



## CITY OF VANCOUVER

### ADMINISTRATIVE REPORT

Report Date: August 31, 2007  
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Meeting City Clerks Use Only  
Date:

TO: Standing Committee on Planning and Environment

FROM: Manager of the Sustainability Group in consultation with the General Managers of Engineering Services, Community Services, Corporate Services, Vancouver Board of Parks and Recreation, and Olympic and Paralympic Operations

SUBJECT: Climate Protection Progress Report - 2007

#### RECOMMENDATION

*That Council receive this report for information.*

#### CITY MANAGER'S COMMENTS

Vancouver has accomplished a great deal in reducing greenhouse gases, particularly as they relate to energy use in our civic buildings and from landfill waste. There is, however, still much work to be done to reduce emissions. Vancouver is on track to meet its 2010 Corporate greenhouse gas reduction target. While Vancouver clearly remains a North American leader in limiting and reducing community GHG emissions, ambitious new actions locally, provincially, and nationally will be required in order to meet its 2012 Community GHG reduction target.

While short-term targets and actions have been important in focusing the city on the concerns of global warming and in initiating change, much more significant long-term actions are required to mitigate climate changes. Toward this end, Council has established aggressive long-range targets and staff have begun to develop plans on how to use the City's ability to

influence and control land-use, transportation, building design, and energy infrastructure in order to achieve these new goals. Implementing these plans and meeting the new long-range greenhouse gas reduction targets will require additional, dedicated staff and financial resources. In addition, much will depend on actions taken by the Provincial and Federal Governments. Any additional resource requirements will be brought forward in association with reports to Council on specific initiatives.

## COUNCIL POLICY

The City has a long history of policies and initiatives related to climate change and energy issues:

In October 1990, Council approved the Clouds of Change report recommendation to reduce CO<sub>2</sub> emissions by 20% as part of global climate change concerns, subject to further reports on costs and trade-offs involved in achieving the objectives and targets.

In 1991, Council first approved the Energy Utilization By-law in order to improve energy efficiency in all newly constructed buildings. Since then the requirements of the Energy Utilization By-law have been incorporated into the Building By-law.

In 1995, Council joined the Federation of Canadian Municipalities' "20% Club", which became the partners for Climate Protection in 1998.

In June 1995, Council adopted the Vancouver CityPlan, which included directions on transportation to prioritize walking, biking, and transit over automobile use.

In May 1997, Council adopted the City of Vancouver Transportation Plan which emphasized:

- providing more comfortable biking and walking environments;
- traffic calming in neighborhoods;
- the need for increased provision and use of transit;
- limiting overall road capacity to the present level, and
- maintaining an efficient goods movement network.

In July 2002, Council adopted the Downtown Transportation Plan to improve downtown accessibility and livability.

In March 2003, Council approved the Corporate Climate Change Action Plan to reduce greenhouse gas (GHG) emissions from civic operations to 20% below 1990 levels by 2010.

In June 2003, Council approved revisions to the energy utilisation requirements of the Building By-Law to improve the energy performance of new large residential and commercial buildings by approximately 13% by referencing ASHRAE 90.1 2001.

In February 2005, Council approved the Ethical Purchasing Policy to help align suppliers with the City's climate protection initiatives.

In June 2005, Council adopted the Vancouver UBC Area Transit Plan to improve transit service within, to and from Vancouver and UBC.

In March 29 2005, Council approved the Community Climate Change Action Plan to reduce GHG emissions in the community to 6% below 1990 levels by 2012.

In March 2007, Council passed a motion directing staff to begin planning for significant, long-range GHG reductions with the eventual goal of becoming a carbon-neutral city.

In May 2007, Council adopted the 2007 Vancouver Building By-law which included Environmental Protection objectives. Although no new “green building” requirements were added to the By-law at that time, the Environmental Protection objectives were put into place to facilitate the future development of the City’s Green Building Strategy.

In July 2007, Council adopted targets to reduce Community GHG emissions to 33% below current levels by 2020 and 80% below current levels by 2050. In addition, Council adopted the target of having all new construction in Vancouver be GHG neutral by 2030.

## PURPOSE

The purpose of this report is to:

- provide an update on City progress toward reaching the targets set out in the *2003 Corporate Climate Change Action Plan* and the *2005 Community Climate Change Action Plan*, and
- highlight the steps necessary to reach Vancouver’s short-term targets while planning and positioning Vancouver for even greater community-wide reductions over the longer term.

## SUMMARY

Since the adoption of the Corporate and Community Climate Change Action Plans (in 2003 and 2005 respectively), the City of Vancouver and the entire community have been successfully building upon their past progress to limit greenhouse gas emissions.

Vancouver has experienced significant growth since 1990, with the number of people increasing 24% and the number of jobs increasing 14%. Along with this growth, the demand for City services, the number of automobiles, and the built area have also increased substantially. Nationally, greenhouse gas (GHG) emissions have increased 25% and provincial emissions are up 30% since 1990.

