reductions. http://www.clintonfoundation.org/cf-pgm-cci-home.htm

7 Jeff Kenworthy, 2003, Transport Energy Use and Greenhouse Gases in Urban Passenger Transport Systems: A Study of 84 Global Cities.

location-specific mortgages can be highly effective. While it is impossible for a city to limit what cars citizens can buy, a number of cities have discussed differential charging for congestion and toll charges based on engine size. This alternative is currently being considered as an enhancement to the congestion charge in London. Ultimately, policy to improve the sustainability of transportation must be a combination of carrots and sticks and the most innovative cities have expanded the range of services they offer, improving the quality of transit.

Finding the Data

For all the great virtues of the Canadian Federal system, it makes data collection much more difficult. Just as laws vary among provinces, so do data collection standards. Unlike more centralized countries like the United Kingdom, there are very few national agencies that collect all the key data for a survey like this. Statistics Canada was an important source, but for some data—such as carbon dioxide emissions from transportation—we performed primary data collection. A full account of our approach to data collection is provided separately. In the absence of shared standards, we had to make our own judgments about the best available data, informed by an expert panel at the University of British Columbia composed of a range of disciplines including atmospheric chemistry, physics, economics and epidemiology. The Report marks the first attempt to pull this data together **in Canada**. There are bound to be areas for improvement, but we are confident that the general findings of the GreenApple Canada 2007 Ranking Report are robust. More importantly, we hope this Report will stimulate an interest in improving the quality of data collection in Canada.

In completing this Report we hope we have filled a vacuum in the area of sustainable transportation and also in the measurement of greenhouse gas emissions nationally. It is difficult to measure how much carbon dioxide is emitted annually and it may come as a surprise that the Kyoto protocol recognizes that uncertainty about the precise figure is as high as 4%,[8] while the uncertainty around methane emissions is much higher. The data that we have gathered for this Report provides a useful cross-reference for national inventories. More importantly, it is hard for cities to know how they are performing if they cannot compare themselves with the competition.

Recognizing that many organizations will want to provide feedback about the GreenApple Canada 2007 Ranking Report or, in some cases, may wish to propose alternate data sources, we have developed a further innovation for this Report: the data will be available on a Wiki based site of the kind used by Wikipedia at greenapple.wikispaces.org. Visitors to the site will be able to scrutinize the data, add comments and make suggestions on how to improve it. This form of quality control will fill the gap created by the absence of a central agency for data collection on sustainable transportation. It will also provide a venue for people to suggest how the cities themselves might improve their performance and for the GreenApple team to improve the next version of the Report

8 UNFCC, 2006, GHG 2006 Data: Highlights from the GHG data for 1990-2004 Annex 1 Countries.

Building a Ranking

At each step along the way, a group of experts, listed in the introduction, worked with a steering committee to review the data we gathered and offered judgments about the quality of the sources. We started with a much longer list of indicators, and only those of sufficiently high quality are reported here. Once the final list of indicators had been assembled, we recruited a larger team of experts to provide us with weights for the indicators, so that the final score for an urban area captured the relative importance of the variable in contributing to the sustainability of the transport system. The methods used for developing the weights and the method for normalizing and adding up the indicators into a single score are documented in the appendices and in separate documentation. A list of indicators and their relative weights in the final index, as well as the maximum values and ideal values for each indicators, are presented in Table 2. The expert panel assigned the ideal values, which reflect what was considered achievable for the cities within a decade. For some indicators the ideal is the lowest value achieved by the existing cities; for other indicators the threshold has not been achieved by any of the cities.

Canada can be proud of being home to some of the most sustainable cities in North America, but it will require a huge amount of effort and innovation to fulfill our Kyoto obligations, let alone to achieve the cuts in emissions necessary to tackle climate change. In light of this, we assigned grades to the cities reflecting their performance relative to a set of overall goals; we identified ideal targets for each of the indicators, presented graphically in the next section of this Report.

There is no 'straight A' student in this survey; no single city received top marks for every variable. Given the scale of the climate challenge, every city shows room for improvement. Instead, we assigned grades to census metropolitan areas and identified the top performer for each variable. Graphs and figures in the last section of this Report show the variation among the urban areas and also show what our expert panel considered to be the ideal score for each variable.

The Results

The study revealed a great deal of variation in the performance of Canada's cities across the variables we selected. One key finding is that our figures suggest that current carbon dioxide emissions from transportation fuel use in the 27 census metropolitan areas included in our study are 49.5 million tonnes each year. Residents in the best performing census metropolitan areas emit around 2 tonnes of carbon dioxide per capita. If all 27 census metropolitan areas were able to meet this target, emissions of carbon dioxide would fall by 8.6 million tonnes, or around 17%.

Table 3 shows the final ranking of Canada's 27 largest cities, including the final score awarded to that city and the letter grade. Ideal values were calculated for all indicators to provide some indication of what might represent realistic targets for the urban areas. In some cases, like that of anti-idling by-laws, the panel deemed the ideal level to be 100% coverage within 10 years. In most cases, the ideal level within 10 years was not immediately apparent. Given that the road transportation sector is responsible for the sharp rise in greenhouse gas emissions during the past half century, the expert panel devised the following approach for these cases: the ideal target represents a cut to 6% below 1990 levels. This reduction reflects Canada's announced intentions under the Kyoto protocol.

Victoria, British Columbia, stands out as the winner in this year's ranking, closely followed by Vancouver and Ottawa-Gatineau. In fact, the top six CMAs stand out as being the leaders in sustainable transportation in Canada, and they have each been awarded a grade of B overall. These top six metropolitan areas range in size from 330,000 people in Victoria to 5.1m in Toronto, and they are spread across four provinces. In total, these six cities are home to over 13 million Canadian residents. All six of these cities deserve real recognition for what they have been able to accomplish. Even so, their grades reflect the fact that there is much more still to be done.

Focusing on **Victoria, the winner of the GreenApple Canada 2007 ranking**, this urban area has led the way in a number of areas: the city has the highest proportion of hybrid taxi cabs with around 30% of the fleet composed of Toyota hybrids. The municipal fleet contains a high number of alternative fuel vehicles (AFV's); around 36% of the total fleet. Emissions of carbon dioxide per capita are well below the average of 2.44 tonnes at 2.04 tonnes, and levels of ozone — a key air quality variable — are among the best observed in our study. Our expert panel felt strongly that one of the things that cities can do to improve the long term sustainability of their transportation systems is to increase the number of residences that are medium and high density since this allows transit systems to be more cost effective. In Victoria, 61% of housing starts are row and apartment units, compared to an average of 39% across the 27 metropolitan areas. Furthermore, 44% of the total stock of housing is composed of row and apartment units, compared to an average of 37%. Victoria benefits from the fact that the Province of British Columbia offers tax incentives to shift to low emission vehicles, and the city has a high level of transit ridership, with 22.5% of the population walking, riding or taking the bus to work.

Vancouver comes in a close second and also performs well in terms of air quality variables and carbon dioxide emissions. Vancouver performs well across a number of the variables including the AFV fleet and it also has a significant number of hybrid taxis, adding up to 10.4% of the total fleet. Vancouver lives up to its reputation as a city of glass and has the highest proportion of housing starts in the form of row housing or apartments at 66% of the total. It has a higher stock of row houses and apartments than Victoria. Vancouverites are less likely to walk, ride or take the bus to work than residents of Victoria, and Vancouver has a lower number of AFV vehicles in the transit and municipal fleets than Victoria.

In third place, **the Ottawa-Gatineau CMA** has been very successful at creating a scheme that allows transit riders to purchase transit passes through their employers, and the transit passes in general are very affordable when adjusted for income levels. Over 25% of the metropolitan area's workers walk, ride or take the bus to work, the third highest figure overall. Ottawa-Gatineau has a high number of housing starts in the form of row housing and apartments units (around 48% of the total number of housing starts) and 95% of the population of the CMA is subject to anti-idling by-laws, which encourage drivers to switch off their engines when they are stationary.

The remaining metropolitan areas in this leading pack of six all excel in some areas, yet are weaker in others.

Winnipeg does well in a number of areas: it has free transit in the downtown core and it has affordable transit passes. Around 26% of the taxi fleet is made up of hybrid cabs, the second highest level of any city. Winnipeg also has relatively low carbon dioxide emissions per capita and lower vehicle ownership than average.

At fifth place, **Toronto** has the lowest number of vehicles per capita of any of the cities and has the second highest number of workers walking, riding or taking transit to work at just under 26%, a figure exceeded only by Montréal. Around 54% of housing starts in Toronto are row houses or apartments and the total stock of row and apartment housing is high at 46%, compared to the average of 37% of hosing starts. Around 74% of the population of Toronto is subject to anti-idling by-laws.

Montréal performs well overall and distinguishes itself in two areas: it has the highest stock of row housing or

apartments at 62% of the total and it has the highest number of citizens walking, riding or taking the bus to work.

The next group of cities received a grade of 'C' overall. These seven cities—**Sherbrooke, Hamilton, Québec, Kingston, London, Halifax and Saguenay**—on average scored significantly lower across the full list of variables, although a number of cities performed well in some areas. The Hamilton metropolitan area has the highest proportion of the population subject to anti-idling laws and offers the steepest discount among the major cities to municipal employees who buy transit passes at work. Hamilton also has the highest proportion of the transit fleet using AFVs at 29% of the total fleet. Despite this, the number of people walking, riding or taking transit to work in Hamilton is in the middle range at 13.1% of the total. Sherbrooke has low carbon dioxide emissions per capita and performs well in terms of the housing density measures. Kingston also has lower carbon dioxide emissions per capita and its transit passes are more affordable relative to local incomes than are the transit passes of a number of other metropolitan areas. The authorities in the Kingston metropolitan area have also been proactive in establishing anti-idling by-laws.

The third group of cities, receiving a grade of 'D' overall, includes the fifth and sixth largest metropolitan areas in Canada: Calgary and Edmonton respectively. The problems these two metropolitan areas face are well known and are probably made clearest in the ranking if one looks at high-density housing starts and high density housing stock. In both cases, just 30% of housing starts are row houses or apartments and around a third of housing stock is in the form of row housing or apartments. As a result, Calgary in particular has high carbon dioxide emissions per capita and the highest level of vehicle ownership per capita. The other metropolitan areas in this group are Abbotsford,[9] Kelowna, Kitchener, Windsor, Saskatoon, Regina and Oshawa. Regina ranks relatively low overall, but it does have the lowest level of carbon dioxide per capita of any of the 27 cities, and also has the lowest levels of ozone. None of the other metropolitan areas distinguish themselves with respect to any of the remaining variables.

The last group composed of **St. Catharines-Niagara, Barrie, Moncton, Greater Sudbury, and St. John's (N.L.)** was graded by the expert panel as 'F' reflecting their poor performance across a number of variables. All five have the potential to improve rapidly in a number of areas through the introduction of alternative fuel vehicles into their taxi, transit and municipal fleets and through regulations and incentives to encourage higher density housing. Barrie and St. Johns both have just 15% higher density new housing starts and would rise in the rankings through any improvement in this figure. A number of cities including Moncton, Saguenay and Greater Sudbury currently have no anti-idling policy. Each of these cities could gain roughly three points in the ranking if they introduced and enforced an anti-idling policy within their jurisdiction. A number of cities, including Ottawa-Gatineau, Kelowna and Sherbrooke have no hybrid vehicles in their taxi fleets, and in some cases this is because local by-laws prohibit the use of hybrid vehicles. New York had this problem until recently, when the Mayor showed that strong local leadership can make a difference.[10] While a municipality can provide bus passes to employees and can encourage other employers to do the same, changing travel habits can take longer. On the other hand, a transit pass scheme for students at the University of British Columbia and Simon Fraser University increased transit ridership for that population by fifty percent in the first year.[11] The congestion charge in central London (England) had a dramatic effect on the centre of the city, reducing congestion by 15-25%. Both examples suggest that strong political leadership is required to generate the courage necessary to create strong policies in the public interest.

Bigger metropolitan areas might appear to have an advantage in our ranking, because they are able to generate economies of scale and can afford to make larger scale investments in sophisticated transport systems. There is a moderate correlation between city size and score, but the presence of Victoria and Winnipeg in the top six metropolitan areas and Edmonton and Calgary in the middle of the pack shows that the relationship is complicated. There is nothing to prevent any one of the 27 metropolitan areas from changing transit pass schemes, encouraging hybrid and other alternative fuel vehicles, requiring minimum levels of high density housing, introducing anti-idling by-laws or introducing free transit in the downtown core.

The next section contains a series of diagrams which indicate the performance of the CMA's graphically. The bubble charts show the relationship between city size, carbon dioxide emissions and both housing stock and new housing starts. The small bar charts allow for quick comparisons across the four policy areas. The spider diagrams for each indicator show the degree of variation between the cities and the final set of diagrams show the performance of all of the cities relative to the targets set by the expert panel. The target is shown by a red line.

9 Abbotsford CMA encompasses a large portion of the eastern lower Fraser Valley and includes many lower density rural areas.

10 http://www.nytimes.com/2006/05/21/automobiles/21TAXI.html?ex=1305864000&en=40efbeb59d90a153&ei=5090&partner=rssuserland&emc=rss

11 http://www.upass.ubc.ca/research/pdf/U-Pass%20Review%20Final%20Report.pdf

GreenApple Canada 2007 SMART Transportation Ranking Report

Tables & Maps

Table 1: Census Metropolitan Areas included in the survey

Census Metropolitan Areas	Population `000
Toronto GTA (Ont.)	5,113
Montréal (Qué.)	3,636
Vancouver (B.C.)	2,117
Ottawa–Gatineau (Ont.–Qué.)	1,131
Calgary (Alta.)	1,079
Edmonton (Alta.)	1,035
Québec (Qué.)	716
Winnipeg (Man.)	695
Hamilton (Ont.)	693
London (Ont.)	458
Kitchener (Ont.)	451
St. Catharines–Niagara (Ont.)	390
Halifax (N.S.)	373
Oshawa (Ont.)	331
Victoria (B.C.)	330
Windsor (Ont.)	323
Saskatoon (Sask.)	234
Regina (Sask.)	195
Sherbrooke (Qué.)	187
St. John's (N.L.)	181
Barrie (Ont.)	177
Kelowna (B.C.)	162
Abbotsford (B.C.)	159
Greater Sudbury / Grand Sudbury (Ont.)	158
Kingston (Ont.)1	152
Saguenay (Qué.)	152
Moncton (N.B.)	126

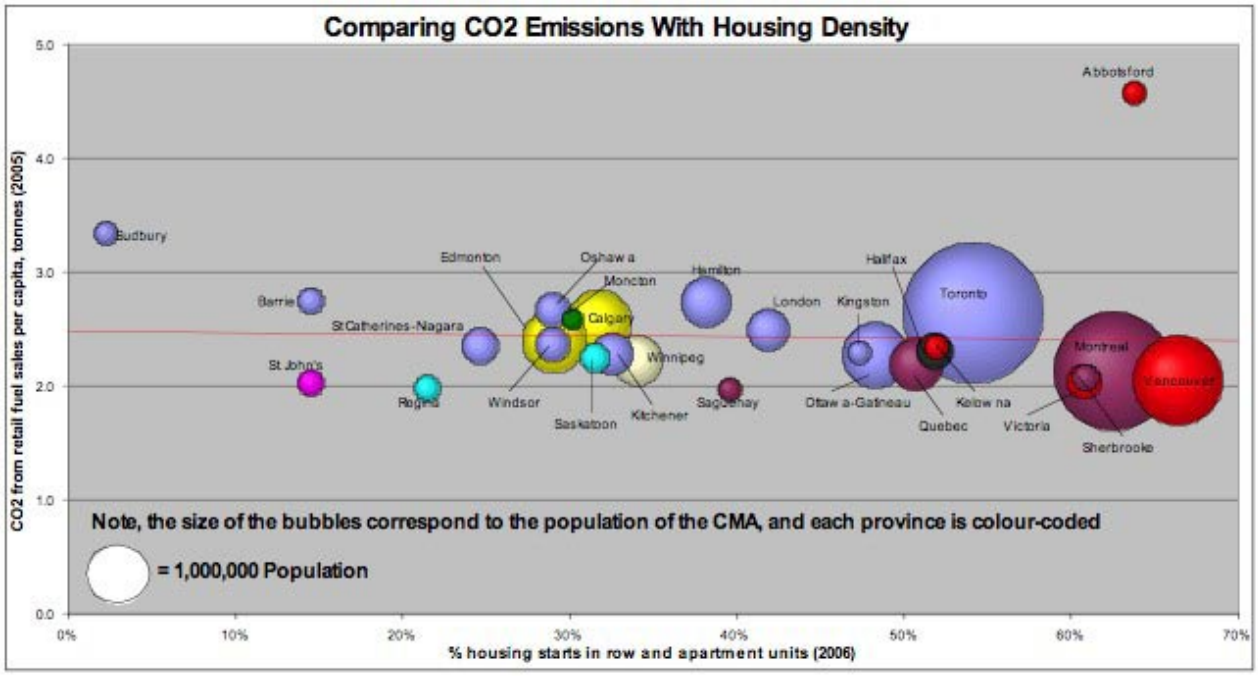
Table 2: Indicators in the survey, weighting in the ranking, best value achieved and ideal value

Category Name	Weighting	Best score	Best value	Winner
CO_2 emissions per capita (tonnes) from retail fuel sales (2005).	3	100	1.97	Saguenay (Qué.)
CO parts per million, median of maximum daily 1 hour averages (2005).	2	100	0.30	Multiple
O_3 parts per billion, median of daily maximum 8 hour averages (2005).	2	100	25.6	Regina (Sask.)
Number of registered vehicles per capita in the CMA (2005).	1	100	0.49	Toronto GTA (Ont.)
Percentage of the CMA population living under an anti-idling by-law (2007).	1	100	97%	Hamilton (Ont.)
Percentage of housing starts within the CMA that were apartment or row units (2006).	3	100	66%	Vancouver (B.C.)
Percentage discount on a local transit pass accorded employees of the CMA's largest city who purchase the pass at work (2007).	1	100	52%	Hamilton (Ont.)
Percentage of the cost difference between the 2007 Honda Civic gasoline and hybrid models covered by provincial tax incentives (2007).	2	100	24%	Winnipeg (Man.)
Percentage of the CMA housing stock that is defined as either apartments or row units (2001).	2	100	62%	Montréal (Qué.)
Annual public transit regular revenue service kilometers traveled per capita, excluding heavy rail and commuter coach (2005).	2	100	53	Vancouver (B.C.)
Percentage of the CMA labour force bicycling, walking or taking public transit to work (2001).	3	100	27%	Montréal (Qué.)
Percentage of total public transit kilometers that are free in the downtown core (2005).	1	100	0.6%	Winnipeg (Man.)
Population-weighted annual adult transit pass cost (2007) adjusted by 2005 median household income.	1	100	0.90%	Abbotsford (B.C.)
Percent of the CMA labour force holding employer issued transit passes (2006).	1	100	3%	Ottawa–Gatineau (Ont.–Qué.)
Percentage of the CMA public transit bus fleet using alternative fuels, excluding commuter coach (March 2007).	1	100	29%	Hamilton (Ont.)
Percentage of the CMA taxi and limousine fleet that is powered by hybrid gasoline-electric means (2007).	2	100	31%	Victoria (B.C.)
Percentage of the CMA municipal road fleet that is powered by alternative fuels (2007).	1	100	36%	Victoria (B.C.)

Table 3: Normalized score, ranking and letter grade of the Census Metropolitan Areas

Rank	Census Metropolitan Area	Normalized Score	Grade	Population (000's)
1	Victoria (B.C.)	78	B	330
2	Vancouver (B.C.)	74	B	2,117
3	Ottawa–Gatineau (Ont.–Qué.)	71	B	1,131
4	Winnipeg (Man.)	69	B	695
5	Montréal (Qué.)	68	B	3,636
5	Toronto GTA (Ont.)	68	B	5,113
7	Sherbrooke (Qué.)	60	C	187
7	Hamilton (Ont.)	60	C	693
9	Québec (Qué.)	59	C	716
10	Kingston (Ont.)	58	C	152
11	Halifax (N.S.)	56	C	373
11	London (Ont.)	56	C	458
13	Saguenay (Qué.)	54	C	152
14	Abbotsford (B.C.)	53	D	159
14	Kelowna (B.C.)	53	D	162
16	Kitchener (Ont.)	50	D	451
16	Calgary (Alta.)	50	D	1,079
18	Windsor (Ont.)	48	D	323
19	Edmonton (Alta.)	47	D	1,035
20	Saskatoon (Sask.)	46	D	234
20	Regina (Sask.)	46	D	195
20	Oshawa (Ont.)	46	D	331
23	St. Catharines–Niagara (Ont.)	44	F	390
24	Barrie (Ont.)	42	F	177
24	Moncton (N.B.)	42	F	126
26	Greater Sudbury / Grand Sudbury (Ont.)	41	F	158
27	St. John's (N.L.)	40	F	181

Figure 1: The relationship between housing starts in row and apartment units, city size and CO2 emissions.



Individual Summaries for Each CMA

This study collected a significant number of variables across the 27 census metropolitan areas and it is difficult to tell from the tables above what factors influence the final score. The charts on the next page provide a summary of how each city performed in four groupings of indicators: Air Quality (Green), Public Policy (Purple), Transportation Policy (Orange) and Technological Adaptation (Pink). The charts are based on the normalized indicators, so the indicators can be added up and compared.

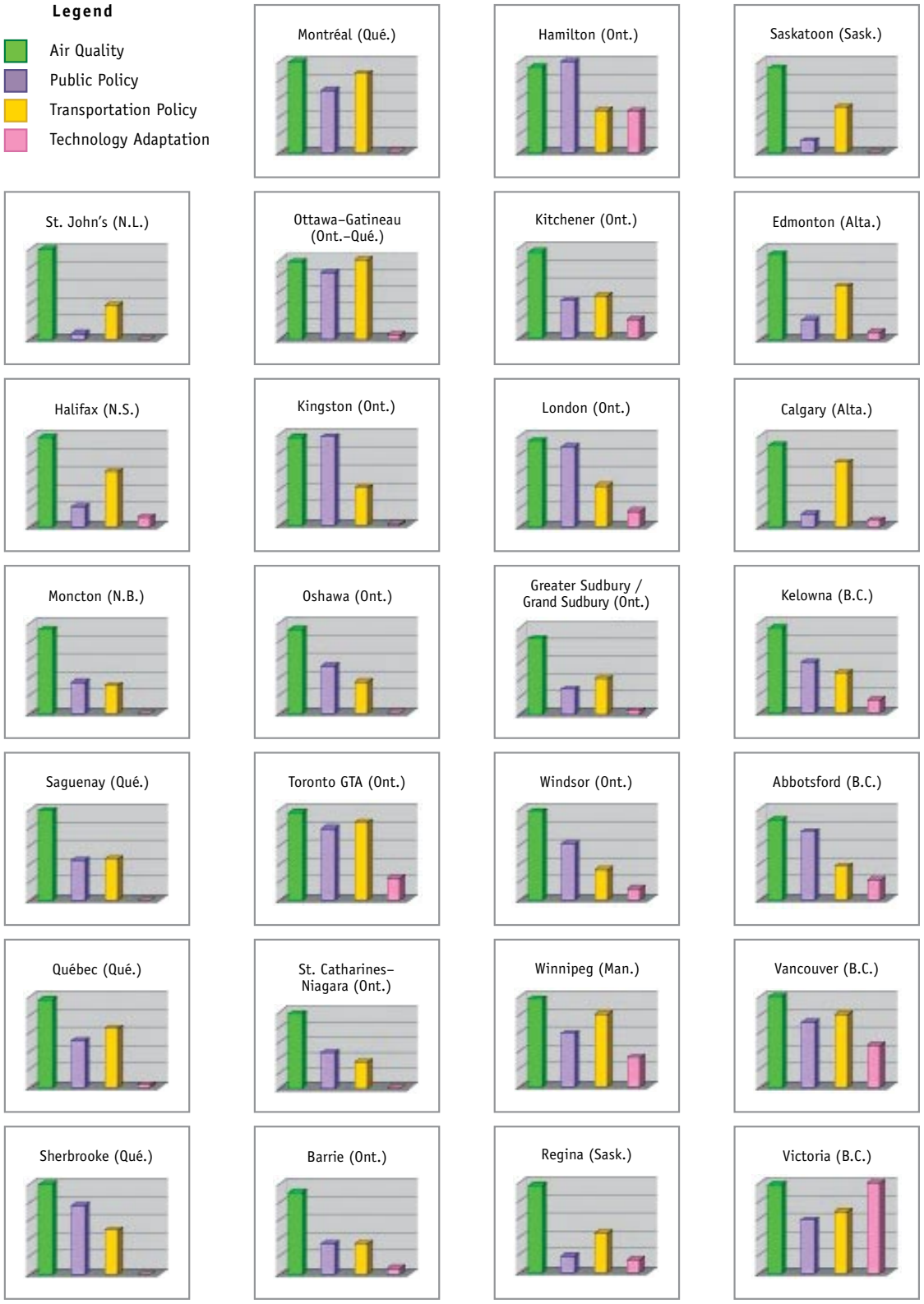
The charts have been calculated in the following way:

1. Sum all normalized scores for each CMA for each of the specified categories. (For example, for Air Quality, the normalized score for the four independent variables measuring air quality are totaled).
2. Calculate the maximum for these totaled scores for each category.
3. Normalize the totaled scores for each category relative to the highest score obtained within that category, where 1 is the highest score. (For example, for air quality, 441 is the highest score obtained (by Vancouver). Therefore, Vancouver's normalized value would be 1. Calgary's normalized value would be its score (396) divided by Vancouver's (441) = 0.9).

The series of figures that follows this single page summary indicate how each city performed on a variable-by-variable basis using 'spider diagrams'. Not all indicators are displayed in this form because in some cases the diagrams are less helpful than the raw data.

Finally, we display the distribution of the indicators by city relative to an ideal level determined by the expert panel. These graphs show both the range of variation among the cities and give some indication of their targets over the coming decade.

GreenApple Canada 2007 – Performance Comparison of the 27 Canadian Urban Areas



Spider Diagrams

Figure 1 – CO_2 emissions per capita (tonnes) from retail fuel sales (2005).
(Data from Kent Marketing Services Limited. Reproduced with permission)

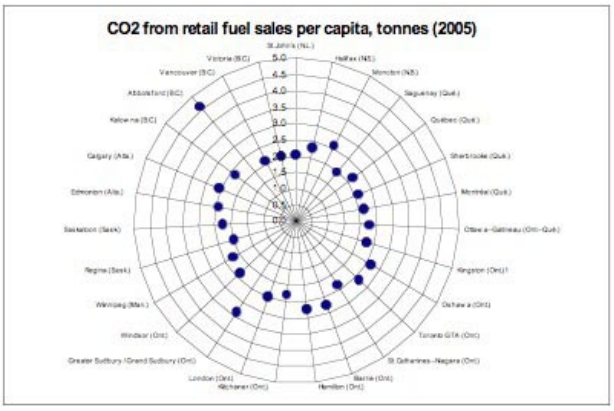


Figure 2 – CO parts per million, median of daily maximum one-hour averages (2005).
(Data from Environment Canada. Reproduced with permission)

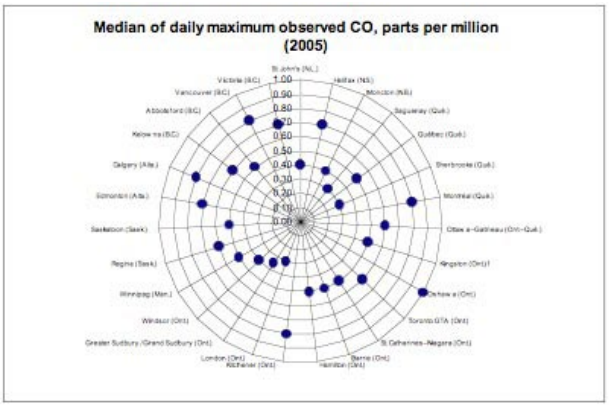


Figure 3 – O_3 parts per billion, median of daily maximum eight-hour average (2005).
(Data from Environment Canada. Reproduced with permission)

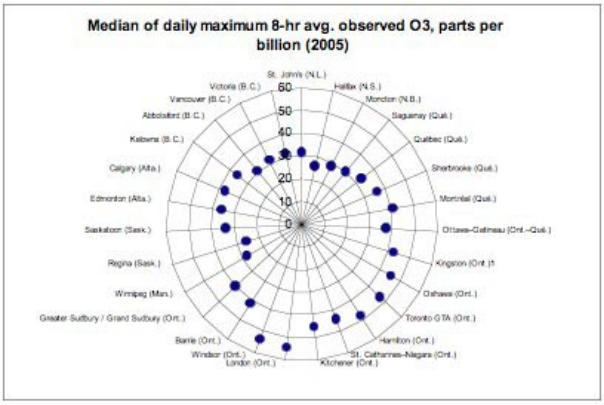


Figure 4 – Number of registered vehicles per capita in the CMA (2005).

(Data from Statistics Canada, Transportation Division. Reproduced with permission)

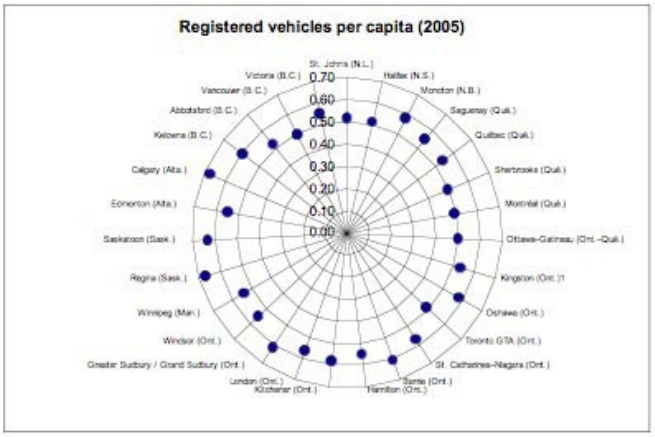
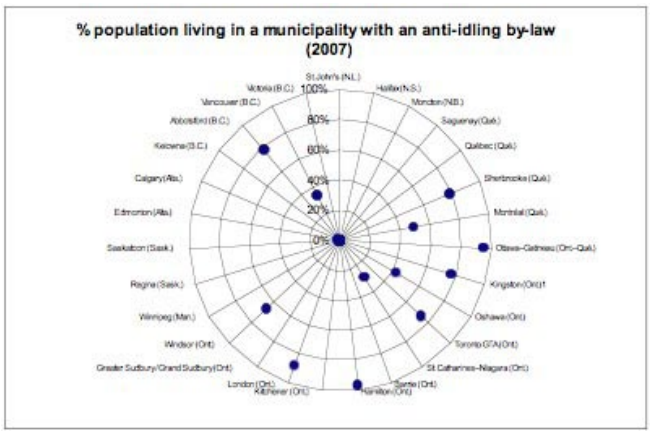


Figure 5 – Percentage of the CMA population living under and anti-idling by-law (2007).



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(Data adapted with permission from Canada Mortgage and Housing Corp., Housing Monthly Information 2007, January)

Figure 7 – Percentage discount on a local transit pass accorded to employees of the CMA's largest city who purchase the pass at work (2007).

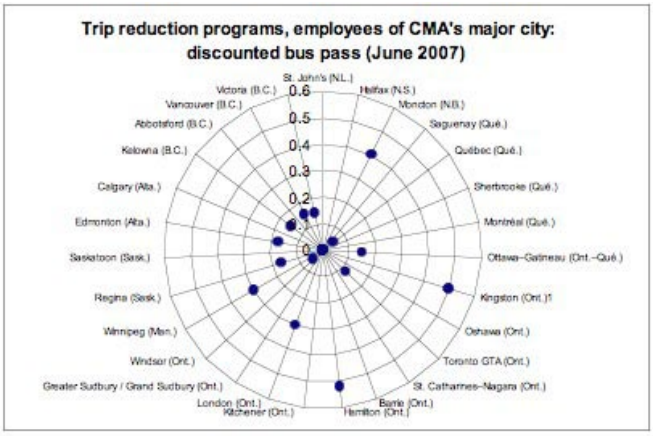


Figure 8 – Percentage of the CMA housing stock that is defined as either apartments or row units (2001).
(Data from Statistics Canada catalogue No. 95F0321XCB2001004. Reprinted with permission)

Figure 9 – Annual public transit regular revenue service kilometers traveled per capita, excluding heavy rail and commuter coach (2005).
(Data from the Canadian Urban Transit Association. Reproduced with permission)

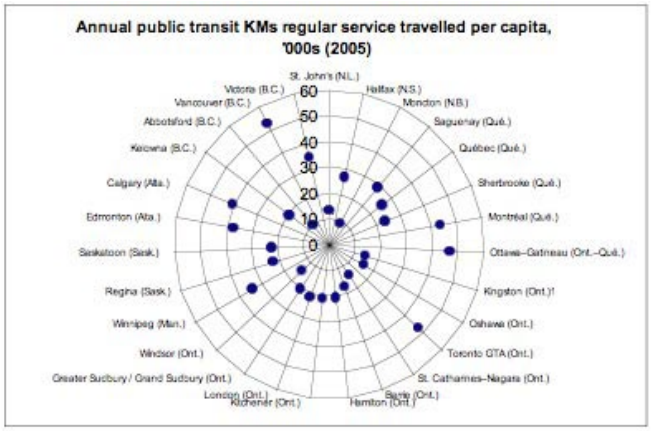


Figure 10 – Percentage of the CMA labour force bicycling, walking or taking public transit to work (2001).
(Data from Statistics Canada, 2001 census. Reproduced with permission)

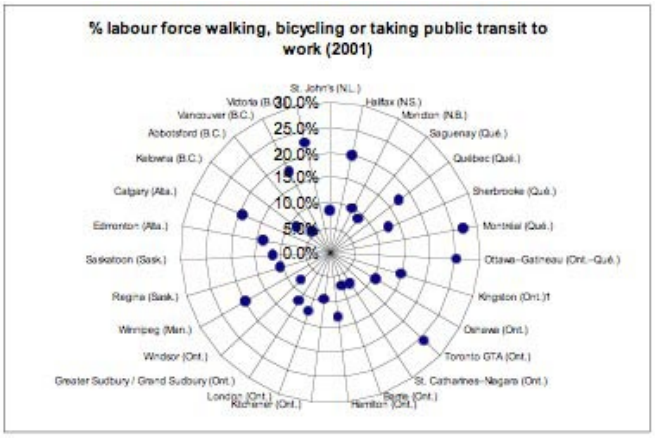


Figure 11 – Population-weighted annual adult transit pass cost (2007) adjusted by 2005 median household income.
(Income data adapted with permission from Tetrad Computer-Applications, Inc.)

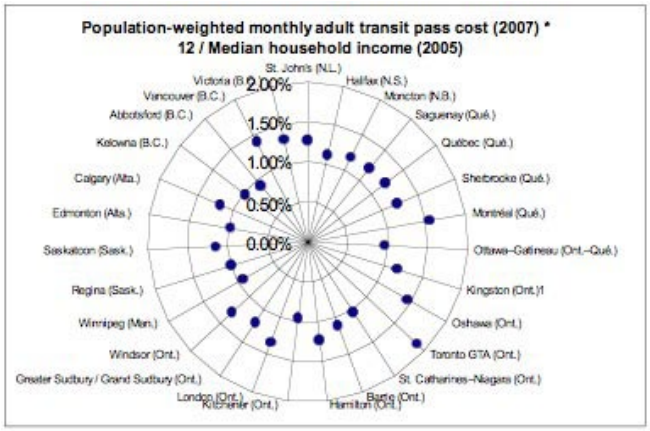


Figure 12 – Percent of the CMA labour force holding employer issued transit passes (2006).
(Labour force data from Statistics Canada. Reproduced with permission)

Figure 13 – Percentage of the CMA public transit bus fleet using alternative fuels, excluding commuter coach (March 2007).

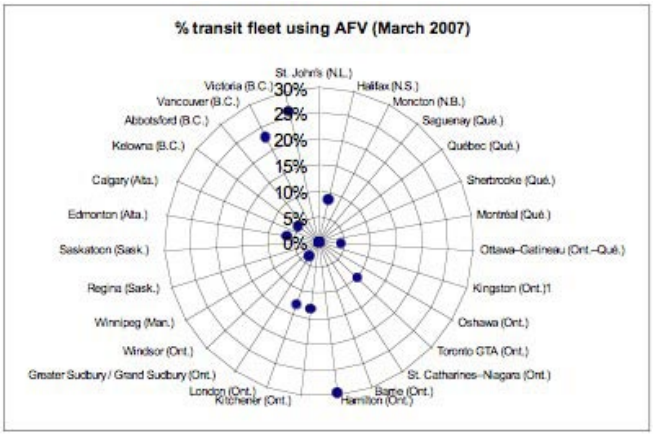


Figure 14 – Percentage of the CMA taxi and limousine fleet that is powered by hybrid gasoline-electric means (2007).

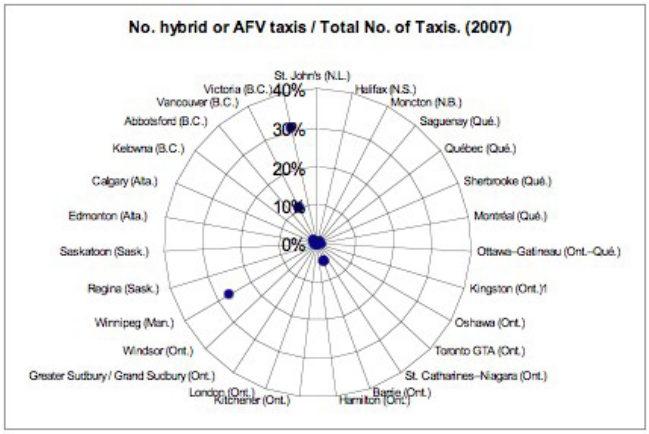
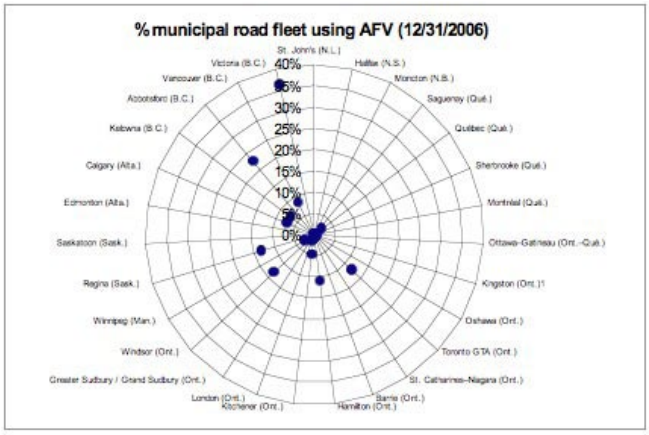
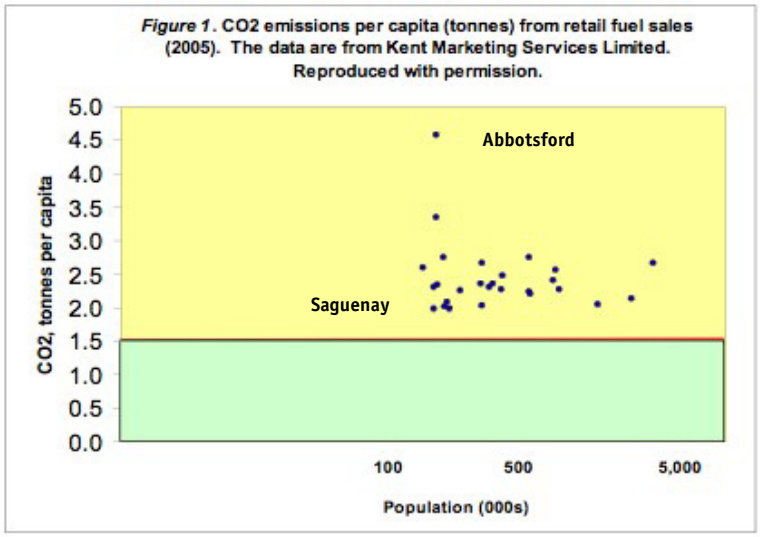
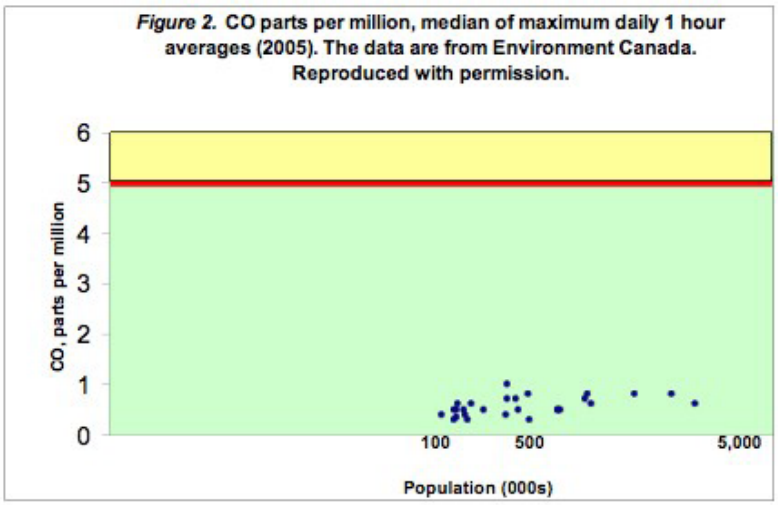


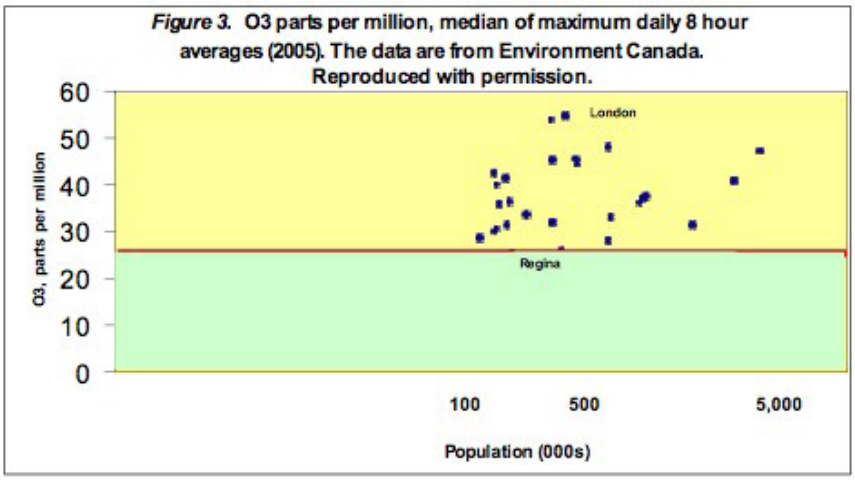
Figure 15 – Percentage of the CMA Municipal road fleet that is powered by alternative fuels (2007).