Despite these pressures, Vancouver’s 2006 GHG emissions from civic operations (corporate emissions) have fallen to 5% below 1990 levels and city-wide (community emissions) have been limited to 5% above 1990 levels. Vancouver’s per capita emissions (4.9 tonnes/person) are down 15% compared to 1990 and are less than half of those for Toronto (9.3 t/person) and a fraction of those of other cities such as Calgary (17.5 t/person), Seattle (12.4 t/per person) and Portland (13.7t/person).

### *Corporate Greenhouse Gas Emissions*

The success to date in reducing corporate GHG emissions (those resulting directly from civic operations) to 5% below 1990 levels can be largely attributed to comprehensive energy retrofits of existing facilities and the implementation of the Vancouver Landfill Gas Recovery System. If the City continues with these initiatives as planned, builds all new and replacement facilities to achieve LEED Gold as per City policy, and follows through on its commitments to fleet vehicle fuel savings, it is projected to be 18% below 1990 levels by 2010 which is 2% (or 600 tonnes) short of its Corporate Target. Some of the additional measures suggested in this report and others currently being explored will need to be implemented prior to 2010 to ensure the target is achieved.

### *Community Greenhouse Gas Emissions*

Vancouver's community GHG emissions, currently 5% above 1990 levels, peaked in 2001, decreased fairly significantly over the next few years, and have recently begun to stabilize into what is projected to be a very slow decline to 2012. Portland is the only growing North American city that has reduced its total greenhouse gasses back to 1990 levels.

Equally significant is the fact that Vancouver's per capita emissions, already the lowest of the other cities surveyed, have decreased nearly 15% since 1990. This is an achievement matched only by Portland and Austin whose per capita emissions decreased comparable amounts.

Vancouver's success in addressing climate change to date can be largely attributed to:

- integrated land-use and transportation planning and investment in walking, cycling, and transit that has limited the growth in, and recently begun to decrease, the GHG emissions from automobiles;
- natural gas conservation by residents and businesses in response to the sharp increases and instability in natural gas prices between 2001 and 2004, and
- the implementation of the Vancouver Landfill Gas Recovery Project that has reduced Vancouver's combined annual GHG emissions from all sources by nearly 10%.

While Vancouver may have curbed the growth of city-wide GHG emissions, meeting the 2012 Community GHG reduction target of 6% below 1990 will be challenging. Based on current projections, community GHG emissions will be essentially unchanged from current levels by 2012. Efficiency improvements and more sustainable transportation trends appear to be just keeping up with population growth. While the City plans to incrementally expand its landfill gas recovery system, the most significant reductions have already been achieved.

As a result, meeting Vancouver's short-term 2012 Community GHG target will require substantial new local actions supported by Metro Vancouver (and Transportation Authority) policies and plans as well as Provincial and Federal government programs. Local initiatives will need to include an even greater focus on sustainable transportation choices, the development of programs to encourage and enable home energy retrofits and savings, and the formation of partnerships to engage businesses and large emitters to reduce their emissions from buildings and fleet operations.

### *Moving Beyond Kyoto*

In July 2007, Council adopted targets to reduce community GHG emissions by 33% below current levels by 2020 and 80% below current levels by 2050 to reflect and support the recently adopted provincial targets. Should British Columbia meet its 2020 target, our provincial emissions will be 3% below 1990 levels but if Vancouver can achieve its 2020 target, its emissions will be 27% below 1990 levels. In addition to the longer-range GHG reduction targets, Council adopted the target of having all new construction in Vancouver GHG neutral by 2030.

These new targets reflect the need for significant reductions beyond those required of Canada under the Kyoto Accord. Many of the opportunities for GHG reductions relate to land-use, transportation infrastructure, green buildings, and community-scale clean energy systems. Although immediate action in these areas may not result in measurable short-term outcomes, it will be key to achieving significant long-term greenhouse gas reductions. Longer-range action plans, combined with other initiatives such as EcoDensity, will play an important role in achieving significant reductions beyond 2012.

## **BACKGROUND**

Greenhouse gas emissions in Vancouver from civic operations and the community are primarily resulting from natural gas and electricity use in buildings, fossil-fuel use for ground transportation, and methane emissions from solid waste in the landfill<sup>1</sup>.

The City has a long history of leadership in land-use planning, green building development, sustainable transportation infrastructure, and solid waste management that has provided a solid foundation for reducing greenhouse gas emissions. Some of Vancouver's key accomplishments that pre-date the development of its Corporate and/or Community Climate Change Action Plans include:

- implementing the 1991 Central Area Plan and the 1995 CityPlan that encouraged compact, mixed-use land development and directed higher densities to neighbourhoods with jobs and services;
- implementing the 1997 Vancouver Transportation Plan that placed a priority on pedestrian, cycling, and transit improvements and resulted in an increase in walking trips of 44%, bike trips of 180%, and a decrease in vehicles trips in and out of the city by 10% over the past decade. Transit ridership in Vancouver has also increased 20% - growing faster than in any other major Canadian city;
- implementing the award-winning Landfill Gas Recovery System in 2003 that has reduced Vancouver's annual GHG emissions by nearly 200,000 tonnes and produced enough clean energy annually to power the equivalent of 6,000 homes;

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<sup>1</sup> Emissions from other sources, such as marine and air transportation, are largely outside the City's ability to influence and are therefore not included in Vancouver's inventory, as per international protocols. Emissions from the production of food and consumer goods are attributed to the jurisdiction in which they are produced, not where they are consumed.