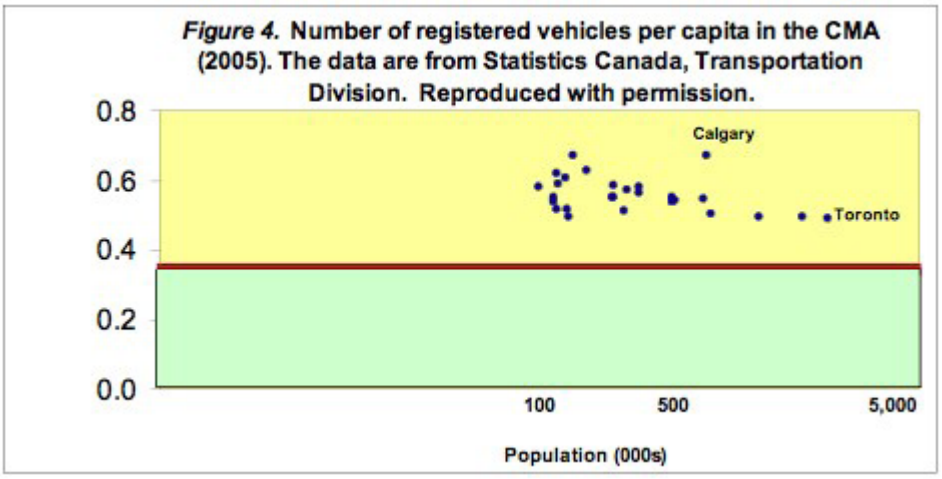


Scatter plot charts showing all CMA's, ideal levels and with the best and worst performers labeled.









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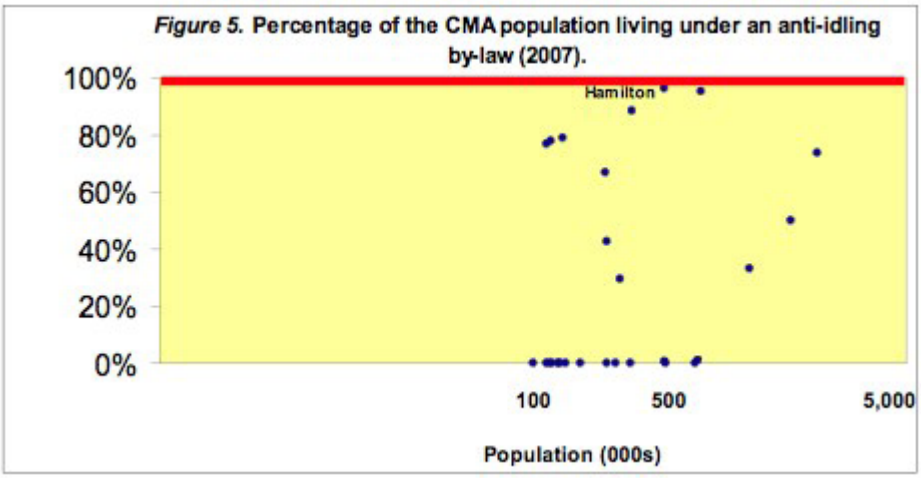

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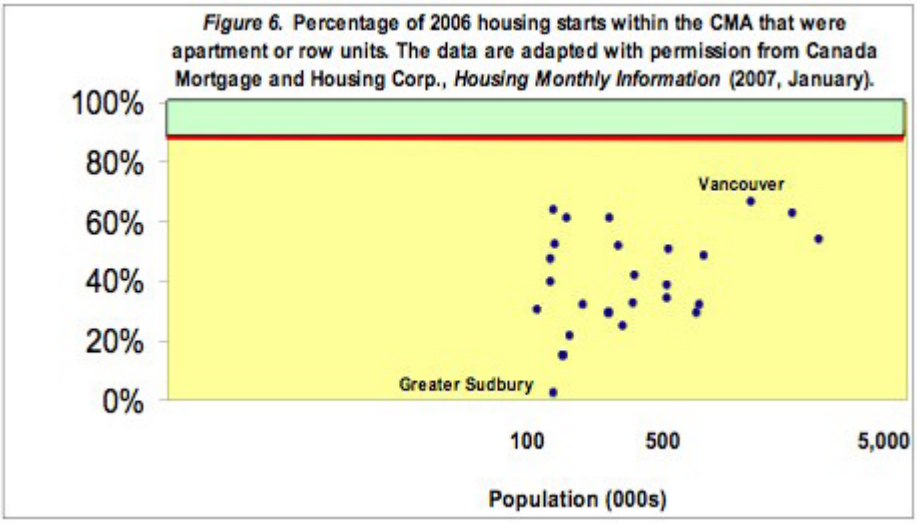

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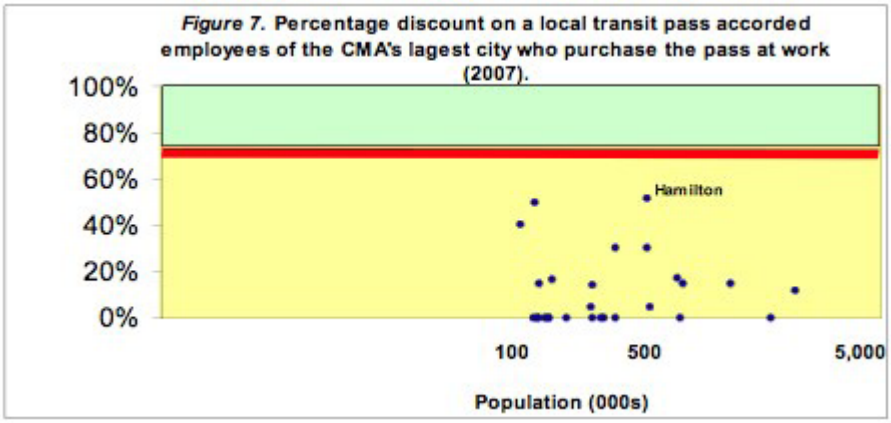

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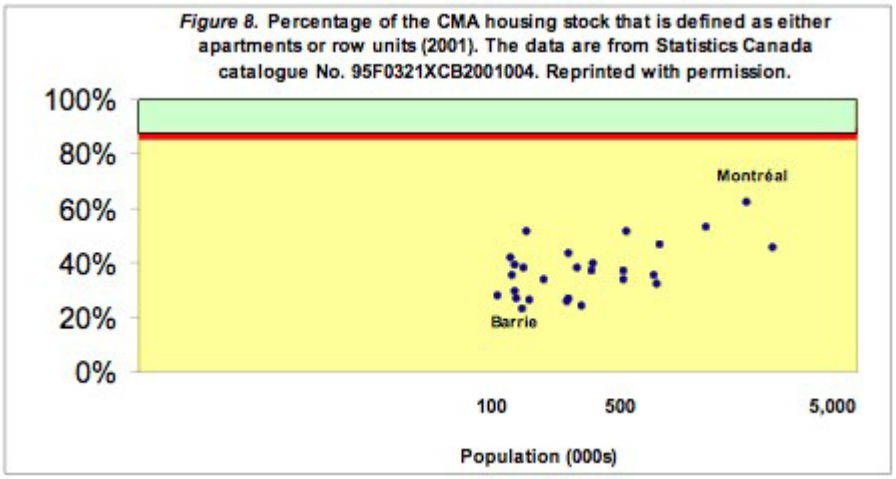

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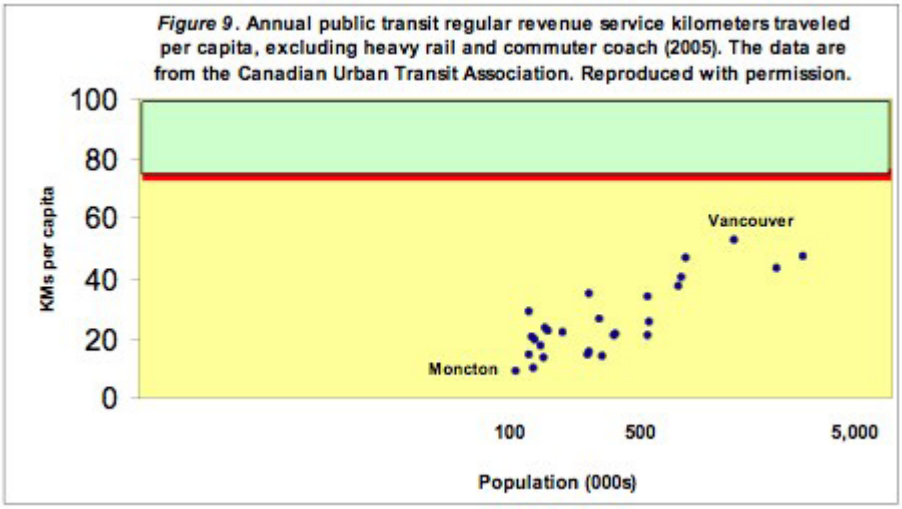

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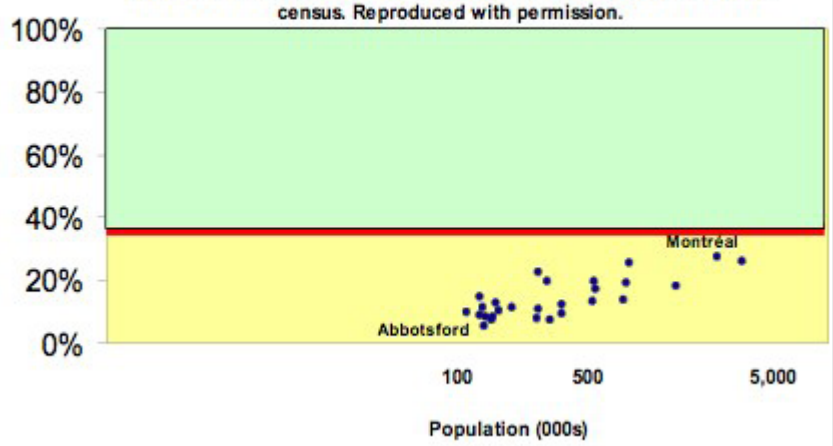

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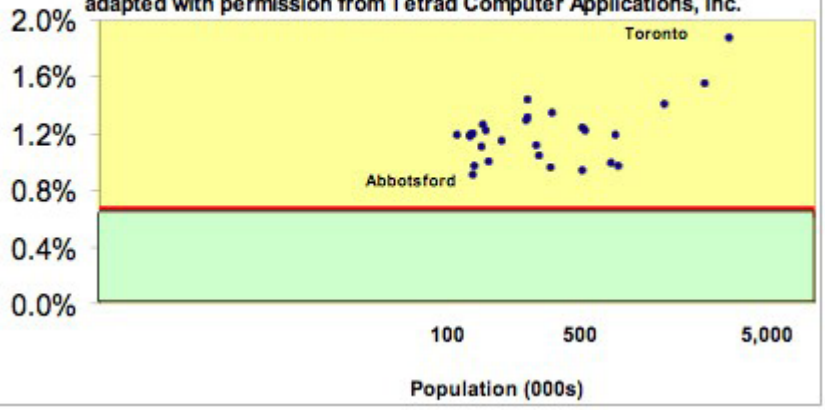

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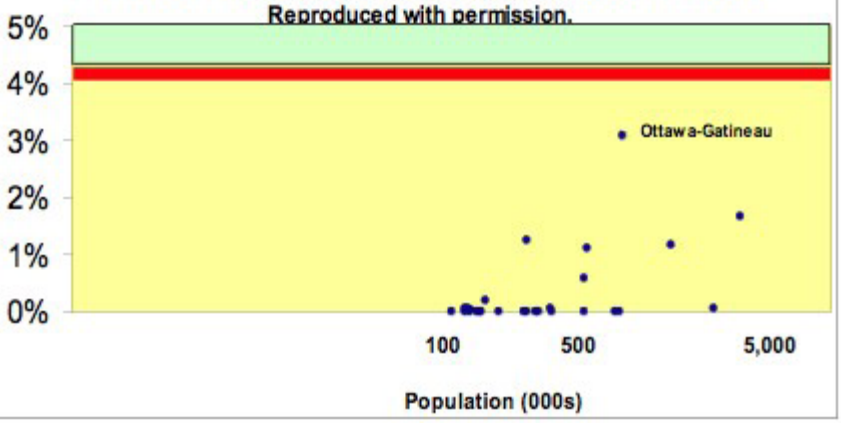
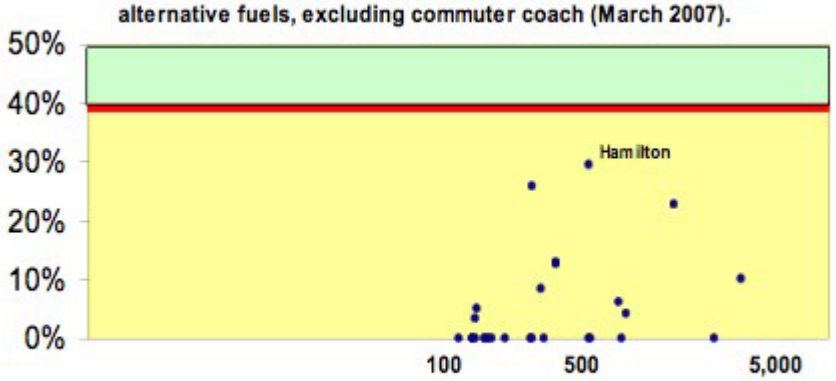


Figure 13. Percentage of the CMA public transit bus fleet using alternative fuels, excluding commuter coach (March 2007).



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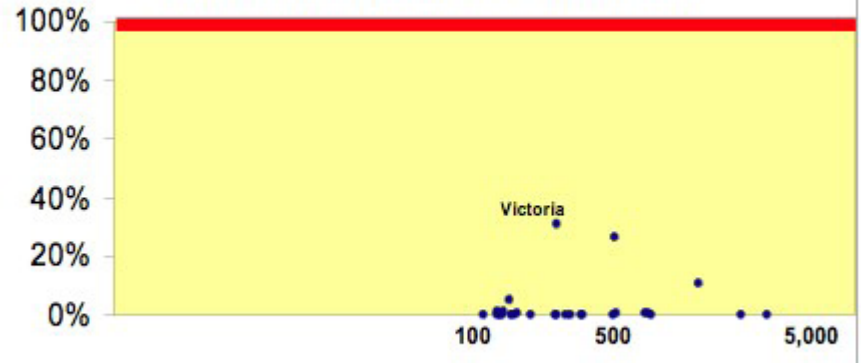
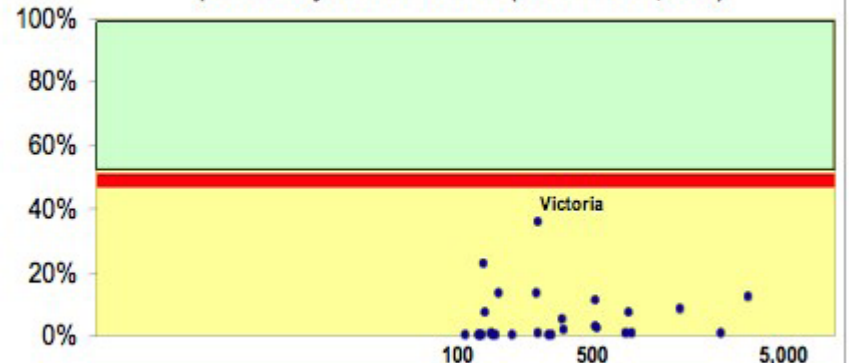


Figure 15. Percentage of the CMA municipal road fleet that is powered by alternative fuels (December 31, 2006).



GreenApple Canada 2007

SMART Transportation Ranking Report

Canadian City Ranking Results

List of Canadian Census Metropolitan Areas (East to West)

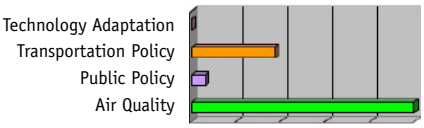
City	Population '000s
St. John's (N.L.)	181
Halifax (N.S.)	373
Moncton (N.B.)	126
Saguenay (Qué.)	152
Québec (Qué.)	716
Sherbrooke (Qué.)	187
Montréal (Qué.)	3,636
Ottawa–Gatineau (Ont.–Qué.)	1,131
Kingston (Ont.)	152
Oshawa (Ont.)	331
Toronto GTA (Ont.)	5,113
St. Catharines–Niagara (Ont.)	390
Barrie (Ont.)	177
Hamilton (Ont.)	693
Kitchener (Ont.)	451
Greater Sudbury (Ont.)	158
London (Ont.)	458
Windsor (Ont.)	323
Winnipeg (Man.)	695
Regina (Sask.)	195
Saskatoon (Sask.)	234
Edmonton (Alta.)	1,035
Calgary (Alta.)	1,079
Kelowna (B.C.)	162
Abbotsford (B.C.)	159
Vancouver (B.C.)	2,117
Victoria (B.C.)	330

St. John's

Newfoundland and Labrador
Population (2006): 181,113

GreenApple Ranking
Rank: 27
Score: 40

GRADE: F



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2	1.47
Median of daily maximum observed CO, parts per million (2005)	0.4	0.3
Median of daily maximum observed O_3, parts per billion (2005)	31.5	25.63
Registered vehicles per capita (2005)	0.52	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	15%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	0%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	38%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	13	71
% labour force walking, bicycling or taking public transit to work (2001)	8.4%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.26%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

The urban region of St. John's[12] is the most easterly city in North America and the second largest metropolitan area in Atlantic Canada. St. John's small population and relatively small industrial sector accounts for its excellent air quality, but the St. John's region has clear challenges if it wants to improve its transportation sustainability.

St. John's has a transit fleet management program to ensure that its municipal transit fleet is maintained properly. It will gradually replace obsolete vehicles with newer fuel efficient models.[13] STEER (Smart Taxis Encouraging Environmental Respect) is a unique project started by the taxi industry of St. John's. STEER assists local taxi drivers to learn about the importance of reducing greenhouse gases through smart driving.[14]

St. John's, along with 13 other cities across Canada, has worked with Environment Canada and the Canadian Urban Transit Association on a national pilot project to retrofit buses with diesel oxidation catalysts to reduce emissions. Diesel oxidation catalysts reduce exhaust emissions of particulate matter by 20%, carbon monoxide (CO) by 40% and hydrocarbons (HC), which is the major component of volatile organic compounds (VOCs) by 50%.[15] These air quality policies are helpful; however they have not been able to raise St. John's from being the lowest placed urban region in the GreenApple Canada 2007 Ranking Report. At a score of 40 out of a possible 100 ranking points, St. John's has taken the last spot in this year's ranking.

There are a number of reasons for St. John's poor showing. There are no alternative fuel or hybrid vehicles in the municipal, transit or taxi fleet; no employer offers employer-issued transit passes, free transit in core areas does not exist and transit pass costs are high relative to household income. In addition, only 8.4% of St. John's labour force walks, cycles or takes public transit to work, and the annual mileage for transit vehicles is very low. All of these problems highlight the fact that transportation policy in St. John's needs to address additional issues. St. John's is a community where there is considerable room for improvement on sustainable urban transportation policy and we are confident that St. John's will be able to increase its standings in future GreenApple Canada Ranking Reports.

12 The Census Metropolitan Region of St. John's consists of: Bauline (Town), Bay Bulls (Town), Conception Bay South (Town), Flatrock (Town), Logy Bay-Middle Cove-Outer Cove (Town), Mount Pearl (City), Paradise (Town), Petty Harbour-Maddox Cove (Town), Portugal Cove-St. Philip's (Town), Pouch Cove (Town), St. John's (City), Torbay (Town), Witless Bay (Town)

13 City of St. John's. " Local Action Plan 2006 – 2010: Greenhouse Gas Emissions Reduction Strategy ." P. 14 http://www.stjohns.ca/cityservices/environment/pdfs/Climate%20Change%20Plan.pdf. Date Accessed: May 14, 2007.

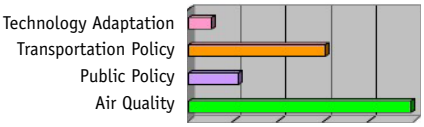
14 Climate Change "Conservation Corps Newfoundland and Labrador." http://www.conservationcorps.nf.ca/ccc/projects_profiles.html. Date Accessed: May 14, 2007.

15 Environment Canada . http://www.ec.gc.ca/cleanair-airpur/Urban_Bus_Retrofit-WS2C562D80-1_En.htm. Date Accessed: May 14, 2007.

Halifax

Nova Scotia
Population (2006): 372,858

GreenApple Ranking
Rank: 11
Score: 56
GRADE: C



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.3	1.47
Median of daily maximum observed CO, parts per million (2005)	0.7	0.3
Median of daily maximum observed O_3, parts per billion (2005)	26.19	25.63
Registered vehicles per capita (2005)	0.51	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	52%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	0%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	38%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	27	71
% labour force walking, bicycling or taking public transit to work (2001)	19.7%	36.5%
Free transit in the core? (June 2007)	Y	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.11%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0.01%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	8%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

Situated in one of the world's largest natural harbours, Halifax is the capital of the province of Nova Scotia.[16] Halifax has developed a comprehensive Clean Air Strategy intended to reduce greenhouse gas emissions and improve its air quality. The strategy includes anti-idling campaigns, trip-reduction programs, and the continuing improvement and expansion of the transit system.[17] The Clean Air Strategy also calls for the city to provide more opportunities to walk, cycle, or other means of sustainable transport; provide incentives to reduce the reliance on the single occupancy vehicle; and improve roadway efficiency through the use of reversible lanes, queue-jumping lanes for transit vehicles, and HOV lanes.[18]

Evidence of Halifax's commitments is seen in the statistics. Halifax offered residents 27 kilometres per capita of public transit in 2005; a significant amount relative to urban regions of similar sizes. Free transit is offered in the downtown core for part of the year. The high percentage of residents walking, bicycling or taking public transit to work — these methods accounted for nearly a fifth of all trips to work. This is the second best showing for an urban region of this size in Canada.

Halifax has shown considerable progress in its land use decisions. With only 38% of its housing stock in the form of row units and apartments, the CMA is actively encouraging denser developments: more than half of all 2006 housing starts were denser forms of housing. Coupled with its strong showing in the delivery of public transit, this may explain why the number of registered vehicles per capita in Halifax is among the lowest in the GreenApple Canada 2007 Ranking Report.

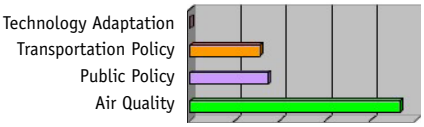
Halifax can improve its sustainable transportation scores immediately by making a number of small changes. The city of Halifax could introduce an anti-idling by-law. Halifax could also show leadership by providing a discounted transit pass to its employees, similar to what other major cities have begun to do. Halifax currently does not appear to have any taxis or limousines powered by hybrid gasoline-electric motors; this could be easily addressed were the regulatory authorities to mandate this change in their by-laws and regulations. These improvements, together with continued improvement in the adoption of alternative fuel technologies for municipal and transit fleets, would allow Halifax to improve its ranking in future years.

16 The Halifax Census Metropolitan Area includes: Beaver Lake 17 (Indian reserve), Cole Harbour 30 (Indian reserve), Halifax (Regional municipality), Sheet Harbour 36 (Indian reserve), Shubenacadie 13 (Indian reserve)
17 Halifax Regional Municipality website: http://www.halifax.ca/environment/documents/CleanAirStrategy-FrameworkDocument.pdf Date accessed May 11, 2007
18 Halifax Regional Municipality website (visited May 11, 2007 at link: http://www.halifax.ca/environment/documents/CleanAirStrategy-FrameworkDocument.pdf Date accessed May 11, 2007

Moncton

New Brunswick
Population (2006 est.): 126,400

GreenApple Ranking
Rank: 24
Score: 42
GRADE: F



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.6	1.47
Median of daily maximum observed CO, parts per million (2005)	0.4	0.3
Median of daily maximum observed O_3, parts per billion (2005)	28.63	25.63
Registered vehicles per capita (2005)	0.58	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	30%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	41%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	0%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	28%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	9	71
% labour force walking, bicycling or taking public transit to work (2001)	9.9%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.19%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

With a population of 120,000, the Moncton CMA [19] needs to address the environmental implications of urban growth and development. In 2003, the City of Moncton published *Adapting to the New Millenium: City of Moncton Environmental Initiatives*, which outlines several initiatives to improve transportation conditions. These include the implementation of employer tax exemptions for employee bus passes, a fleet management system to ensure that community vehicles are running efficiently, and an air quality monitoring station.[20]

The Codiac Transit Commission (CTC) was praised for having the lowest emissions levels in New Brunswick. The CTC initiated a prominent advertising and awareness campaign in order to educate Moncton residents about the benefits of using mass transit. Further initiatives such as an aggressive bus replacement program designed to replace the fleet of older, more polluting buses with new compressed natural gas/low-sulfur diesel buses and a bicycle-bus service integration scheme, all point to a much more environmentally friendly future.[21]

The City of Moncton Active Transportation Plan strives to develop a well-designed transportation system that actively targets public transport users, walkers, cyclists and others in order to further reduce dependency on motor vehicles. Key components of the AT Plan include the development of an arterial route, a collector route, safe neighbourhood routes, an arterial trail and a collector trail in a bid to unite neighbourhoods, important locales, and entire communities in a more efficient transportation network.[22]

Moncton still has a long way to go before its transportation network becomes sustainable and environmentally viable. Moncton has scored 42 out of a possible 100 points, leaving it in 24th place in the GreenApple Canada Ranking. Moncton scored poorly in the categories of Technology Adoption and the Transportation Policy.

As of 2007 there were no alternate fuel or hybrid vehicles used in Moncton's municipal or transit fleet. This is an area that will have to be addressed if Moncton is to see some improvement in its transportation scores. Poor performance in a number of areas brought down the score: employer-issued transit passes in the area are uncommon; transit passes are relatively expensive compared to the median household income; there is no free transit in the core; a relatively small percentage of people actually walk, bike or take public transit to work; and the annual revenue from public transit is low. Dense residential development is not a priority in Moncton, a factor that does not bode well for proponents of more environmentally sound transportation.

A bright spot in the results is Moncton's relatively good air quality. The Moncton area has low levels of CO and O_3, which is important, but these air quality scores cannot offset the other sustainable urban transportation concerns identified in the GreenApple Canada 2007 Ranking Report.

19 The Census Metropolitan Region of Moncton includes: Coverdale (Parish), Dieppe (City), Dorchester (Village), Dorchester (Parish), Elgin (Parish), Fort Folly 1 (Indian reserve), Hillsborough (Village), Hillsborough (Parish), Memramcook (Village), Moncton (City), Moncton (Parish), Riverview (Town), Saint-Paul (Parish) and Salisbury (Village)

20 City of Moncton. Adapting to the New Millenium: City of Moncton Environmental Initiatives. P.14,16. http://www.moncton.org/search/english/CITYHALL/publications/Environmental%20Initiatives.pdf. Date Accessed: September 12, 2007.

21 ibid. P. 14-15

22 ibid. P. 34

Saguenay

Québec
Population (2006): 151,643

GreenApple Ranking
Rank: 13
Score: 54

GRADE: C

Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.0	1.47
Median of daily maximum observed CO, parts per million (2005)	0.3	0.3
Median of daily maximum observed O_3, parts per billion (2005)	30.13	25.63
Registered vehicles per capita (2005)	0.55	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	40%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.1%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	42%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	29	71
% labour force walking, bicycling or taking public transit to work (2001)	8.8%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.19%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

Saguenay was formed in 2002 through the merger of the cities of Chicoutimi, Jonquière, La Baie, and Laterrière, along with the municipalities of Lac-Kénogami and Shipshaw and part of the township of Tremblay.[23] The city stepped up its efforts to battle climate change most notably after the 1996 Saguenay floods.

The residents of the Saguenay area are reliant on bicycles to get around the city,[24] and in tandem with the "Taxi and Bike" service launched by Velo Québec in 2003, Saguenay now has two companies that offer this service. Relative to other cities, Saguenay has better than average air quality, particularly since CO levels are on target and O_3 levels are also lower than average. Although the registered vehicles per capita score is greater than the GreenApple 10 year expert target value, Saguenay has a relatively low number of registered vehicles compared to other cities observed in the study.

This urban area has started promoting dense residential neighbourhoods, which will make future urban transportation networks more viable. This relatively high residential densification is consistent with targets suggested by the GreenApple Expert Panel.

Saguenay still has to address other issues in order to make its transportation sector more environmentally viable. Figures show there are no alternative fuel or hybrid vehicles in the city transit fleets or the public transportation fleet. The Transportation Policy category was also a low scoring area, with no employer-issued transit passes available, relatively expensive transit passes, no free transit in core city areas.

The Saguenay area still has challenges to address: it has no anti-idling laws, trip reduction programs or discounts on bus passes. These are all features typical of urban areas with a high level of transportation sustainability. The Saguenay area received a GreenApple Canada 2007 Ranking Report score of 54 points, right in the middle of the range of Canadian urban areas.

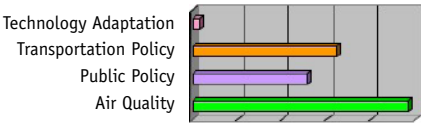
23 The Census Metropolitan Area of Saguenay includes Larouche (Municipalité), Saguenay (Ville), Saint-Fulgence (Municipalité), Saint-Honoré (Municipalité).

24 Similar to Sherbrooke, one out of two commutes is with a bicycle. Velo Québec Association. Bicycling in Quebec in 2005: A Study by Velo Québec Association. p. 5.

Québec City

Québec
Population (2006): 715,515

GreenApple Ranking
Rank: 9
Score: 59
GRADE: C



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.2	1.47
Median of daily maximum observed CO, parts per million (2005)	0.5	0.3
Median of daily maximum observed O_3, parts per billion (2005)	33.13	25.63
Registered vehicles per capita (2005)	0.54	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	51%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	5%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.1%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	52%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	26	71
% labour force walking, bicycling or taking public transit to work (2001)	17.2%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.22%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	1.12%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0.71%	100%
% municipal road fleet using AFV (12/31/2006)	2%	48.3%

Québec City, the capital of the province of Québec, is the second largest city in the province. This CMA placed in the top ten urban regions in Canada, securing 9th place in the GreenApple Canada 2007 Ranking.

Québec City, the largest constituent of this urban area, has taken steps to meet Kyoto Protocol targets. The city committed to reducing its greenhouse gas emissions by 60,000 tonnes by the year 2010. To help realize this target, in 2004 the city put in place a Greenhouse Gas Emissions Reduction Plan.[25] A year after its implementation the city had already reached 75% of its targeted goals.[26] Among the programs in place are programs that are aimed at reducing fuel consumption and CO_2 emissions from municipal motor vehicles by replacing old municipal vehicles with hybrids or AFVs. The city now has more then 40 hybrid vehicles, more stringent inspection of vehicles carried out at regular intervals, and has controlled fuel consumption with the development of a computerized fuel distribution system.[27]

According to the Québec City transit authority, public transportation contributes to 13.4% of the greenhouse gas emissions in Québec City. The target is to reduce emissions by 10% by 2010. The optimal solution to achieving this target is to replace the fleet with biodiesel vehicles. The city is finding that replacement costs are prohibitive. As such, the transit authority is seeking subsidies from both the provincial and federal governments.

On February 15, 2007, the federal and provincial transport ministries announced that their governments are committed to contributing $16.5 million to innovative public transit initiatives as part of the Urban Transportation Showcase Program in Gatineau, Montréal and Québec City. These contributions will help put electric buses into service in Old Québec City, and implement measures to accommodate a combination of regular buses and hybrid diesel-electric buses.[28] More recently, the transit authority has begun offering targeted commuter service for free to and from industrial work sites.[29]

Inspired by the 1998 French initiative, Québec City has been an active participant in the international event "*In town without my car!*" for the past three years. This initiative is now an international event focused on raising community awareness about the effects of excessive car use. It also provides the public with information on the various methods of alternative transportation, such as car pooling, public transit, bicycles, scooters, and walking, in the hope of changing commuter behaviour: if each individual takes action, it will be possible to improve the quality of life in the city and combat climate change.[30] Despite this awareness campaign, less than 18% of the area's residents reported bicycling, walking or taking public transit to work. This may be because there is a relatively small amount of transit service available.

Québec City could improve significantly upon its GreenApple Canada score by encouraging road vehicle fleets to adopt alternative fuel technologies. Its taxi and limousine fleets could easily be converted within a few years to hybrid gasoline-electric powered vehicles, for instance. Coupled with the introduction of anti-idling by-laws, we should expect to see Québec City enter the top tier of cities ranked in future GreenApple Canada 2007 Ranking Reports.

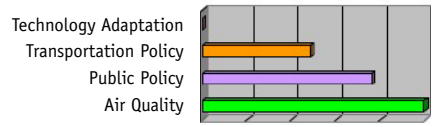
25 Ville de Québec: Plan de réduction des émissions de gaz á effet de serre: http://www.ville.quebec.qc.ca/fr/ma_ville/environnement/air/implication_ville.shtml
26 http://www.ville.quebec.qc.ca/fr/ma_ville/environnement/air/implication_ville.shtml
27 http://www.ville.quebec.qc.ca/fr/ma_ville/environnement/air/implication_ville.shtml
28 Transport Canada, News Release H024/ 07, February 15, 2007: http://www.tc.gc.ca/mediaroom/releases/nat/2007/07-h024e.htm Date accessed: May 11, 2007
29 Anonymous. Réseau du Transport de la Capitale. Telephone conversation with Patrick Doré. August 22, 2007.
30 "En Ville Sans Ma Voiture" (website visited May 11, 2007 at link: http://www.amt.qc.ca/comm/enville06/index.asp)

Sherbrooke

Québec
Population (2006): 186,952

GreenApple Ranking
Rank: 7
Score: 60

GRADE: C



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.10	1.47
Median of daily maximum observed CO, parts per million (2005)	0.3	0.3
Median of daily maximum observed O_3, parts per billion (2005)	36.38	25.63
Registered vehicles per capita (2005)	0.5	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	79%	100%
% housing starts in row and apartment units (2006)	61%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.1%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	51%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	23	71
% labour force walking, bicycling or taking public transit to work (2001)	12.7%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.22%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

Sherbrooke is located in south-eastern Québec, and is a fast growing urban region with population growth of 6.3% since 2001.[31] Recognizing the need to deal with this growth, the city presented a plan entitled "The Urban Planning Programme" in May 2007.[32] Although the city's goal is to become the "most vibrant regional development hub in Québec",[33] it has taken into account the social, economic and environmental issues at stake today.

The plan set in motion initiatives to promote sustainable development. To constructively deal with growth, the city plans to curb urban sprawl and densify urban activities; to develop a network of bike paths that will be incorporated into the road network; and to strengthen and promote the public transit network.[34]

Sherbrooke has an efficient public transit system, providing city residents with a reliable transit service serving several industrial parks in the greater Sherbrooke area. To further encourage more transit use and curb urban sprawl the city is embarking on a densification plan to promote the redevelopment of previously built-up areas in the downtown core, former industrial areas, unused commercial and semi-industrial areas.[35]

Sherbrooke has had an anti-idling campaign in place since 2003, and is also a participant in the "*In Town Without My Car*" day. The bicycle is one of the more popular alternative modes of transportation in Sherbrooke.[36] This number will likely continue to rise as the city "densifies".

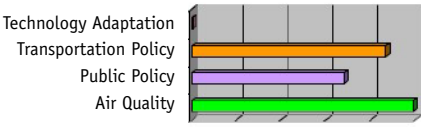
31 The Census Metropolitan Area of Sherbrooke includes Ascot Corner (Municipalité), Compton (Municipalité), Hatley (Canton (municipalité de)), Magog (Ville), North Hatley (Village), Saint-Denis-de-Brompton (Paroisse (municipalité de)), Sherbrooke (Ville), Stoke (Municipalité), Waterville (Ville)
32 http://plandurbanismesherbrooke.com/home.html
33 Executive Summary Sherbrooke Strategic Plan 2007-2010, Message from Mayor, Jean Perrault.
34 http://plandurbanismesherbrooke.com/environnement_en.html
35 Info Sherbrookois, Autumn 2006, Vol. 2, No. 3, p.14.
36 Bicycling in Quebec, 2005: A Study by Velo Quebec Association, June 2006, p.5.

Montréal

Québec
Population (2006): 3,635,571

GreenApple Ranking
Rank: 5
Score: 68

GRADE: B



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.1	1.47
Median of daily maximum observed CO, parts per million (2005)	0.8	0.3
Median of daily maximum observed O_3, parts per billion (2005)	40.88	25.63
Registered vehicles per capita (2005)	0.49	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	50%	100%
% housing starts in row and apartment units (2006)	63%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.1%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	62%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	43	71
% labour force walking, bicycling or taking public transit to work (2001)	27.2%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.55%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0.05%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0.07%	100%
% municipal road fleet using AFV (12/31/2006)	1%	48.3%

The Montréal ties with Toronto for fifth place in the GreenApple Canada 2007 Ranking Report. While the City of Montréal is the largest community in this urban area, the census municipal area (CMA) has approximately 90 different communities, comprising almost a quarter of all the individual communities studied within the GreenApple Canada 2007 Ranking Report.

Montréal is fast becoming a fierce advocate for environmentally sustainable transportation practices. The Montréal CMA municipalities have banded together to increase the use of public transit. It has the highest number of people in the GreenApple Canada 2007 Ranking Report walking, riding or taking public transit, (27.2%). These investments have had a positive effect on Montréal's overall ranking. However, this strong performance still does not meet the GreenApple Canada Expert Panel 10 year target of 36.5%.

Montréal comes out as the leader in three of the transportation policy category indicators. Montréal has the highest proportion of higher density housing stock in Canada, making public transit more viable. Montréal also has a high number of housing starts (60%) in the high density category.

Montréal currently has the second highest monthly transit pass cost in the country relative to local incomes. The Montréal area did not score well in the techonology adaptation category. Based on data we were able to collect, Montréal does not have any AFV vehicles in its transit fleet and only 1% of the municipal road fleet is composed of AFVs. Although the CMA also has other measures in place to reduce greenhouse gases, including anti-idling by-laws and a sales tax credit for purchasers of hybrid vehicles, there is still much to be done to improve its air quality.