- updating the energy utilisation requirements of the Building By-Law in 2003 that required the highest energy performance standard for new, large buildings in Canada (ASHRAE 90.1 2001);
- adopting City policy that required all new civic facilities be built to a LEED Gold standard, the highest environmental performance requirement for any municipality in North America, and
- adopting the 2004 Official Development Plan for SEFC and establishing the objective of making this major brownfield development a model sustainable community with all buildings meeting a minimum LEED Silver standard (LEED Gold for buildings in the Athlete's Village).

In 2003, the City formed the Cool Vancouver Task Force that included a wide-range of community, academic, utility, and government representatives to develop the 2003 Corporate Climate Change Action Plan and the 2005 Community Climate Change Action Plan.

In 2005, the Corporate Climate Change Action Plan *Progress Report* summarized some of the early implementation accomplishments including civic facility energy retrofits; the purchase of Green Power Certificates for 10% of the electricity used by City Hall; and the Energy Efficient Purchasing Policy mandating purchase of ENERGY STAR products.

In the past year, there has been a notable shift in the desire to take action on climate change from the public, local utilities, and the Provincial and Federal Governments. It is hopeful that this shift will result in increased action by all of these stakeholders to reduce GHG emissions in Vancouver. For example, this year, the Province announced targets to reduce GHG emissions to 33% below current levels by 2020 (taking it just slightly below 1990 levels), to meet 50% of its incremental power needs through conservation, and to have all electricity generating facilities in British Columbia be greenhouse gas neutral by 2016.

## DISCUSSION

This report focuses on the City of Vancouver's climate protection progress from 2005 to 2006 and planned next steps moving forward. The discussion focuses on three main areas of interest:

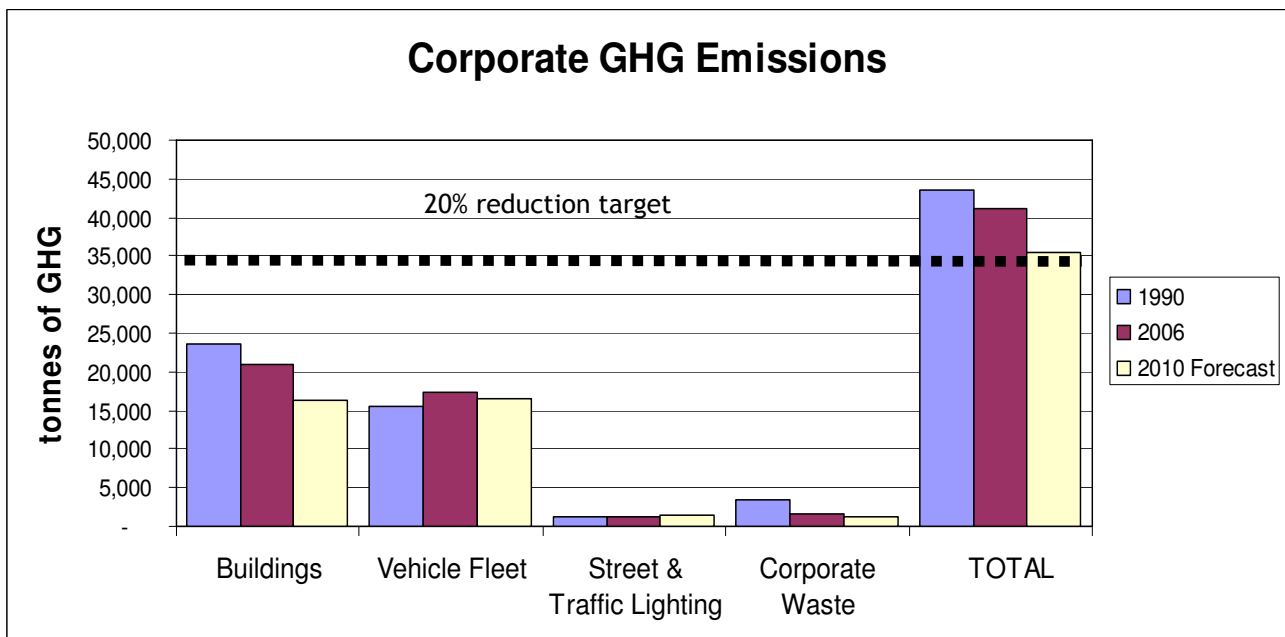
- progress on the 2003 Corporate Climate Change Action Plan for greenhouse gas emissions from civic operations;
- progress on the 2005 Community Climate Change Action Plan for city-wide greenhouse gas emissions, and
- plans and actions to "move beyond Kyoto" for more substantial city-wide greenhouse gas emissions over the longer-term.