In 2004 the city of Montréal developed its first Strategic Sustainable Development Plan in which the city administration committed to a 20% reduction in greenhouse gas emissions by 2012. This goal is three times more demanding than the Canadian objective set in the Kyoto Protocol. The city has also endorsed the commitments proposed in the Urban Environmental Accords,[37] which is a collaborative platform of Mayors around the world committed to building an ecologically sustainable, economically dynamic and socially equitable future for urban citizens.[38] Montréal is one of more than 50 cities around the world to sign these Accords, which include 21 environmental commitments. The city has begun its quest to meet as many of these commitments as possible over the next seven years.[39]

In May 2007, Gerald Tremblay, the mayor of Montréal, together with Andre Lavallee, Member of Montréal's Executive Committee responsible for Urban Planning and Transportation, announced the launch of 21 projects designed to help make mass transit the preferred means of transportation for Montréalers.[40] These projects will span the next decade and will form an integral part of Montréal's transportation plan, "Reinventing Montréal". The 21 projects slated for implementation include the creation of a tramway, an eastern expansion of the metro and the creation of 400 km of bike paths which will double the size of the existing network.

The Montréal region has done very well in the GreenApple Canada 2007 Ranking Report. It has asserted a policy leadership role, but not all parts of the Montréal CMA have asserted this same level of leadership. The entire urban area could improve its place in future GreenApple Canada rankings by taking steps to obtain better Technology Adoption scores through the utilization of alternative fuel or hybrid vehicles for municipal transportation or transit fleets.

37 Urban Environmental Accords, June 5, 2005 (visited May 15, 2007 on the Urban Accords Institute website at link: http://www.urbanaccords.org/pdf/Accords.pdf)

38 Urban Environmental Accords, June 5, 2005 at p. 1 Accords Institute website at link: http://www.urbanaccords.org/pdf/Accords.pdf Date accesssed May 11, 2007

39 City of Montréal, Office of the Mayor/ Executive Committee website (http://www.ccnmatthews.com/news/releases/show.jsp?action=showRelease&actionFor=569183&searchText=false&showText=all Date accesssed May 11, 2007

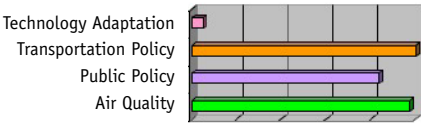
40 Montréal Presents its Ambitious First Ever Transportation Plan, Canada News Wire, May 7, 2007.

Ottawa-Gatineau

Ontario – Québec
Population (2006): 1,130,761

GreenApple Ranking
Rank: 3
Score: 71

GRADE: B



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.3	1.47
Median of daily maximum observed CO, parts per million (2005)	0.6	0.3
Median of daily maximum observed O_3, parts per billion (2005)	37.38	25.63
Registered vehicles per capita (2005)	0.5	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	95%	100%
% housing starts in row and apartment units (2006)	48%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	15%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	47%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	47	71
% labour force walking, bicycling or taking public transit to work (2001)	25.5%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	0.96%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	3.1%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	4%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

Canada's national capital comes in third place in the GreenApple Canada 2007 Ranking Report.[41] Ottawa estimates that the population will increase by approximately 50% by the year 2020.[42] The city of Ottawa has outlined a plan to deal with sustainable development in light of urban growth and densification in an Environmental Strategy, which is part of the Ottawa 2020 City Plan.[43] The Strategy contains plans to ensure that growth occurs in a sustainable manner by using land wisely and efficiently, and by developing only within the current urban boundary.

Ottawa's sustainable transportation goals are outlined in the Ottawa 2020 City Plan and in the Transportation Master Plan.[44] Ottawa hopes to encourage the use of clean-burning fuels and alternatives to automobile travel, such as walking, bicycling, and public transit. With over 25% of the city's workers walking, riding or using public transit, Ottawa is well on its way to achieving its goal, as well as the 10 year target set by the GreenApple Canada Expert Panel. This factor, coupled with the high number of housing starts in the form of row housing and apartments units (48%) will encourage the use of sustainable transportation. The CMA's pace of technology adoption is slower, it has no hybrid gasoline-electric powered taxis or limousines, and a low number of transit and municipal vehicles using alternative fuels. However, the City Plan suggests that diesel hybrid buses will be implemented later this year, and the future looks very positive for this CMA.

The Transportation Master Plan also identifies ways to reduce the negative impact of transportation, such as anti-idling by-laws,[45] trip reduction programs, a monthly pass program and a mass transit employer pass program that delivers 15% savings on annual transit passes.[46] Ottawa-Gatineau stands apart from other Canadian urban areas as the most successful at encouraging transit riders to purchase passes through their employers. Transit costs are among the lowest of all CMAs relative to local incomes. Over 95% of the population of the CMA is subject to anti-idling by-laws, which is almost at the 10 year attainable target of 100% set by the Expert Panel.

Ottawa-Gatineau has made good progress, which has resulted in its high ranking in the GreenApple Canada Reports. Nonetheless, Ottawa-Gatineau still has some way to go in order to achieve the GreenApple Canada Expert Panel's 10 year target values, especially in the technology adaptation category.

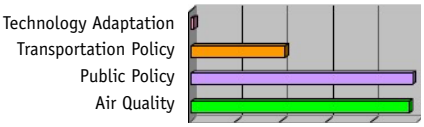
41 Ottawa – Gatineau Census Metropolitan Area includes: Cantley (Municipalité), Chelsea (Municipalité), Clarence-Rockland (City), Denholm (Municipalité), Gatineau (Ville), L'Ange-Gardien (Municipalité), La Pêche (Municipalité), Ottawa (City), Pontiac (Municipalité), Russell (Township), Val-des-Monts (Municipalité)
42 City of Ottawa, "Ottawa 2020 – Environmental Strategy for the City of Ottawa", October, 2003 at p. 3: http://ottawa.ca/city_services/planningzoning/2020/enviro/pdf/env_en.pdf. Date accessed: May 11, 2007
43 City of Ottawa, "Ottawa 2020 – Environmental Strategy for the City of Ottawa", October, 2003 at p. 3: http://ottawa.ca/city_services/planningzoning/2020/enviro/pdf/env_en.pdf Date accessed: May 11, 2007
44 Official website of the City of Ottawa http://ottawa.ca/city_services/planningzoning/2020/transpo/es_en.shtml Date accessed: May 11, 2007
45 Official website of the City of http://www.ottawa.ca/city_services/environment/city/programs/idling/index_en.html Date accessed: May 11, 2007
46 Official website of the Public Transit in Ottawa http://www.octranspo.com/Fares_menue_ecopass.htm Date accesssed May 11, 2007

Kingston

Ontario
Population (2006): 152,358

GreenApple Ranking
Rank: 10
Score: 58

GRADE: C



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.3	1.47
Median of daily maximum observed CO, parts per million (2005)	0.5	0.3
Median of daily maximum observed O_3, parts per billion (2005)	42.5	25.63
Registered vehicles per capita (2005)	0.54	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	77%	100%
% housing starts in row and apartment units (2006)	47%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	50%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	35%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	14	71
% labour force walking, bicycling or taking public transit to work (2001)	14.8%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.17%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0.04%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0.91%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

Kingston and the surrounding area has a population of approximately 155,000.[47] The City of Kingston, the largest component of this CMA, has proposed a plan to improve existing public transportation networks and to encourage alternatives such as walking and cycling. Combined with an anti-idling campaign and a trip reduction program, Kingston hopes to significantly reduce its environmental impact.[48]

The City of Kingston Transportation Master Plan (KTMP)[49] emphasizes cycling as part of a transportation demand management strategy. One goal of the plan is to increase the modal share of cycling trips in the city. Every bus in Kingston Transit's fleet has been equipped with the Rack and Roll bike-storage service. This popular service, which allows cyclists to store their bikes on a rack attached to the front of a bus is now in its fourth year of operation.[50]

With the aim of saving money and contributing to a cleaner environment, Kingston began a trial program in March 2007 to test the use of smaller buses on select routes The city hopes that this program will both cut costs and reduce exhaust emissions.[51] Public Policy initiatives in the Kingston area should be a source of pride; the CMA has above average scores for all public policy categories.

Air quality data, however, shows mixed results. While the number of registered vehicles per capita and levels of CO are relatively low, CO_2 from retail fuel sales as well as O_3 levels are above average. Only 0.91% of taxis are reported hybrid or alternative fuel vehicles, and there is room for improvement in the area of transportation policy. In particular, Kingston's percentage of employer-issued transit passes is relatively low and the metropolitan areas lack free transit.

The Kingston CMA placed 10th in the GreenApple Rankings with a score of 58, which places it in the middle of the pack in. However, Kingston still has some way to go in order to achieve the target goals set by the Expert Panel.

47 The Census Metropolitan Area of Kingston consists of: Frontenac Islands (Township), Kingston (City), Loyalist (Township), South Frontenac (Township).
48 City of Kingston. "Kingston Transportation Master Plan: Final Report," July, 2004. P. 7. http://www.cityofkingston.ca/pdf/transportation/ktmp/KTMP_FinalReport_July04.pdf). Date Accessed: May 14, 2007.
49 City of Kingston. "Kingston Transportation Master Plan: Final Report," July, 2004. P. 6. http://www.cityofkingston.ca/pdf/transportation/ktmp/KTMP_FinalReport_July04.pdf). Date Accessed: May 14, 2007.
50 City of Kingston."Rack and roll available on all Kingston Transit buses", May 2, 2007. http://www.cityofkingston.ca/cityhall/press/release.asp?mode=show&id=2024). Date Accessed: May 14, 2007.
51 City of Kingston. "Transit moves in green lane with smaller buses", March 7, 2007. http://www.cityofkingston.ca/cityhall/press/release.asp?mode=show&id=2000). Date Accessed: May 14, 2007.

Oshawa

Ontario
Population (2006): 330,594

GreenApple Ranking
Rank: 20
Score: 46
GRADE: D

Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.7	1.47
Median of daily maximum observed CO, parts per million (2005)	1.0	0.3
Median of daily maximum observed O_3, parts per billion (2005)	45.38	25.63
Registered vehicles per capita (2005)	0.58	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	43%	100%
% housing starts in row and apartment units (2006)	29%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	27%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	15	71
% labour force walking, bicycling or taking public transit to work (2001)	10.6%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.44%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

The urban region of Oshawa[52] is a major industrial area located at the eastern gateway to the Greater Toronto Area (GTA). It is well served by major rail, road and water transportation facilities. Oshawa is home to many commuters, who travel 30 km or more to work. Each day about 29,280 Oshawa residents travel to the Toronto area to work, while an additional 10,730 travel within the Oshawa CMA to nearby Clarington or Whitby. [53]

Oshawa City Council approved a Vehicle Idling Control by-law in January 2006. Passage of this by-law fulfilled Oshawa's commitment to the 2002 Inter-Governmental Declaration on Clean Air, which called on members of the GTA-Clean Air Council to "implement a Greater Toronto area-wide anti-idling public education program and participate in a review of the feasibility of anti-idling by-laws in their jurisdictions."

Oshawa has done well in the Public Policy category, where it scored at average or above average for most variables. For instance there is currently a 23.3% tax incentive to purchase hybrid vehicles. As with other regions that scored poorly, the Oshawa region has not taken meaningful steps in the technology adoption category, meaning that neither municipal nor public transit or taxi fleets employ hybrid or alternate fuel technology. Oshawa and region has below average relative air quality, especially observed O_3 levels, which stand at 45.38 parts per billion. This is markedly higher than the 25.63 parts per billion benchmark target used by the GreenApple Expert Panel.

In the Transportation Policy category, there is definite room for improvement in Oshawa. The region does not have any employer-issued transit passes, no free transit in the core, and has a high cost monthly adult transit pass. Oshawa would benefit from more densification: only 27% of the local housing stock is high density. A reasonable proportion (10.6%) of the labour force walks, cycles or uses urban transit to get to work, although this is well below the 10 year GreenApple Canada Expert Panel target value of 36.5%.

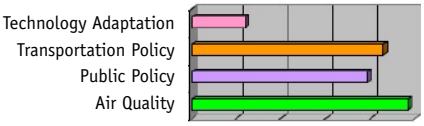
Oshawa has made important strides, but it still has room for improvement. Oshawa has no trip reduction programs, an initiative that can significantly aid in transportation sustainability, and that would have improved Oshawa's ranking. Unfortunately, Oshawa has many challenges and has ranked in the bottom tier of Canadian municipal areas in this GreenApple Canada 2007 Ranking Report. Overall, Oshawa received 46 points, putting the CMA at the lower end of the ranking.

52 The Census Metropolitan Area of Oshawa consists of: Clarington (Municipality), Oshawa (City), Whitby (Town).
53 City of Oshawa. "Oshawa Community Strategic Plan." September 2004. P. 8 http://www.oshawa.ca/strategic/OshawaFinalComProfile.pdf. Date Accessed: May 11, 2007

Toronto

Ontario
Population (2006): 5,113,200

GreenApple Ranking
Rank: 5
Score: 68
GRADE: B



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.7	1.47
Median of daily maximum observed CO, parts per million (2005)	0.6	0.3
Median of daily maximum observed O_3, parts per billion (2005)	47.25	25.63
Registered vehicles per capita (2005)	0.49	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	74%	100%
% housing starts in row and apartment units (2006)	54%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	12%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	46%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	47	71
% labour force walking, bicycling or taking public transit to work (2001)	25.9%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.87%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	1.65%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	10%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0.17%	100%
% municipal road fleet using AFV (12/31/2006)	12%	48.3%

The Toronto Census Metropolitan Area is the largest CMA in Canada, the fourth-largest urban area in North America, and is home to more than 5.1 million people.[54] Toronto ranks fifth with the Montréal CMA in the GreenApple Canada 2007 Ranking Report with a score of 68 points.

The City of Toronto, the largest community in this CMA, acknowledges that the emissions of greenhouse gases are a contributing factor to the warmer summers that the city has been facing. Toronto has experienced an annual average of 120 heat-related deaths, and it is anticipated that climate change resulting from the emissions of large amounts of greenhouse gases will increase heat and pollution-related deaths in the city.[55] To address these issues, the city of Toronto has developed a comprehensive Framework for Public Review that outlines several positive steps to reduce its negative environmental performance and the amount of greenhouse gas emissions. The Framework lists goals such as a 20% reduction of smog-causing pollutants by 2012 (based on a 2004 baseline) and 30% reduction of greenhouse gas emissions by 2020 (based a 1990 baseline). Both of these policies would put Toronto in line with the Kyoto Protocol goals. The City of Toronto has committed to convert all diesel-powered vehicles in the city operated transit fleet to bio-diesel by 2015.[56]

However, many of the Framework's more ambitious initiatives have yet to be fully implemented. For example, gasoline-fuelled vehicles (a major source of greenhouse gas emissions and air pollutants), create 27% of Toronto's CO_2 emissions.[57] The Framework calls for alternatives to driving (such as biking, walking, and public transit) by making such alternatives more attractive to commuters and travelers.

With over 25% of the population walking, riding or taking public transit, Toronto is headed in the right direction. It boasts North America's second-largest public transportation system and the CMA has the lowest number of registered vehicles per capita. This is a positive factor for Toronto and it is already consistent with the 10 year target set by the GreenApple Expert Panel. Because of Toronto's continued growth, the Toronto area will have to remain vigilant in order to curb the increase in private vehicles and must encourage more sustainable forms of transportation to maintain the 10 year achievable target.

In March 2007, Canada's federal government committed more than $1 billion in funding to reduce gridlock and improve air quality in Ontario. The bulk of the funds were earmarked for improving and expanding the subway system in the City of Toronto. Many environmental groups raised concerns that the money spent on transit expansions, should be focused

54 The Toronto Census Metropolitan Area includes the following: Ajax, Aurora (Town),Bradford West Gwillimbury (Town), Brampton (City), Caledon (Town), Chippewas of Georgina Island First Nation (Indian reserve), East Gwillimbury (Town), Georgina (Town), Halton Hills (Town), King (Township), Markham (Town), Mississauga (City), Mono (Town), New Tecumseth (Town), Newmarket (Town), Oakville (Town), Orangeville (Town), Pickering (City), Richmond Hill (Town), Toronto (City), Uxbridge (Township), Vaughan (City), Whitchurch-Stouffville (Town).

55 Framework for Public Review and Engagement, "Change is in the Air. Toronto's Commitment to an Environmentally Sustainable Future", March 2007 at p. 23 http://www.toronto.ca/legdocs/mmis/2007/ex/bgrd/backgroundfile-2428.pdf Date accessed May 11, 2007

56 Framework for Public Review and Engagement, "Change is in the Air. Toronto's Commitment to an Environmentally Sustainable Future", March 2007 at p. 2 http://www.toronto.ca/legdocs/mmis/2007/ex/bgrd/backgroundfile-2428.pdf Date accessed May 11, 2007

57 Framework for Public Review and Engagement, "Change is in the Air. Toronto's Commitment to an Environmentally Sustainable Future", March 2007 at p. 13 http://www.toronto.ca/legdocs/mmis/2007/ex/bgrd/backgroundfile-2428.pdf Date accessed May 11, 2007

on improving the efficiency and sustainability of the current system.[58]

While the City of Toronto has much to do to meet its framework goals, it is taking positive steps. These include an anti-idling by-law.[59] It has also established the "Smart Commute" Program which hopes to discourage the use of single vehicle commuting while encouraging a switch to more sustainable modes of transportation. These include city employee discounts on public transit passes, park and ride facilities, mass transit employer passes, and several other incentives to reduce the stress and hassles of single vehicle commuting.[60] The Toronto CMA should also consider introducing free transit services in its downtown core; such an initiative could further encourage people to live and work near the downtown core. Another option for Toronto is to increase the percentage of the local labour force holding transit passes purchased through their place of employment; the Toronto area already is ranked second in this category but could do better as currently less than 2% of the population holds such passes.

In 2006, diesel-electric hybrid buses, (which have lower carbon emissions than traditional diesel buses), were introduced to Toronto's public transportation fleet. Today, about 10% of the total transit fleet and 12% of the municipal fleet run on alternative fuels. This number falls significantly short of the 10 year attainable target of 39.48% of total transit vehicles and 48.3% of municipal road fleets.

The Toronto CMA has demonstrated that it can make progress on sustainable transportation policy — but the GreenApple Canada 2007 Ranking Report shows that Toronto still has more to do if it is to climb higher in the GreenApple Canada Ranking.

58 Toronto Environmental Alliance website http://www.torontoenvironment.org/climate?PHPSESSID=6d545d53ed384477141e9680b37dab4b Date accesssed May 11, 2007

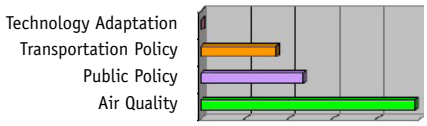
59 Official website of the city of Toronto http://www.toronto.ca/greenguide/cleaner_air.htm Date accesssed May 11, 2007

60 Official website of the city of Toronto http://www.toronto.ca/greenguide/people_motion.htm Date accesssed May 11, 2007

St. Catharines-Niagara

Ontario
Population (2006): 390,317

GreenApple Ranking
Rank: 23
Score: 44
GRADE: F



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.4	1.47
Median of daily maximum observed CO, parts per million (2005)	0.5	0.3
Median of daily maximum observed O_3, parts per billion (2005)	46.5	25.63
Registered vehicles per capita (2005)	0.57	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	29%	100%
% housing starts in row and apartment units (2006)	25%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	24%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	14	71
% labour force walking, bicycling or taking public transit to work (2001)	7.4%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.04%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

The St. Catharines-Niagara CMA has a combined population of less than 400,000, yet it receives millions of tourist visitors every year.[61] With the number of annual visits to this scenic region expected to climb past 20 million, congestion and pollution has become a pressing concern. Part of this urban region has implemented anti-idling by-laws in hope of stemming unnecessary idling, and has also instituted campaigns to encourage taking public transit, walking, cycling, and other forms of sustainable transit.[62]

These efforts are not generating results in a number of important areas. The CMA has only a fraction of its population subject to anti-idling by-laws and only a quarter of its housing starts are in the form of row housing and apartments. The vast majority of its housing is in the form of single-family and duplex units, which results in low housing density, and hinders the provision of effective public transit. Only 24% of the housing stock is composed of row houses and apartments and the CMA offers its residents only 14 kilometres of public transit per capita, less than half the level of Halifax. Only 7% of local residents cycle, walk or take public transit to work, and there is no employer transit pass program available to employees. While bus passes are relatively affordable taking into consideration local incomes, it is clear that this inducement brings little benefit in the face of a product which fails to serve commuters' needs.

The St. Catharines-Niagara CMA has not yet implemented alternative fuel technologies in its local public transportation fleets: its transit, municipal and taxi and limousine fleets all lack alternative fuel or hybrid vehicles.

The St. Catharines-Niagara CMA can realize immediate improvements to its GreenApple Canada 2007 Ranking score by enacting comprehensive anti-idling by-laws, encouraging the use of more density in new housing, increasing the transit available to the public, and by requiring taxi and limousine fleets to convert to vehicles powered by hybrid gasoline-electric motors.

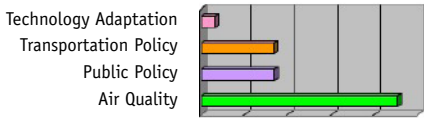
61 The St. Catharines-Niagara Census Metropolitan Area includes: Fort Erie (Town), Lincoln (Town), Niagara Falls (City), Niagara-on-the-Lake (Town), Pelham (Town), Port Colborne (City), St. Catharines (City), Thorold (City), Wainfleet (Township), Welland (City)

62 The Regional Municipality of Niagara: http://www.regional.niagara.on.ca/government/initiatives/airquality/default.aspx Date accesssed May 11, 2007

Barrie

Ontario
Population (2006): 177,061

GreenApple Ranking
Rank: 24
Score: 42
GRADE: F



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.8	1.47
Median of daily maximum observed CO, parts per million (2005)	0.5	0.3
Median of daily maximum observed O_3, parts per billion (2005)	41.5	25.63
Registered vehicles per capita (2005)	0.61	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	15%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	23%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	17	71
% labour force walking, bicycling or taking public transit to work (2001)	7.1%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.11%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	5%	100%
% municipal road fleet using AFV (12/31/2006)	1%	48.3%

The Barrie CMA[63] consists of 177,061 residents and is located north of Canada's largest urban community, Toronto. Many Barrie residents commute to jobs located in the Toronto CMA.

Since early 2004, the Ontario government's GO Transit has been working to secure the land and rail corridor needed to expand GO Transit rail service to Barrie. Up to four GO trains are expected to serve Barrie by late 2007.[64]

On October 28, 2005, Environmental Action Barrie (Living Green)[65] received $50,000 to research and analyze the effectiveness and potential emission reductions associated with a new telecommuting centre in Barrie. The telecommuting centre is an innovative business model, the first of its kind in Canada. Its goal is to allow employees of firms in the Greater Toronto Area to work closer to home in a centralized location rather than having to commute long distances regularly.[66] The new project in Barrie, Ontario received funding under the Moving on Sustainable Transportation (MOST) program, a five-year, $2.5 million contribution program established by Transport Canada to stimulate the development of innovative tools, approaches and practices for sustainable transportation.[67] On June 22, 2007 under the "Greening Barrie's Fleet" initiative, the City of Barrie unveiled four new hybrid powered vehicles in order to further the Urban region's goals in sustainable transportation.[68]

Despite these efforts, Barrie has a low rank in the GreenApple Canada 2007 Ranking Report – receiving a score of 42 points. Barrie received low scores in every category. For instance, in the Technology Adoption category, Barrie reported no AFVs in the transit fleet and a very low adoption of AFV technology in the municipal road fleet. Only 5% of the Barrie taxi fleet has adopted AFV technology.

The Transportation Policy category also proved a challenge for Barrie. The Barrie labour force does not have access to employer-issued transit passes, nor is there free transit in the core. Monthly adult transit passes are relatively expensive compared to household income, and a very small proportion (7.1%) of the labour force walks, cycles or uses public transit to get to work and revenue passenger kilometers on transit is low (17 kms).

The Public Policy category is also an area that needs improvement. The Barrie urban area has no anti-idling laws, there are no trip reduction programs and urban sprawl has not been adequately addressed. Barrie's Air Quality scores were worse than average with observed O_3 and registered vehicles per capita well above average.

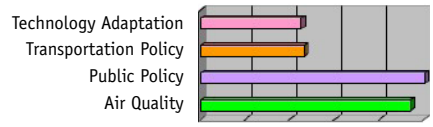
The GreenApple Canada 2007 Ranking Report shows that the Barrie area can secure improvements in all of the policy category areas. Progress in these areas would improve this fast-growing area's ranking in future studies.

63 The Census Metropolitan Region of Barrie consists of: Barrie (City), Innisfil (Town), Springwater (Township).
64 Ontario Ministry of Transportation news release, "Go Transit marks ridership achievement" (website visited May 14, 2007 at link: http://ogov.newswire.ca/ontario/GPOE/2006/10/11/c6695.html?lmatch=&lang=_e.html)
65 Environmental Action - Barrie/ Living Green is a non-profit organization committed to raising awareness about environmental issues and solutions. http://www.livinggreen.info/about/). Date Accessed: May 14, 2007
66 Transport Canada, news release no. H205/05, "Sustainable Transportation Project Announced in Barrie", October 28, 2005. http://www.tc.gc.ca/mediaroom/releases/nat/2005/05-h205e.htm. Date Accessed: May 14, 2007.
67 Transport Canada, Moving on Sustainable Transportation (MOST). http://www.tc.gc.ca/programs/environment/most/aboutmost.htm. Date Accessed: May 14, 2007
68 City of Barrie. "Greening Barrie's Fleet." June 22, 2007. http://www.barrie.ca/WCMAdmin/Images/wwwbarrieca/PDF_Comm/Hybrid%20Media%20Release%20June%2025,%202007.pdf. Date Accessed: September 13, 2007.

Hamilton

Ontario
Population (2006): 692,911

GreenApple Ranking
Rank: 7
Score: 60
GRADE: C



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.7	1.47
Median of daily maximum observed CO, parts per million (2005)	0.5	0.3
Median of daily maximum observed O_3, parts per billion (2005)	48	25.63
Registered vehicles per capita (2005)	0.55	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	97%	100%
% housing starts in row and apartment units (2006)	38%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	52%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	37%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	21	71
% labour force walking, bicycling or taking public transit to work (2001)	13.1%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.24%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	29%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	11%	48.3%

Hamilton tied with Sherbrooke CMA for seventh place in the GreenApple Canada 2007 Ranking Report.[69] Hamilton is plagued by congestion, poor air quality and urban sprawl. For several decades, Hamilton's city planners have developed the urban region with single occupancy commuter vehicles in mind — envisioning high speed travel from one side of the city to the other. The consequences of this style of urban planning are evident in the levels of congestion on the streets. Hamilton only has 37% of its housing stock in dense forms such as row housing or apartments compared to Sherbrooke's 51%; Hamilton also has more registered vehicles per capita than Sherbrooke.

The links between poor health and vehicular emissions have forced people to shift their priorities and focus on developing Hamilton in a way that is more in tune with the environment.

Despite its overall low scores, Hamilton leads in three policy indicators. 97% of the Hamilton area's population is subject to anti-idling laws and it also offers the most significant discount for transit passes to municipal employees. Hamilton reportedly has the highest proportion of a transit fleet using alternative fuels at 29%.

The goals outlined in the "Clean Air Hamilton" plan are ambitious: to ensure that the City of Hamilton has the best air quality of any major urban center in Ontario; and to reduce city-wide greenhouse gas emissions by 6% from a 1994 baseline.[70]

Hamilton's urban planners are focusing on creating alternatives to transportation other than cars. Future planning initiatives provide easier access to public transportation by focusing development in already developed areas that are close to the public transit network. This new community design focuses on people, not vehicles, and promotes walking, biking, and public transit by creating communities that are not only closer to the public transit network, but also close to an extensive network of walking and biking paths. According to our Report, which reports 2001 figures, only 13.1% of the labour force walks, cycles or takes transit to work. This plan, if implemented, will not only increase row housing and apartment stock, but also the number of people who can walk, bicycle or take public transit to work.

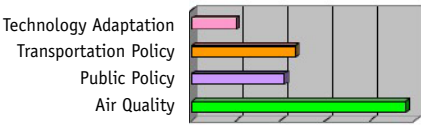
While the Hamilton area has a number of sustainable transportation challenges, it has the ability to score higher on future GreenApple Canada Rankings.

69 The Hamilton Census Metropolitan Area includes: Burlington (City), Grimsby (Town), Hamilton (City)
70 City of Hamilton, "Cleanair Hamilton 2004-2005 Progress Report", May 2006, p. 4: http://www.cleanair.hamilton.ca/downloads/CAHProgressReport20042005.pdf

Kitchener-Waterloo

Ontario
Population (2006): 451,235

GreenApple Ranking
Rank: 16
Score: 50
GRADE: D



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.3	1.47
Median of daily maximum observed CO, parts per million (2005)	0.8	0.3
Median of daily maximum observed O_3, parts per billion (2005)	45.5	25.63
Registered vehicles per capita (2005)	0.58	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	33%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	37%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	21	71
% labour force walking, bicycling or taking public transit to work (2001)	9.3%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	0.96%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0.05%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	13%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	5%	48.3%

The Kitchener-Waterloo urban area has a population of almost half a million people located about an hour's drive west of Toronto.[71] Air pollution remains a particular concern in this community because its proximity to a number of industrial cities makes it susceptible to poor air quality. The coal plants in the Ohio Valley for example, contribute over half of the pollutant load in the Kitchener-Waterloo region.[72] However, emissions from local sources also contribute to Kitchener's low air quality scores. Even with its relatively small population, the Kitchener-Waterloo region was reported to have air pollution levels as high as or higher than large cities like Hamilton and Toronto, and currently has the worst air quality scores for ground-level ozone. [73]

In 2007, Kitchener published "A Plan for a Healthy Kitchener," which sets goals and priorities for the healthy development of the city.[74] The Report highlighted just how important the issues of sustainable development and transportation are to Kitchener residents. Around 89% of those surveyed said that Kitchener should focus "significant energy and resources on becoming more environmentally friendly, through investments in things like bike trails, improved transit systems, tougher environmental by-laws and stricter growth management policies that limit urban sprawl."[75]

Residents of the Kitchener-Waterloo CMA do not currently benefit from public policy and transportation policy initiatives. For instance, Kitchener-Waterloo does not have anti-idling by-laws, nor does it have a robust transit system usage levels. Although its bus passes are relatively affordable when adjusted for local incomes, the use of public transit, walking and bicycling as modes of transport to work is very low at just 10%. The reason for these poor showings lies in the CMA's morphology: just under two thirds of its housing stock is in the form of single-family and duplex units and the CMA perpetuates this transit-unfriendly land use pattern by devoting an even larger share of housing starts to these categories.

Kitchener's commitment to improving its local air quality is also evident in its 2006 Report, "Air Quality in Kitchener."[76] The Report recognized that city residents have important roles to play in improving the air quality and overall environmental quality in Kitchener. This Report recommends that Kitchener fund a region-wide public education program that informs residents about the links between personal action (unnecessary idling, driving rather than walking or biking short distances) and their health and environment. The Report also recommends controlling urban sprawl by focusing on the densification of the downtown urban core and building new residential areas on already-existing developments.[77]

Kitchener's city officials also recognize the importance of improving public transit to make it a more attractive commuting option. As of March 2007, 13% of the transit fleet uses

71 The Kitchener-Waterloo Census Metropolitan Area includes the following: Cambridge (City), Kitchener (City), North Dumfries (Township), Waterloo (City), Woolwich (Township)
72 University of Waterloo, "ERS 285 – Local Air Quality Initiatives in the Region of Waterloo: What else can be done?", July 20, 2000 at para. 8.1 (website visited May 11, 2007 at link: http://www.adm.uwaterloo.ca/infowast/watgreen/projects/library/s00localairqualitystrategies/localairquality.html)
73 Environmental Committee, "Air Quality in Kitchener - 2006" at p. 3 (website visited May 11, 2007 at link: http://www.kitchener.ca/pdf/air_quality_kitchener.pdf)
74 City of Kitchener, "A plan for a healthy Kitchener (2007 to 2027) – Community Strategic Plan" (visited May 11, 2007 at link: http://www.kitchener.ca/pdf/a_plan_for_a_healthy_kitchener.pdf)
75 City of Kitchener, "A plan for a healthy Kitchener (2007 to 2027) – Community Strategic Plan" at p. 14 (visited May 11, 2007 at link: http://www.kitchener.ca/pdf/a_plan_for_a_healthy_kitchener.pdf)
76 Environmental Committee, "Air Quality in Kitchener 2006" http://www.kitchener.ca/pdf/air_quality_kitchener.pdf Date accesssed May 11, 2007
77 Environmental Committee, "Air Quality in Kitchener 2006" at p. 3 http://www.kitchener.ca/pdf/air_quality_kitchener.pdf Date accesssed May 11, 2007

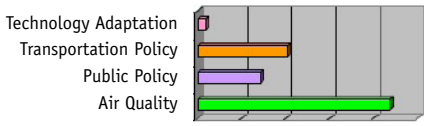
alternative fuels. Kitchener–Waterloo has introduced AFVs into their transit fleet. The local transit agency has also introduced an employer pass program that allows employees to buy passes at work at a discount; this program has the capacity, if properly expanded, to increase transit ridership.

The Kitchener CMA has a significant amount of work to do. By matching its deeds to its words, Kitchener CMA can make its road transportation system more environmentally sustainable.

Greater Sudbury

Ontario
Population (2006): 158,258

GreenApple Ranking
Rank: 26
Score: 41
GRADE: F



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	3.4	1.47
Median of daily maximum observed CO, parts per million (2005)	0.35	0.3
Median of daily maximum observed O_3, parts per billion (2005)	39.88	25.63
Registered vehicles per capita (2005)	0.62	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	2%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	29%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	21	71
% labour force walking, bicycling or taking public transit to work (2001)	11.4	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.2%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0.05%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	3%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

Greater Sudbury is home to a large mining industry that contributes to poor air quality.[78] Its long history as one of the world's largest metal smelting complexes has unfairly conjured an image dominated by acid rain-damaged lakes and a bleak industrial landscape featuring Superstack, the world's tallest smokestack.[79]

In an effort to improve the quality of life of its citizens and to address its reputation as an environmentally damaged city, Sudbury has proposed an ambitious Local Action Plan designed to make the area more sustainable.[80] The plan includes several projects to reduce the amount of harmful greenhouse gas emissions, including an anti-idling campaign, trip-reduction programs, and a program that experiments with biodiesel in the city's public transit and municipal fleet. Currently four public transit vehicles and four city vehicles run on biodiesel.[81] The City's Local Action Plan also calls for the implementation of a SMART Fleet Program that maximizes the efficiency of its city vehicles while lowering the volume of greenhouse gas emissions; the promotion of public transit to high school and college students; and the improvement and expansion of the current transit system.

Despite these plans, Greater Sudbury has placed second last out of all the regions ranked in the GreenApple Canada 2007 Ranking Report with a score of 41 points. Despite the best efforts of regional officials the Air Quality is poor. While observed carbon monoxide levels are quite close to the target value of 0.3, the other variables were poor, relative to the target levels. Carbon dioxide emissions are 3.4 tonnes per capita, which is well above the 1.47 tonne target. Ozone levels of 39.88 parts per billion are also high relative to the target of around 26ppb and finally there are 0.62 registered vehicles per capita; well above the average and a long way from the target of 0.49 registered vehicles per capita.

The Public Policy Category is another area where Greater Sudbury has room for improvement. There are no anti-idling laws, urban sprawl is not being checked, and there are no trip reduction programs. Transportation Policy also does not improve the situation for Greater Sudbury. Only 0.05% of employers issued transit passes and there is no free transit in core areas. Bus passes are relatively expensive compared to average household income, which might explain why just 11.4% of people who walk, cycle or take public transit to work.

Greater Sudbury's failure to adopt new technology means only 3% of the transit fleet utilizes alternative fuel, while there are no hybrid or AFV taxis or municipal vehicles. There is considerable room for Greater Sudbury to take new measures to improve its ranking in future years.

78 The Census Metropolitan Area of Greater Sudbury consists of: Greater Sudbury/Grand Sudbury (City), Wahnapitei 11 (Indian reserve), Whitefish Lake 6 (Indian reserve)

79 City of Greater Sudbury, Ontario, "Air Quality Trends, 1953 – 2002", June 2004 at p. 8 http://www.greatersudbury.ca/content/div_earthcare/documents/Air%20Quality%20Trends%20-%20June%2020041.pdf Date accessed May 14, 2007.

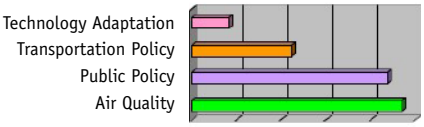
80 City of Greater Sudbury, "Becoming a Sustainable Community. The Earth Care Sudbury Local Action Plan, 2003." P. 1. http://www.greatersudbury.ca/content/div_earthcare/documents/EarthCareLocalActionPlanENG.pdf. Date Accessed: May 14, 2007

81 City of Greater Sudbury, "Biodiesel Fuel in Sudbury." http://www.city.greatersudbury.on.ca/cms/index.cfm?app=div_earthcare&lang=en&currID=2010&parID=2007. Date Accessed: May 14, 2007

London

Ontario
Population (2006): 457,720

GreenApple Ranking
Rank: 11
Score: 56
GRADE: C



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.5	1.47
Median of daily maximum observed CO, parts per million (2005)	0.3	0.3
Median of daily maximum observed O_3, parts per billion (2005)	54.63	25.63
Registered vehicles per capita (2005)	0.56	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	88%	100%
% housing starts in row and apartment units (2006)	42%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	30%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	40%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	22	71
% labour force walking, bicycling or taking public transit to work (2001)	12.4%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.34%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	13%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	2%	48.3%

The London CMA grew more than 5% from 2001 to 2006.[82] This growing urban area has the worst ambient levels of ozone among the 27 CMAs included in the GreenApple Canada 2007 Ranking Report. In part, it is possible that London's air quality reflects transboundary emissions, but vehicle emissions likely play a role as well. The city is struggling to cope with the environmental consequences of this rapid growth, such as increased congestion, pollution, and urban sprawl. The largest source of pollution and greenhouse gas comes from vehicle emissions, but little has been done to reduce dependence on single occupant vehicles.

The city's most recent Transportation Master Plan was approved in 2004 and called for "further investment and support…for the LTC [London Transit] to meet its planned long term role in the London transportation system."[83] Recognizing Londoners' dependence on the single occupancy vehicle, city planners have set an achievable, though very low, target of a 4% increase of transit ridership by 2024 from a 2002 baseline. The Plan is still centred on the single occupancy vehicle as the principal means of transportation, focusing largely on the improvement and expansion of existing roadways.

There are a number of things which the London CMA can do that will increase transit ridership immediately. The housing starts in London are increasingly devoted to denser forms of housing, and this can be increased and in turn clustered around public transit. The cost of transit passes relative to local incomes is among the most expensive in the country and reducing the cost of a transit pass could arguably increase its appeal to new users. London might experience a significant rise in ridership if it were to introduce an employer pass program providing discounts and convenience to commuters who purchase their passes through work. London's plan to increase transit service moderately will not do much to boost its standing among other CMAs; at just 22 kilometers of transit revenue km per capita, both Halifax and Victoria, do considerably better at 27 kilometers and 35 kilometers per capita. London could also introduce free transit in its core.

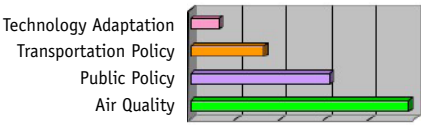
Despite the deficiencies in its public transit system, the urban region has taken several positive steps to reduce its greenhouse gas emissions in other ways. The London Police Service started using propane in their police vehicles in 1982 and currently 65% of police vehicles have been converted to run on propane, including 71 full-sized sedans and 20 trucks and vans.[84] The use of propane has not only saved Londoners millions of dollars over the course of 20 years, it has also caused a significant reduction in greenhouse gas emissions.[85] If the city and its neighbouring communities were to convert their non-police and non-fire fleets to alternative fuels, there would be a significant improvement in London's GreenApple Canada ranking.