### Progress on the 2003 Corporate Climate Change Action Plan

Corporate Greenhouse Gas (GHG) Target:	20% below 1990 levels by 2010
GHG emissions as of 2006:	5% below 1990 levels
Forecast based on planned activities:	18% below 1990 levels by 2010

The 2006 Corporate GHG Inventory illustrated in Figure 1 (the methodology for which is described in Appendix A) reveals that City operations are already emitting 5% fewer GHG's than in 1990. In addition, if the City can successfully complete all of its planned energy and fuel conservation initiatives, it is anticipated that Corporate GHG emissions will fall to 18% below 1990 levels by 2010.

*Figure 1*



#### *Civic Buildings*

Energy retrofits of existing buildings and the replacement of old buildings with newer more energy efficient ones have significantly reduced corporate GHG emissions. Despite a 25% increase in managed floor space, GHG emissions from civic building operations are currently 11% below 1990 levels. The planned completion of building energy retrofits and the continued replacement of old, inefficient facilities are forecast to reduce GHG emissions from civic facilities to 31% below 1990 levels by 2010. Appendix B contains details on the specific retrofit and building replacement projects that are underway or planned.

### *City Fleet*

Through fleet vehicle right-sizing and the adoption of maximum allowed bio-diesel blends for most of the City's diesel fleet, growth in vehicle emissions have been limited to 11% above 1990 levels, even though the size of the fleet has grown over 21%. While reductions to Corporate building GHG emissions were attainable under similar growth conditions, it is important to note that it is difficult to retrofit existing vehicles for improved efficiency and, unlike new buildings, advances in new vehicle technology have, until recently, focused primarily on performance and not efficiency.

Moving forward, planned changes for fuel switching, improved operating practices and reduced vehicle use are expected to reduce fleet emissions by about 4% from current levels by 2010. Appendix C contains details on City vehicle fuel reduction initiatives that are underway or planned and briefly describes additional opportunities that are being explored.

### *Solid Waste*

Emissions from the decomposition of solid waste from civic operations are currently 54% below 1990 levels and are forecast to fall an additional 15% by 2010. This is primarily due to the recovery and re-use of landfill gas at the Vancouver Landfill. The forecast 2,200 tonne GHG reduction compared to 1990 will be a key contributor to meeting the 2010 Corporate GHG reduction target.

### *Street and Traffic Lighting*

Due to the fact that most of the electricity in B.C. comes from renewable hydro sources, the electricity used in Vancouver's street and traffic lighting is not major source of GHG emissions. Even so, Vancouver converted its traffic signals to long lasting light-emitting diodes (LED's) in 2004 reducing their energy use by approximately 85%. Further optimization of traffic signals would yield negligible results.

Conversely, energy use for lighting streets, lanes, and parks has increased 14% over 1990 levels. Given that the City's projected corporate GHG emissions for 2010 are so close to the corporate target and a significant portion of the City's street lighting luminaires are reaching the end of their useful life, it would be timely to develop a plan to reduce street lighting energy use (possibly incorporating new technologies, changes to lighting levels, etc) even if the overall GHG emission reductions would be modest. Such a plan would need to consider the importance of this street lighting in creating a safe night-time travel environment, especially for pedestrians and cyclists.

### *Next Steps Toward Meeting the 2010 Corporate Target*

Meeting the 2010 Corporate target will require that:

- the existing ambitious plans for building retrofits and the landfill gas recovery expansion proceed as planned;

- fleet fuel conservation initiatives are accelerated, additional opportunities for reductions are identified in the next year, and responsibility for fuel conservation is expanded beyond Equipment Services to the user groups;
- an Employee Mobility Program is implemented to optimize fleet vehicle utilization and enable more sustainable employee commutes;
- a plan for street lighting energy savings is developed that respects the importance of street lighting for personal and traffic safety, particularly for vulnerable road users such as pedestrians and cyclists, and
- successful approaches used by other North American municipalities are reviewed for their applicability to the City of Vancouver.

### Progress on the 2005 Community Climate Change Action Plan

2012 Community Greenhouse Gas (GHG) Target:	6% below 1990
2006 Community GHG emissions:	5% above 1990 levels
Additional reductions below 2012 forecast required to meet the Community target:	10%