82 The London Census Metropolitan Area includes the following: Adelaide Metcalfe (Township), Central Elgin (Municipality), London (City), Middlesex Centre (Township), Southwold (Township), St. Thomas (City), Strathroy-Caradoc (Township), Thames Centre (Municipality).
83 City of London, "Transportation Master Plan", Final Report, May 2004, p. 3: http://www.london.ca/Cityhall/EnvServices/Transportation_Systems_Eng/Planning/TMPFinal.pdf
84 Office of Energy Efficiency, Natural Resources Canada. "Switch to Alternative Fuel Saves Tax Dollars". November 18, 2004: http://oee.nrcan.gc.ca/transportation/business/documents/success-stories/cars-minivans-london.cfm?attr=16
85 Natural Resources Canada's Office of Energy Efficiency (OEE): http://oee.nrcan.gc.ca/transportation/business/documents/success-stories/cars-minivans-london.cfm?attr=16

Windsor

Ontario
Population (2006): 323,342

GreenApple Ranking
Rank: 18
Score: 48
GRADE: D



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.4	1.47
Median of daily maximum observed CO, parts per million (2005)	0.4	0.3
Median of daily maximum observed O_3, parts per billion (2005)	53.88	25.63
Registered vehicles per capita (2005)	0.55	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	67%	100%
% housing starts in row and apartment units (2006)	29%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	5%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.3%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	26%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	15	71
% labour force walking, bicycling or taking public transit to work (2001)	8.1%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.29%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	13%	48.3%

Located just across the river from Detroit, Michigan, the Windsor CMA is home to one of Canada's largest industrial centres.[86] As a result of a booming manufacturing industry, Windsor's population has mushroomed to over 320,000 people, bringing increased pollution and congestion. The Windsor-Detroit Gateway is the busiest trade-crossing in North America. The effects of industry, trade and transboundary pollution from neighbouring industrial American cities has contributed to one of the lowest air quality scores observed in our GreenApple Canada 2007 Ranking Report. Windsor's ozone concentrations are among the highest observed in our study, even accepting the influence of industrial and U.S. emissions.

The City of Windsor has taken several steps to combat the negative environmental effects of urban growth, beginning with a comprehensive Environmental Master Plan that addresses several pressing environmental problems for the city. The Plan highlights several local and federal initiatives that aim to reduce the staggering amounts of vehicular greenhouse gas emissions. The Plan includes, an anti-idling by-law and a Rail Study designed to reduce the negative impact of existing railways and to improve and extend the current railway system.[87] The City also has several pilot projects with alternative fuel buses. Two thirds of the CMA's population now live under an anti-idling by-law.

The Windsor CMA's transit offerings do not adequately meet the needs of commuters. The city's public transit authority offered free transit on several smog advisory days in 2003; as a result transit ridership jumped to almost 50% during the experiment.[88] Such projects are an excellent first step towards addressing the lack of transit ridership. Ridership in the Windsor CMA suffers with only 15 kilometers per capita of public transit service; as a result, only 8% of the population bicycled, walked or took public transit to work in 2001. All these factors are inextricably linked to Windsor's low density housing stock: nearly three quarters of its housing is in the form of single-family and duplex units. The CMA is exacerbating this problem by allowing low density new housing starts. Such measures will ultimately only increase sprawl over time and reduce the ability of public transit to effectively reach residents living in new suburbs.

The Windsor CMA can improve its GreenApple Canada score by making important modifications to its transit fleets over time. The transit, taxi and limousine fleets in particular could benefit greatly from the introduction of alternative fuel engines. An employer pass program to encourage the purchase of transit passes by commuters could also help Windsor score higher in future GreenApple rankings.

86 The Windsor Census Metropolitan Area includes: Amherstburg (Town), LaSalle (Town), Lakeshore (Town) Tecumseh (Town), Windsor (City)

87 City of Windsor, "Environmental Master Plan", July 25, 2006, p. 6: http://windsoremp.dpra.ca/finalEMP_24Jul06.pdf Date accessed May 11, 2007

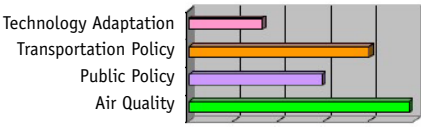
88 City of Windsor official website: http://www.citywindsor.ca/001449.asp Date accesssed May 11, 2007

Winnipeg

Manitoba
Population (2006): 694,668

GreenApple Ranking
Rank: 4
Score: 69

GRADE: B



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.2	1.47
Median of daily maximum observed CO, parts per million (2005)	0.5	0.3
Median of daily maximum observed O_3, parts per billion (2005)	28	25.63
Registered vehicles per capita (2005)	0.54	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	1%	100%
% housing starts in row and apartment units (2006)	34%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	30%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	23.6%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	34%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	34	71
% labour force walking, bicycling or taking public transit to work (2001)	19.6%	36.5%
Free transit in the core? (June 2007)	Y	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	0.94%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0.57%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	26.32%	100%
% municipal road fleet using AFV (12/31/2006)	3%	48.3%

Winnipeg generally has fared quite well in the GreenApple Canada 2007 Ranking Report, where it has placed fourth .[89] Winnipeg's strong result is based on factors such as the relatively low CO_2 emissions (at 2.2 tonnes per capita), coupled with the fact that over 26% of its taxis and limousines are powered by hybrid gasoline-electric motor. Provincial tax incentives are in place for the purchase of hybrid vehicles.

Although Winnipeg does well in these policy categories, it still needs to do more to encourage the use of urban public transit. The percentage of the labour force that uses public transit is surprisingly low (at 19.6%), despite the availability of a free transit service in the downtown core. The number of registered vehicles per capita of 0.54 exceeds the 10 year GreenApple Expert Panel's attainable target of 0.49 vehicles per capita.

Winnipeg has addressed this problem in its official urban plan, entitled "Winnipeg 2020 Vision".[90] The plan outlines several strategies to encourage energy efficiency and to address water, air, and noise pollution. These strategies include a comprehensive education program to make people aware of the links between greenhouse gas emissions and climate change; to encourage energy efficient design and construction in new residential, commercial, and industrial structures to reduce the reliance on single occupancy vehicles; and to promote alternative forms of transportation. The provincial government has helped realize some of these goals by announcing that it would provide a tax rebate for the purchase of new hybrid vehicles.[91] Now over 26% of Winnipeg taxi owners have adopted hybrid vehicles.

The 2006 Winnipeg Preliminary Capital Budget recommends a $142 million capital injection into the transit system.[92] The plan also recommends introducing electric hybrid buses into the transit fleet. A most effective and essentially costless way to encourage the immediate reduction of greenhouse gas emissions would be to introduce an anti-idling by-law. The Winnipeg CMA's component municipalities could also improve its ranking by increasing the percentage of high density housing starts.

89 The Winnipeg Census Metropolitan Area includes the following communities: Brokenhead 4 (Indian reserve), East St. Paul (Rural municipality) Headingley (Rural municipality), Macdonald (Rural municipality), Ritchot (Rural municipality), Rosser (Rural municipality), Springfield (Rural municipality), St. Clements (Rural municipality), St. François Xavier (Rural municipality), Taché (Rural municipality), West St. Paul (Rural municipality), Winnipeg (City)

90 City of Winnipeg, "IPEG 2020 Vision" at p. 29 http://www.winnipeg.ca/cao/pdfs/plan_2020.pdf Date accessed May 11, 2007

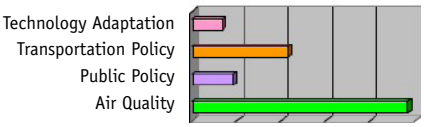
91 Red River Valley Clean Cities Coalition Winnipeg Chapter Inc.: http://www.cleancitieswinnipeg.org/LocalSuccessStories.htm Date accessed May 11, 2007

92 2006 Winnipeg Preliminary 2006 Capital Budget and the 2007to 2011 Five Year Forecast at: http://www.winnipeg.ca/finext/fpr/files/2006_preliminary_capital_budget.pdf

Regina

Saskatchewan
Population (2006): 194,971

GreenApple Ranking
Rank: 20
Score: 46
GRADE: D



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2	1.47
Median of daily maximum observed CO, parts per million (2005)	0.6	0.3
Median of daily maximum observed O_3, parts per billion (2005)	25.63	25.63
Registered vehicles per capita (2005)	0.67	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	22%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	17%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	0%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	26%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	22	71
% labour force walking, bicycling or taking public transit to work (2001)	10.3%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0.18%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0.83%	100%
% municipal road fleet using AFV (12/31/2006)	13%	48.3%

Regina's relatively small population of just under 200,000, together with its small industrial base has resulted in favourable air quality scores.[93] Regina started its environmental campaign in 1990[94], when it became the third municipality in the country to commit to reducing its greenhouse gas emissions by joining the Partners for Climate Protection Program.[95] In 2000, Regina created the Green Ribbon Community Climate Change Advisory Committee to develop an action plan to reduce the city's greenhouse gas emissions by 6% from its 1990 baseline by 2012. Since 2004 the city has reduced its greenhouse gas emissions by 12% through a series of changes that include improving the heating and lighting efficiency of city buildings; converting the entire vehicle fleet from gasoline to compressed natural gas; and pilot testing a hybrid vehicle for the Automated Meter Reading Program.[96]

Recognizing that the majority of emissions come from the private sector, the environmental plan has established several sub-committees to tackle different aspects of community involvement. One of them, the Education and Communication sub-committee, focuses on developing an awareness program to educate the residents of the urban region of the links between their private actions (such as driving cars) and greenhouse gas emissions.[97] The goal is to make people aware of climate change and what they can do to help slow it down. The Transportation sub-committee focuses on reducing congestion in the city, decreasing the amount of vehicle trips while increasing transit ridership, and limiting urban sprawl. The sub-committee also recommends the promotion of walking and biking as viable transportation options.[98]

Regina has a challenge with its transportation category results. It has not made gains in the area of Technology Adoption. Only 13% of the municipal road fleet uses AFV or hybrid technology, which is far below the 10 year GreenApple Canada Expert Panel target of 48.3%. Furthermore only 0.83% of taxis use AFV technology. Regina has no AFV use for public transit vehicles. Transportation Policy is also another area of concern. Only 0.18% of the labour force hold employer-issued transit passes, there is no free transit access in core areas and issues of urban sprawl have not been addressed: just 26% of the current housing stock is dense residential.

Regina still needs to address key Public Policy category issues through anti-idling laws, incentives for hybrid vehicle purchases and by increasing trip reduction programs. These policies have combined with Regina's lack of urban residential density to result in a lower ranking score of 46 points.

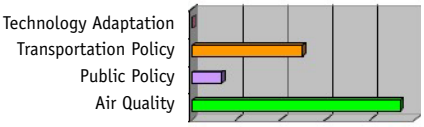
93 The Census Metropolitan Region of Regina consists of: Balgonie (Town), Belle Plaine (Village), Buena Vista (Village), Disley (Village), Edenwold (Village), Edenwold No. 158 (Rural Municipality), Grand Coulee (Village), Lumsden (Town), Lumsden Beach (Resort village), Lumsden No. 189 (Rural municipality), Pense (Village), Pense No. 160 (Rural municipality), Pilot Butte (Town), Regina (City), Regina Beach (Town), Sherwood No. 159 (Rural municipality), White City (Town).
94 Regina Green Ribbon Committee, "Regina's Community Greenhouse Gas Emission Reduction Action Plan", January 2004 at p. 6: http://www.regina.ca/pdfs/Summary.pdf Date accessed May 14, 2007.
95 City of Regina, "Climate Change Program": http://www.regina.ca/content/info_services/climate/information/leadership.shtml Date accessed May 14, 2007.
96 City of Regina, "Climate Change Program": http://www.regina.ca/content/info_services/climate/information/leadership.shtml Date accessed May 14, 2007.
97 Regina Green Ribbon Committee, "Regina's Community Greenhouse Gas Emission Reduction Action Plan", January 2004 at p. 11: http://www.regina.ca/pdfs/Summary.pdf Date accessed May 14, 2007.
98 Regina Green Ribbon Committee, "Regina's Community Greenhouse Gas Emission Reduction Action Plan", January 2004 at p. 15: http://www.regina.ca/pdfs/Summary.pdf Date accessed May 14, 2007.

Saskatoon

Saskatchewan
Population (2006): 233,923

GreenApple Ranking
Rank: 20
Score: 46

GRADE: D



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.3	1.47
Median of daily maximum observed CO, parts per million (2005)	0.5	0.3
Median of daily maximum observed O_3, parts per billion (2005)	33.5	25.63
Registered vehicles per capita (2005)	0.63	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	32%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	0%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	34%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	22	71
% labour force walking, bicycling or taking public transit to work (2001)	11.4%	36.5%
Free transit in the core? (June 2007)	Y	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.15%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

The Urban region of Saskatoon[99] has more than 230,000 people and is growing. The CMA has started to take positive sustainability steps through the launch of a BioBus pilot project to test the use of bio-diesel fuel in its transit fleet.[100] The conversion of the entire Saskatoon Transit fleet to a 1.0% CME blend will result in a cost reduction through reduced fuel consumption and less engine wear.

Saskatoon has the second-highest proportion of bicycle commuters in Canada.[101] Cyclists can take advantage of bike racks on all buses — such that they can pedal to the nearest stop and hop on the bus to complete their journey. Racks on the front of the buses can hold two bicycles.[102] To further reduce congestion and promote public transit usage the urban region has implemented free transit programs in the core of some municipal areas. Nevertheless, despite all of its programs the urban region has received a score of 46 points.

Saskatoon has a low score in the Technology Adoption category; no alternate fuel technology is being used in the municipal road fleet, the public transit or the taxi fleet.

Saskatoon also scores low in the Public Policy category, as it does not have any anti-idling laws or trip reduction programs. Air Quality in Saskatoon is surprisingly poor, with all values higher than the target levels. Saskatoon CMA has one of the highest proportion of registered vehicles per capita rates for all the urban regions studied at 0.63. Not surprisingly, all of these factors had a negative affect on the Transportation Policy category. None of the labour force holds employer-issued transit passes and monthly adult transit passes are high compared to other urban regions. Transit vehicle maintenance expenditure per capita and transit revenue kilometres are also low. Together, these results all contributed to the area's poor showing in the GreenApple Canada 2007 Ranking Report.

99 The Census Metropolitan Area of Saskatoon consists of: Allan (Town), Asquith (Town), Blucher No. 343 (Rural municipality), Bradwell (Village), Clavet (Village), Colonsay (Town), Colonsay No. 342 (Rural municipality), Corman Park No. 344 (Rural municipality), Dalmeny (Town), Delisle (Town), Dundurn (Town), Dundurn No. 314 (Rural municipality), Elstow (Village), Langham (Town), Martensville (Town), Meacham (Village), Osler (Town), Saskatoon (City), Shields (Resort village), Thode (Resort village), Vanscoy (Village), Vanscoy No. 345 (Rural municipality), Warman (Town), Whitecap (Indian reserve)

100 City of Saskatoon Transit Services. http://www.city.saskatoon.sk.ca/org/transit/biobus.asp. Date Accessed: May 14, 2007

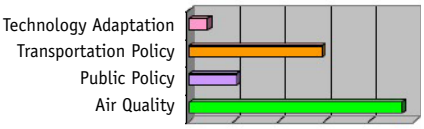
101 Climate Change Central. http://www.climatechangecentral.com/default.asp?V_DOC_ID=1513. Date Accessed: May 14, 2007.

102 City of Saskatoon Transit. http://www.saskatoon.ca/org/transit/index.asp. Date Accessed: May 14, 2007

Edmonton

Alberta
Population (2006): 1,034,945

GreenApple Ranking
Rank: 19
Score: 47
GRADE: D



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.4	1.47
Median of daily maximum observed CO, parts per million (2005)	0.7	0.3
Median of daily maximum observed O_3, parts per billion (2005)	36.06	25.63
Registered vehicles per capita (2005)	0.55	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	29%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	17%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	0%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	35%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	37	71
% labour force walking, bicycling or taking public transit to work (2001)	13.5%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	0.99%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	6%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0.4%	100%
% municipal road fleet using AFV (12/31/2006)	0%	48.3%

Edmonton is spread over a large geographic area. This is reflected in the low proportion of dense housing stock. The lack of urban density increases dependence on greenhouse gas emitting vehicles. Edmonton has high carbon dioxide emissions per capita and the high level of vehicle ownership per capita reduces its GreenApple Canada 2007 Ranking Report scores. A more compactly designed city, one that is planned around a comprehensive public transit network, greatly reduces residents' dependence on the vehicles that emit the noxious gases that cause climate change. Edmonton (and many North American cities), however, has developed around the idea that most residents will use their vehicles to get around the city and this has had a significant impact on Edmonton's urban design. With rising gas prices and a new awareness of the links between vehicle emissions and climate change, Edmonton city officials have begun to rethink their transportation and developments needs and options.

In 2006, city officials came up with a comprehensive Environmental Strategic Plan.[103] This Plan made recommendations about how to make the city more environmentally sustainable.[104] Among other things, the Plan calls for a pilot project that tested six new hybrid-diesel buses, as well as a detailed analysis of the costs and benefits of increased use of alternative fuels in its municipal vehicles. As of March 2007, 6% of Edmonton's transit fleet were AFVs. This is a good start but well below the expert panel's 10 year attainable target of 39.48%. As of December, 2006 there were no AFV vehicles in its municipal road fleet.

The City of Edmonton has campaigns to encourage the use of mass transit, walking, bicycling and other more sustainable forms of transportation, as well as campaigns to discourage idling and the use of older, more polluting vehicles. One of the more innovative initiatives in place is the Car Heaven Project which is a collaborative effort between Edmonton Transit, Clean Air Foundation and Climate Change Central. Car Heaven encourages the donation of pre-1994 vehicles for scrapping and recycling, because older vehicles are known to be much more polluting than newer ones. One of the bonuses offered to Edmontonians who surrender their old vehicles is six months of free transit ridership. This is a promising move towards encouraging more use of public transit. Edmontonians would also benefit if there were tax incentives offered to those who purchase hybrid vehicles. This would not only encourage private vehicle owners to purchase hybrids, but it also creates an incentive for taxis to upgrade their aging vehicles. Only 0.3% of Edmonton's taxis run on alternative fuels or are hybrids.

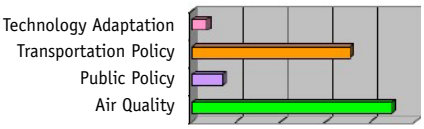
Edmonton can improve its ranking by implementing all those plans laid out in its Environmental Strategic Plan.

103 City of Edmonton, "2006 Environmental Strategic Plan at: http://www.edmonton.ca/Environment/ESP/2006_ESP.pdf)
104 City of Edmonton, "2006 Environmental Strategic Plan at: http://www.edmonton.ca/Environment/ESP/2006_ESP.pdf)

Calgary

Alberta
Population (2006): 1,079,310

GreenApple Ranking
Rank: 16
Score: 50
GRADE: D



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.6	1.47
Median of daily maximum observed CO, parts per million (2005)	0.8	0.3
Median of daily maximum observed O_3, parts per billion (2005)	36.88	25.63
Registered vehicles per capita (2005)	0.67	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	1%	100%
% housing starts in row and apartment units (2006)	32%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	0%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	32%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	40	71
% labour force walking, bicycling or taking public transit to work (2001)	18.9%	36.5%
Free transit in the core? (June 2007)	Y	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.19%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0.3%	100%
% municipal road fleet using AFV (12/31/2006)	7%	48.3%

Calgary is one the country's fastest growing urban regions[105] and also one of the country's largest consumers of energy. A recent Report by the Federation of Canadian Municipalities gave Calgary the distinction of having the largest ecological footprint, requiring 9.7 hectares of land to support each Calgarian.[106]

A booming oil and gas industry contributes to Calgary's wealth, making it one of the most cosmopolitan cities in Canada, but its inhabitants face the daunting prospect of congestion and increased traffic and pollution. In fact, Calgary is often named as one of Canada's most polluted cities, and its nitrogen oxide (NOx) levels are very high.[107] Calgary's greenhouse gas emissions are continually increasing with its population.

This is evident in our survey, as it was revealed that Calgary has high carbon dioxide emissions per capita and the highest level of vehicle ownership per capita. Calgary is a long way from the GreenApple Canada Expert Panel 10 year attainable target of 0.49 vehicles per capita. In co-operation with the Canadian Federation of Municipalities, it has developed policies and programs to conserve energy to reduce greenhouse gas emissions. In July 2006, Calgary issued the Calgary Climate Change Action Plan Target. The Report outlines the city's strategy for realizing its goal of reducing its greenhouse gas emissions by 50% (from its 1990 baseline) by 2012. In committing to do so, the City of Calgary is the first major city in North America to announce its intention to reduce greenhouse gas emissions by 50 per cent from 1990 levels by the target year 2012.[108]

The Plan also outlines a range of goals (short-term, mid-term and long-term) for transportation community-oriented programs in the city.[109] It has identified a variety of action areas in need of improvement. The Plan includes the goal of increasing transit ridership in the downtown core and stopping downtown road and parking expansions.[110] To further encourage the use of public transit Calgary offers free transit in the downtown core. Only three other urban regions (Winnipeg, Halifax and Saskatoon) offer this service.

Nonetheless, to further encourage the use of public transit Calgary will need to implement more attractive incentives. Offering programs such as a special employer mass transit pass is a good way to convince employees to use public transit. However, as of December 2006, no employer offered this program. Calgary should also consider starting trip reduction programs for public service employees.

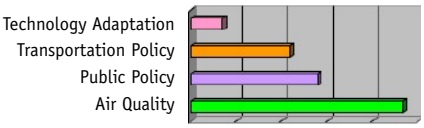
Calgary faces numerous challenges if it wants to realize its Climate Change Action Plan, as well as the GreenApple Canada Expert Panel's 10 year attainable targets. The introduction of AFVs into Calgary's regional transit fleet and municipal fleet, as well as increasing the application of anti-idling laws would have a positive impact and would help lower greenhouse gas emissions.

105 The Calgary Census Metropolitan Area includes: Airdrie (City), Beiseker (Village), Calgary (City), Chestermere (Town), Cochrane (Town), Crossfield (Town), Irricana (Village), Rocky View No. 44 (Municipal district), Tsuu T'ina Nation 145 (Sarcee 145) (Indian reserve)
106 The City of Calgary Environmental Management, "Calgary Climate Change Action Plan Target 50 – The City of Calgary Corporate and Community Outlook on Climate and Air Quality Protection", July 2006 at p. 5 http://www.calgary.ca/docgallery/bu/environmental_management/climate_change_program/target_50_climate_change_action_plan.pdf Date accessed May 11, 2007
107 This Magazine: http://www.thismagazine.ca/issues/2004/11/holysmokes.php Date accessed May 11, 2007
108 The City of Calgary Environmental Management, "Calgary Climate Change Action Plan Target 50 – The City of Calgary Corporate and Community Outlook on Climate and Air Quality Protection", July 2006 at p. 5: http://www.calgary.ca/docgallery/bu/environmental_management/climate_change_program/target_50_climate_change_action_plan.pdf Date accessed May 11, 2007
109 The City of Calgary Environmental Management, "Calgary Climate Change Action Plan Target 50 – The City of Calgary Corporate and Community Outlook on Climate and Air Quality Protection", July 2006 at p. 52: http://www.calgary.ca/docgallery/bu/environmental_management/climate_change_program/target_50_climate_change_action_plan.pdf Date accessed May 11, 2007
110 The City of Calgary Environmental Management, "Calgary Climate Change Action Plan Target 50 – The City of Calgary Corporate and Community Outlook on Climate and Air Quality Protection", July 2006, p. 64.

Kelowna

British Columbia
Population (2006): 162,276

GreenApple Ranking
Rank: 14
Score: 53
GRADE: D



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.3	1.47
Median of daily maximum observed CO, parts per million (2005)	0.6	0.3
Median of daily maximum observed O_3, parts per billion (2005)	35.71	25.63
Registered vehicles per capita (2005)	0.59	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	52%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	15%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	21.68%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	27%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	19	71
% labour force walking, bicycling or taking public transit to work (2001)	8.3%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	0.97%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0.04%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	5%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	1.12%	100%
% municipal road fleet using AFV (12/31/2006)	7%	48.3%

Kelowna[111] is located in British Columbia's scenic Okanagan region. Kelowna and its surrounding areas comprise one of the fastest growing regions in the province.

Kelowna is part of the 'Partners for Climate Protection Program' and is seeking to reduce its greenhouse gas emissions by 20% by 2011.[112] The Kelowna CMA has launched an anti-idling campaign, trip reduction programs, and educational programs intended to raise awareness of environmental issues. Since the early 1990's, Kelowna Regional Transit Authority has been using low sulfur diesel fuel. In 2005, it was the first city in Canada to debut the hybrid diesel-electric bus.[113]

Currently the Kelowna CMA is testing three hybrid buses for future conversion of the entire fleet. In 2005, Kelowna implemented the Central Okanagan Smart Transit Plan.[114] Another initiative within Kelowna, has been to encourage Transportation Demand Management. This program strives to encourage more walking, cycling, public transit use, car-pooling, and telecommuting in Kelowna. It also promotes higher residential densities and other modes of travel in order to improve public transit.

For all of its studies and initiatives, Kelowna still scored poorly. For instance the overall Air Quality in Kelowna is below average. With regard to Public Policy, there are no anti-idling laws and the 15% value of trip reduction programs and discounted bus passes is well below the 89% GreenApple Canada Expert Panel 10 year target. The commitment to develop dense residential areas serves to highlight that Kelowna is capable of achieving more in its Public Policy agenda. Turning to its Transportation Policy, Kelowna is striving to make improvements. There are a number of areas in need of improvement. Low numbers of people walk, cycle and take public transport to work and there are few employer-issued transit passes. There is no free transit in core areas. Finally, Technology Adoption does exist, although at a level far below the Expert Panel targets. Taking these figures into consideration Kelowna scored 53 points in the GreenApple Canada 2007 Rankings.

111 The Census Metropolitan Area of Kelowna includes: Central Okanagan (Regional district electoral area), Central Okanagan J (Regional district electoral area), Duck Lake 7 (Indian reserve), Kelowna (City), Lake Country (District municipality), Peachland (District municipality), Tsinstikeptum 9 (Indian reserve), Tsinstikeptum 10 (Indian reserve).

112 City of Kelowna, Environmental Division, "City of Kelowna. State of the Environment Report, 2003": http://www.city.kelowna.bc.ca/CityPage/Docs/PDFs/Environment%20Division/Environment%20Reports/State%20of%20the%20Environment%20Report%20-%202003.pdf

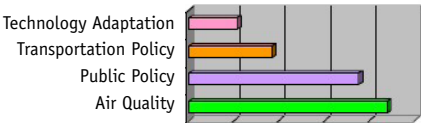
113 Kelowna Regional Transit System, news release, "Canada's First Hybrid Bus Arrives in Kelowna", May 4, 2005 at: http://www.busonline.ca/regions/kel/news/hybrid_electric.cfm

114 City of Kelowna, "Central Okanagan Smart Transit Plan: Final Report." April 29, 2005. http://www.city.kelowna.bc.ca/citypage/docs/pdfs/Transportation%20Division/Smart%20Transit%20Plan%20-%20Report.pdf. Date Accessed: September 12, 2007.

Abbotsford

British Columbia
Population (2006): 159,020

GreenApple Ranking
Rank: 14
Score: 53
GRADE: D



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	4.6	1.47
Median of daily maximum observed CO, parts per million (2005)	0.5	0.3
Median of daily maximum observed O_3, parts per billion (2005)	30.63	25.63
Registered vehicles per capita (2005)	0.52	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	78%	100%
% housing starts in row and apartment units (2006)	64%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	0%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	21.68%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	39%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	10	71
% labour force walking, bicycling or taking public transit to work (2001)	5.5%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	0.9%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	0%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	0%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	0%	100%
% municipal road fleet using AFV (12/31/2006)	22%	48.3%

The Abbotsford[115] CMA has a population of just over 161,000 people. Located in the Fraser Valley near Vancouver, the Abbotsford CMA continues to enjoy rapid growth due to the booming industrial, agricultural, and manufacturing sectors. The City of Abbotsford has proposed an ambitious Community Plan.[116] This Official Plan is based on Abbotsford's Charter of Sustainability, which commits the city to make decisions "based on four Principles of Sustainability: responsible growth; pollution prevention and resource conservation; social well-being; and shared responsibility".[117] The Plan contains several initiatives that Abbotsford has already implemented to address the environmental consequences of urban growth and development.[118] In order to prevent urban sprawl, it encourages increasing the density of the downtown core and focusing new residential and commercial areas in already existing developments.

Targeting urban sprawl and promoting dense residential development greatly aids in the usefulness of a public transit system. The Official Plan addresses Abbotsford's need to provide sustainable transportation options for the growing population that is cost and energy efficient and environmentally sustainable. Together with a Bicycle Master Plan and a Trail Development Strategy, Abbotsford has implemented policies that make alternative transportation — like biking, walking, and public transit — more attractive. This in turn, actively discourages the use of single-commuter vehicles.[119] Given these initiatives it is no surprise that Abbotsford scored fairly well within the Public Policy category. Anti-idling laws are in place, dense residential housing development is promoted and there are tax incentives for purchasing hybrid vehicles. The weaknesses in an otherwise strong Public Policy are that there are no trip reduction programs or discounted bus passes.

Abbotsford's low score of 53 is due to a number of factors. Transportation Policy category scores all could be improved. There are no employer-issued transit passes, there is no free transit in the core and the percentage of the labour force that walks, cycles or takes public transit is a low 5.5%.

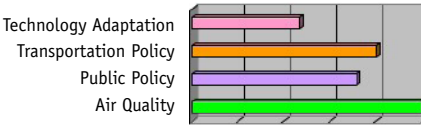
There is room for improvement in Abbotsford's air quality scores as well. 4.6 tonnes per capita of CO_2 retail sales is the highest recorded value out of all of the urban areas considered in the GreenApple Canada 2007 Ranking Report. Abbotsford's location on a major highway route may impact some of these values. At the same time, Abbotsford's CO, O_3 as well as its registered vehicles per capita are far from target values.

115 The Census Metropolitan Region of Abbotsford includes: Abbotsford (City), Fraser Valley H (Regional district electoral area), Matsqui Main 2 (Indian reserve), Mission (District municipality), Upper Sumas 6 (Indian reserve)
116 Abbotsford, Official Community Plan (By-law 1483-2005, October 17, 2005): http://www.abbotsford.ca/Page479.aspx Date accessed May 14, 2007
117 City of Abbotsford. Official Community Plan. By-law 1483-2005, October 17, 2005. http://www.abbotsford.ca/AssetFactory.aspx?did=2750). Date accessed May 14, 2007.
118 Ibid.
119 Ibid.

Vancouver

British Columbia
Population (2006): 2,116,581

GreenApple Ranking
Rank: 2
Score: 74
GRADE: B



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2.1	1.47
Median of daily maximum observed CO, parts per million (2005)	0.8	0.3
Median of daily maximum observed O_3, parts per billion (2005)	31.5	25.63
Registered vehicles per capita (2005)	0.5	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	33%	100%
% housing starts in row and apartment units (2006)	66%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	15%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	21.68%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	53%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	53	71
% labour force walking, bicycling or taking public transit to work (2001)	18%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.41%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	1.18%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	23%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	10.41%	100%
% municipal road fleet using AFV (12/31/2006)	8%	48.3%

Vancouver makes an impressive showing in the GreenApple Canada 2007 Ranking Report — placing a close second after Victoria.[120] It is not surprising that Vancouver ranks among the top urban areas as its environmental roots run deep (Greenpeace, the international environmental organization, was founded there in 1971). To this day, Vancouver's municipal government is at the forefront of environmentally sustainable growth and transportation practices for North America. As Canada's third-largest metropolitan area, Vancouver is growing at an astonishing rate of 6.5%. Rapid population growth, along with a thriving international seaport, airport, and a large number of single commuter vehicles, have contributed to increasing the area's ecological footprint, and a conconmittant decrease in its ambient air quality scores.

Vancouverites have launched two impressive and ambitious initiatives to reduce their environmental impact. The first is EcoDensity, an initiative designed to reduce the City's ecological footprint through smarter and more sustainable growth and planning practices.[121] The City's population growth has made Vancouver into the thriving metropolis that it is today with a reputation for high density. A crucial issue is managing this growth effectively. EcoDensity will build on and improve existing policies by ensuring that alternative forms of transportation (such as walking, cycling, and public transit) are efficient and accessible to more residents; by allowing new systems and buildings that reduce and efficiently use energy, water, and materials; by creating communities that have greater access to businesses and public transit in order to reduce the number of vehicle trips that residents make to get to basic services. The second initiative, EcoStructure, works in tandem with EcoDensity to ensure that the buildings and communities that Vancouver creates to accommodate its growth are sustainable.[122]

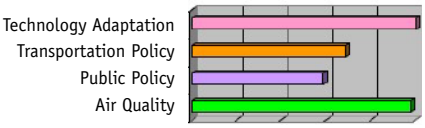
Vancouver's Community Climate Change Action Plan established an emissions reduction target for the city that is 6% below 1990 levels by 2012.[123] The Plan calls for a reduction in these emissions by reducing the amount of driving that residents do and by improving the fuel efficiency of vehicles. In view of these goals, the city offers several incentives to its residents to use mass transit, including a 15% fare discount on annual passes purchased through a payroll deduction plan.[124] However, this may not be a sufficient incentive as the monthly cost of $130 for an annual transit pass makes Vancouver's scheme one of the most expensive in Canada. The city also boasts the "world's first hybrid taxi"[125] and at the time of this Report 10% of the taxi and limousine fleet is powered by hybrid gasoline-electric means. The Vancouver CMA has one of the lowest numbers of vehicles per capita and benefits from provincial tax incentives on the purchase of new hybrids.[126] Vancouver is leading the way for environmentally sustainable transportation in Canada.

120 The Vancouver Census Metropolitan Area includes: Anmore (Village), Barnston Island 3 (IR) Belcarra (Village), Bowen Island (Island municipality), Burnaby (City), Burrard Inlet 3 (IR), Capilano 5 (IR), Coquitlam (City), Coquitlam 1 (IR), Coquitlam 2 (IR), Delta (District municipality), Greater Vancouver A (Regional district electoral area), Katzie 1 (IR), Katzie 2 (IR), Langley (City), Langley (District municipality), Langley 5 (IR), Lions Bay (Village), Maple Ridge (District municipality), Matsqui 4 (IR), McMillan Island 6 (IR), Mission 1 (IR), Musqueam 2 (IR), Musqueam 4 (Indian reserve), New Westminster (City), North Vancouver (City), North Vancouver (District municipality), Pitt Meadows (District municipality), Port Coquitlam (City), Port Moody (City), Richmond (City), Semiahmoo (Indian reserve), Seymour Creek 2 (IR), Surrey (City), Tsawwassen (IR), Vancouver (City), West Vancouver (District municipality), White Rock (City),Whonnock 1 (IR)
121 Vancouver Ecodensity Planning Initiative website: http://www.vancouver-ecodensity.ca/content.php?id=19 Date accesssed May 11, 2007
122 Vancouver Ecodensity Planning Initiative website: http://www.vancouver-ecodensity.ca/content.php?id=19 Date accesssed May 11, 2007
123 City of Vancouver, Municipal Government, British Columbia, Canada, "The climate-friendly city — Vancouver's community climate change action plan" , March 29, 2005 at p. 2: http://vancouver.ca/sustainability/documents/CommunityPlan.pdf Date accesssed May 15, 2007
124 Greater Vancouver Transportation Authority website: http://www.translink.bc.ca/About_TransLink/News_Releases/news01040701.asp Date accesssed May 11, 2007
125 Alternet website: http://www.alternet.org/envirohealth/23932/ Date accesssed May 11, 2007
126 National Post: http://www.canada.com/nationalpost/financialpost/story.html?id=5d11b5da-cd1c-4d7c-a1e9-cbd26e34d7f7&k=9890 Date accesssed May 11, 2007

Victoria

British Columbia
Population (2006): 330,088

GreenApple Ranking
Rank: 1
Score: 78
GRADE: B



Indicator Data	Value	Target
Air Quality		
CO_2 from retail fuel sales per capita, tonnes (2005)	2	1.47
Median of daily maximum observed CO, parts per million (2005)	0.7	0.3
Median of daily maximum observed O_3, parts per billion (2005)	31.86	25.63
Registered vehicles per capita (2005)	0.55	0.49
Public Policy		
% population living in a municipality with an anti-idling by-law (2007)	0%	100%
% housing starts in row and apartment units (2006)	61%	89%
Trip reduction programs, employees of CMA's major city: discounted bus pass. (June 2007)	14%	89%
Provincial incentives/credits to buy 2007 hybrid automobile instead of gasoline model (August 2007)	21.68%	100%
Transportation Policy		
Housing stock % row and apartment (2001)	44%	84%
Annual public transit regular revenue KMs travelled per capita, 000s (2005)	35	71
% labour force walking, bicycling or taking public transit to work (2001)	22.5%	36.5%
Free transit in the core? (June 2007)	N	Y
Population-weighted monthly adult transit pass cost (2007) * 12 / Median household income (2005)	1.31%	0.67%
% of labour force holding employer-issued transit passes (December 2006)	1.26%	4.16%
Technology Adoption		
% transit fleet using AFV (March 2007)	26%	39.48%
No. hybrid or AFV taxis / Total No. of Taxis. (2007)	30.65%	100%
% municipal road fleet using AFV (12/31/2006)	36%	48.3%

The urban region of Victoria[127], British Columbia, is a thriving and progressive city that prides itself on its high quality of life.[128] While this growth is exciting and beneficial to Victoria's economy and culture, residents recognize the importance of controlling the effects of this growth and its impact on the environment. In response, they have established development plans that are centred on sustainable growth and transportation. These policies have established Victoria as one of North America's leaders in sustainable growth and transportation. These impressive programs aim to reduce greenhouse gas emissions, improve air quality, and ensure that the quality of life in Victoria remains high.

The city's transit ridership is around 22% for the working population and there are over 5000 bicycle trips in the peak commuting hours (although growth is hindered by the lack of facilities and a perceived lack of safety).[129] In response, the City of Victoria has drawn up a Bicycle Master Plan and other programs to make walking and cycling a more attractive alternative transportation option. The "Bicycle Master Plan," if implemented, will help make the CMA the "Cycling Capital of Canada"[130] by providing more facilities (locker rooms, bike locks, and an extensive network of safe cycling routes) and more funding than any other region in Canada. Another program is a long-term Greenways Plan that will establish a network of green pathways through the city that will provide a safe and beautiful environment for the use of cyclists and pedestrians.[131] These paths, which will run throughout the city and provide access to the entire waterfront, will provide an attractive and efficient alternative to battling the congested roadways in a single occupancy vehicle.

Victoria has also set an impressive example of sustainable public transportation in Canada. Victoria Regional Transit, along with Kelowna Regional Transit, launched the first hybrid-electric buses in Canada in 2005. In that same year, Victoria Transit tested an alternative fuel — a biodiesel blended fuel — in six buses, and hopes to be able to use this cleaner burning fuel for its entire fleet in the near future.[132] The Victoria CMA scored above average in many of the categories considered by this study. Technology Adoption has been fully embraced with an impressive 26% of Victoria's transit fleet based on AFVs, which comes closest to meeting the GreenApple Canada Expert Panel's 39.48% 10-year target.

Furthermore, Victoria spends a considerable amount on vehicle maintenance when compared to other CMAs, and has above average mileage on its fleet of transit vehicles. Similarly, with 22.5% of the labour force walking, cycling or taking public transit, Victoria is in the top four CMAs for this variable, competing with much larger metropolitan areas. 61% of residential start-ups are higher density, placing the urban region among the leaders in this category. A high proportion of current housing stock is also high density. It is for these reasons that Victoria scored 78 points, putting it in 1st place in the GreenApple Canada 2007 Ranking Report.

For all of its positive achievements there are still some areas for improvement. For instance Victoria does not provide free transit in its core areas and to date there are still no anti-idling laws in place.

On the whole, however, Victoria has embraced most of the criteria that this study observed, with strong commitment in almost every category. The challenge will be to maintain this level of commitment in order to reach all of the marked targets.

127 The Census Metropolitan Area of Victoria includes: Becher Bay 1 (IR), Capital H (Regional district electoral area), Central Saanich (District municipality), Cole Bay 3 (IR), Colwood (City), East Saanich 2 (IR), Esquimalt (IR), Esquimalt (District municipality), Highlands (District municipality), Langford (City), Metchosin (District municipality), New Songhees 1A (IR), North Saanich (District municipality), Oak Bay (District municipality), Saanich (District municipality), Sidney (Town), Sooke (District municipality), South Saanich 1 (IR), T'Sou-ke 1 (Sooke 1) (IR), T'Sou-ke 2 (Sooke 2) (IR), Union Bay 4 (IR), Victoria (City), View Royal (Town)
128 City of Victoria. http://www.victoria.ca/business/locating_qlt.shtml. Date Accessed: May 11, 2007.
129 City of Victoria. http://www.victoria.ca/cityhall/departments_engtranbicycle.shtml. Date Accessed: May 11, 2007
130 Ibid.
131 Ibid.
132 BC Transit. http://www.bctransit.com/regions/vic/news/biodiesel_study/default.cfm. Date Accessed: May 11, 2007

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