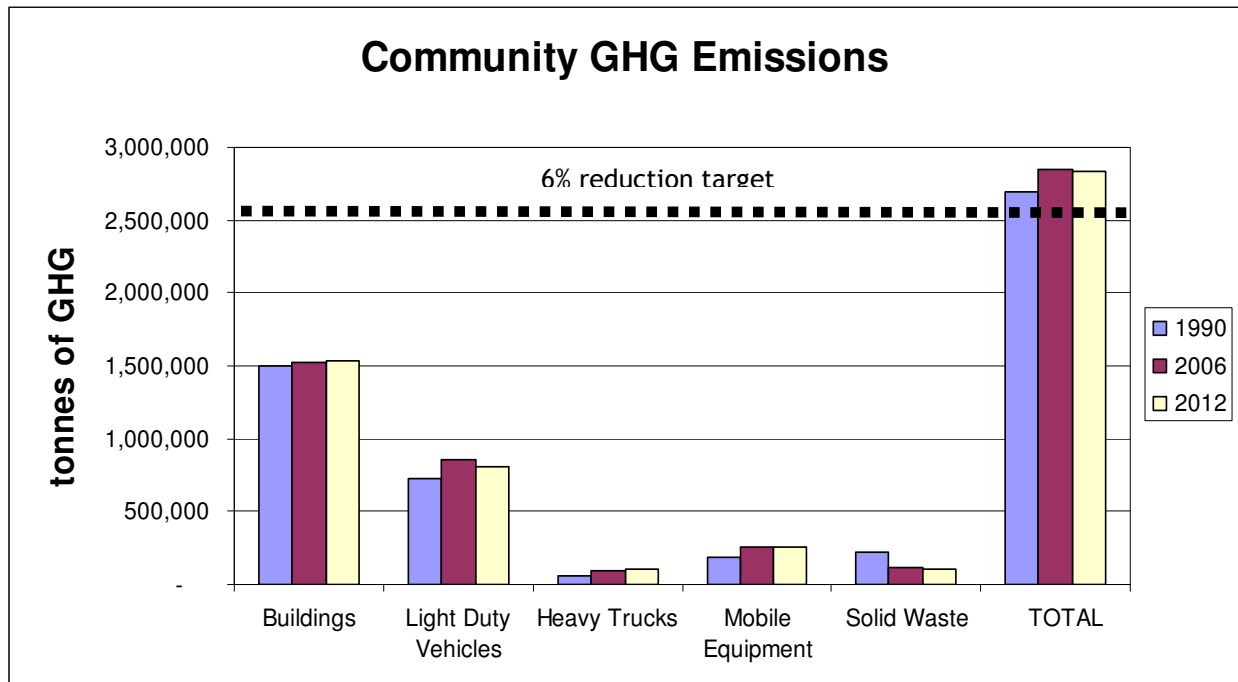
This section of the report discusses:

- trends in Vancouver's Community GHG emissions;
- comparison of Vancouver's emissions with other leading North American cities;
- implementation of the Community Plan to date, and
- next steps toward meeting the 2012 Community GHG reduction target

#### *Vancouver's Community GHG Emissions*

The methodology used to prepare Vancouver's community GHG inventory, detailed in Figure 2, is described in Appendix A. It is important to note that the best available data was used to prepare the inventory but in a number of instances direct data was not available or was out-of-date and extrapolations or proxies were used. As the Provincial Government establishes systems for data collection and Metro Vancouver updates air emissions inventories, Vancouver's community GHG inventory will also be updated and further refined.

Figure 2



The growth in Vancouver's community GHG emissions between 1990 and 2006 was limited to 5%. This is despite the fact that:

- Vancouver has experienced significant growth over this same period, with the number of people increasing 24% and the number of jobs increasing 14%, and
- shortly after adopting the Vancouver Community Climate Change Action Plan in 2005, Federal Government support and action on GHG reductions stalled. Since 1990, Canada's GHG emissions have increased 25% and British Columbia's emissions are up 30%.

Despite these successes, meeting the community GHG reduction target of 6% below 1990 by 2012 will be a considerable challenge. Using recent trends for emission sources where data is available and somewhat dated regional modelling estimates, the business-as-usual projection for 2012 suggests that without new local, provincial, and national action to reduce GHG emissions, Vancouver will fall short of its 2012 target by 10% (approximately 300,000 t).

Figure 3

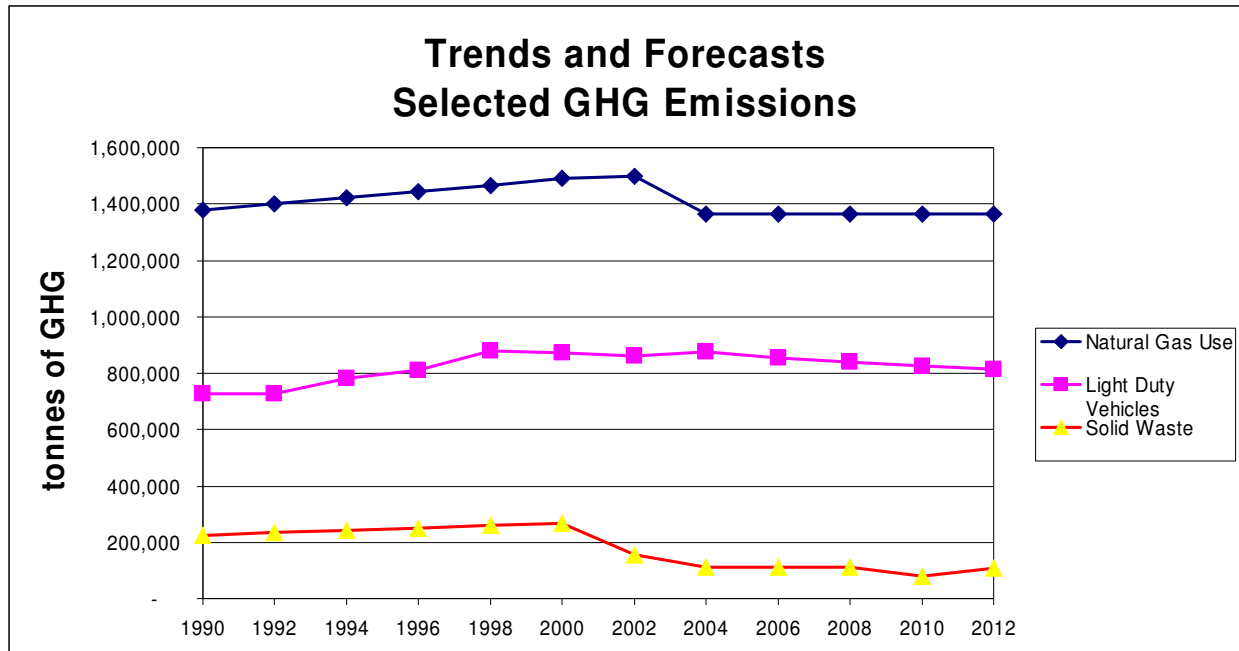


Figure 3 illustrates the trends and projections for GHG emissions from buildings, light-duty vehicles, and solid waste. As is evident, emissions increased during the 1990s in all categories, but peaked around the turn of the century. Sharp declines in solid waste and building-related emissions between 2001 and 2004 resulted from the landfill gas recovery system being brought on-line and volatile natural gas price increases that led to increased conservation. In the past few years, these emissions have stabilized.

While light-duty vehicle emissions (based on retail gasoline sales in Vancouver) increased faster than the population until they peaked in 1999, the growth in these emissions was slower than the regional trend. Since then, regional fuel sales have stabilized and in Vancouver, fuel sales have been declining gradually for a number of years. This is attributed to the effects of Vancouver's compact, mixed-use development, its focus on providing priority for walking, cycling, and transit infrastructure and the fact that, nation-wide, the fuel efficiency of the light-duty vehicles only began to improve at the turn of the century.

Trends for heavy-duty vehicles and non-road mobile equipment are not discussed as the data for these is based on out-of-date regional modelling. While Metro Vancouver is updating its models this year, a better understanding of these sources and an assessment of opportunities to limit these emissions will likely be an important component of meeting our 2012 community GHG target.

#### *Comparison with Leading North American Cities Addressing Climate Change*

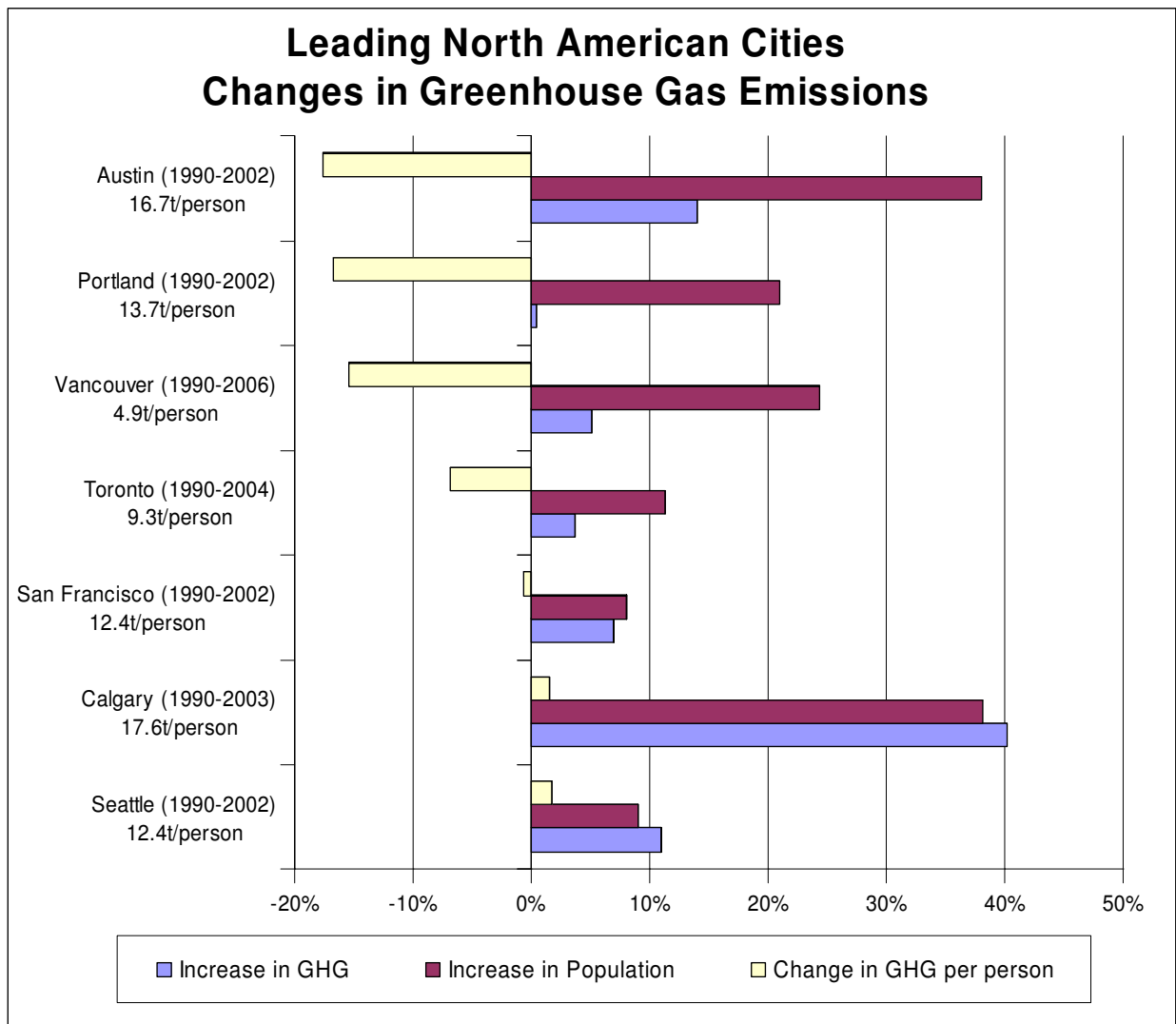
In North America, other local governments have taken a real leadership role in addressing the challenges of climate change. As the context, methodologies, timeframes, and data quality that inform the GHG inventories of different cities can vary considerably, drawing conclusions based on the comparison of cities is problematic. Even so, a comparison such as the one presented in Figure 4 (below), which includes the North American cities frequently recognised

as leaders in addressing climate change, can provide an understanding of relative performance.

For each of the cities cited, Figure 4 includes:

- comparison time period (e.g. 1990 - 2006)
- current GHG emissions per person (tonnes/person)
- change in tonnes of GHG per person (%)
- increase in population (%)
- increase in total GHG emissions (%)

Figure 4



Sources for Figure 4:

*Institute for Local Self Reliance "Lessons from the Pioneers: Tackling Global Warming at the Local Level"*

*City of Calgary "2006 State of the Environment Report"*

*City of Toronto - Environment Office*

*City of Vancouver - Sustainability Group*

While Vancouver's per capita emissions are roughly half of those for Toronto and a fraction of those of the other leading North American cities, its decrease in emissions per person of 15% since 1990 is rivalled by Austin and Portland. Ultimately though, cities have adopted absolute reduction targets irrespective of population or economic growth. While Portland is the only city that has successfully reduced their emissions back to 1990 levels, their leadership in this regard is partially attributable to their relatively slow population growth compared to the other leading cities.

### *Implementation of the 2005 Community Climate Change Action Plan To Date*

Since the approval of the Community Plan in 2005, the City has implemented or initiated a number of significant new initiatives to reduce greenhouse gas emissions including:

- **Neighbourhood Energy Utility (NEU)**  
The City is developing its first NEU project, a \$14 million district heating system that will deliver space heating and domestic hot water to the South East False Creek neighbourhood (including the Olympic Village) using sewage heat recovery as the primary heat source. This utility is expected to reduce GHG emissions by up to 50% over conventional heating systems. The South East False Creek NEU is projected to serve 350,000 m<sup>2</sup> of new residential and commercial development by 2010 and up to 1.5 million m<sup>2</sup> by 2020 (including the Flats on North False Creek).
- **Green Building Strategy**  
The City has established a clear scope for 2007/2008 for developing policy recommendations covering a wide range of desired green building outcomes such as waste reduction, water efficiency and storm water management, indoor air quality, etc. Central to this work is the development of policy proposals on reducing the energy use from new commercial and multi-family buildings to 25% below the Model National Energy Code for Buildings. This work has been recognized as important to the success of the BC Energy Plan with financial support from the Province.

Policy recommendations for new building construction to further support sustainable transportation choices are also being developed.

In addition, the City has worked with the development community to establish Vancouver as the nation's leader in green building development with more LEED registered projects than any other city. In 2006, the developer of the Olympic Athlete's Village committed to making all buildings in the Village meet the requirements for achieving a LEED Gold rating.

- **Building Retrofit Programs**  
The City is partnering with BC Hydro, Terasen Gas, Metro Vancouver and the Province to deliver conservation and energy efficiency programs to lower the greenhouse gases from residential and commercial buildings. In 2006, the City received a \$15,000 award from the Province for its success in promoting the highest number of home energy retrofits for any municipality in the province under the Energy Savings Program.

In 2007, the City will deliver three innovative new programs: a building recommissioning pilot program for large buildings, a restaurant program providing free low-flow pre-rinse

spray valves to 800 restaurants, and a “strata” program to lower energy and water use in approximately 3000 suites.

- Sustainable Transportation

Since 2005 the City has expanded its bike routes by more than 35%, installed dozens of pedestrian and cyclist-activated crossing signals, started to implement transit priority measures and pedestrian improvements on Main Street, installed pedestrian/bus bulges and bus lanes on Broadway, worked with TransLink to renew the electric trolley fleet; and initiated a pilot program to increase active and safe trips to school.

In addition, the City has reduced the parking requirements for multiple-family dwellings and has largely completed the implementation of the 1997 Transportation Plan, the 2002 Downtown Transportation Plan, and the Kingsway and Knight Neighbourhood Centre Public Realm & Pedestrian/Traffic Improvement Plan. In 2005, the City won the Federation of Canadian Municipalities (FCM) - CH2M HILL Sustainable Community Award for the comprehensive range of sustainable transportation strategies, including plans for the Downtown Streetcar, developed for the South East False Creek neighbourhood.

- Public Engagement and Community Partnership

The City has developed and begun implementation of One Day, an award-winning public engagement initiative to encourage and enable individual behaviour changes to reduce GHG emissions. Under this initiative the City has partnered with numerous local businesses and organisations to engage the public about climate change and specific actions they can take to reduce emissions. Details about Vancouver’s community engagement initiatives and partnerships focused on climate protection are discussed in Appendix D.

- Idle Free

The City passed and began enforcing a by-law prohibiting unnecessary vehicle idling. In addition, it conducted a wide-reaching awareness campaign on vehicle idling with fleet operators and the public.

- Low-carbon Vehicle Initiatives

The City worked with the Vancouver Taxi Association to successfully encourage the use of a fuel efficient vehicle selection process for the expansion of the Vancouver taxi fleet - a move that facilitated the Provincial Government’s interest in regulating the taxi industry across B.C. to use hybrid vehicles. In addition, the City and Easy Park launched a pilot program that provides a parking discount to registered, very fuel efficient vehicles. Finally, the City has begun work to facilitate infrastructure and market uptake of electric mobility solutions.

- Sustainable Purchasing

The City has begun to incorporate GHG considerations as part of its service and supply contracts. The recent City of Vancouver courier services contract included an assessment of the proponents’ vehicle fuel efficiencies and strategies for improvement. The successful bidder was required to undertake a number of additional changes based on best operating practices for fuel savings.

### *Next Steps Towards Meeting the 2012 Community GHG Target*

While Vancouver has reduced its GHG emissions to just 5% above 1990 levels, meeting the 2012 community-wide greenhouse gas reduction target of 6% below 1990 levels will be a substantial challenge. Current trends suggest that planned and on-going initiatives may keep GHG emissions stable despite the growth of our city but they are not likely to reduce emissions by the 300,000 tonnes required to meet the target.

In order to meet the target, the City must continue to work with community partners and other levels of government to implement additional approaches to greenhouse gas reductions, including:

- **City Capital Budgets**  
Future capital plans will be developed with explicit information on GHG reduction and adaptation impacts in order to better coordinate decision making.
- **Sustainable Transportation**  
The City will continue to improve cycling and walking infrastructure and work with the Province and TransLink to improve the frequency and capacity of transit service.

Currently, many of Vancouver's bus and skytrain routes are operating at or near capacity. Without substantial improvements to transit capacity in Vancouver it will be difficult to make significant progress towards reducing transportation-related greenhouse gas emissions by 2012. The completion of the Canada Line, the extension of the Millennium Line along the Broadway corridor, more SkyTrain cars, implementing the first phase of the Downtown Streetcar, and the expansion of B-line services along 41<sup>st</sup> Avenue and Hastings Street will be critical to enabling increased transit use.

In addition, the City will continue to develop approaches to support the expansion of car-sharing in Vancouver including contracting with a car-sharing company to provide vehicles for City use during business hours, continuing to develop "car-sharing friendly" parking policies, and exploring a public promotion partnership with key stakeholders.

Further analysis of the opportunities for bike sharing and personal transportation marketing programs will also be pursued. Similarly, a better understanding of the impact of goods movement and commercial vehicle traffic on GHG emissions and steps Vancouver could take, like heavy rail grade-separation, to reduce these emissions could prove to be high priority.

- **Landfill Gas Recovery**  
The City must proceed with the planned, multi-phase expansion of the Vancouver Landfill Gas Recovery System.
- **Building Retrofit Pilot Programs**  
The City will continue to work with stakeholders to develop and test new approaches for reducing energy use in existing commercial, multi-family, and detached housing buildings. In addition, opportunities to regulate energy use in existing buildings will be explored.

- **Public Engagement**  
The City will critically evaluate its public engagement strategy and the approaches taken to date in order to build upon the tools already created and optimize the program's effectiveness in catalyzing individual changes in energy use at home and on the road.
- **Business Engagement**  
The City will develop new approaches to more fully engage businesses, in particular large emitters and leading organisations, in GHG reductions. Without significant participation from the business community, attainment of the 2012 Community GHG reduction target is unlikely.
- **Procurement**  
The City will continue to incorporate emissions reductions and sustainable transportation expectations into the City's service and supply contracts.

### Moving Beyond Kyoto

2020 Community Greenhouse Gas Target:	33% below 2007 levels
2050 Community Greenhouse Gas Target:	80% below 2007 levels
2030 New Buildings Target:	Carbon-neutral

While Vancouver will continue to aggressively implement the Community Climate Change Action Plan, it has become increasingly evident that the most powerful infrastructure, regulatory and public engagement tools available to a municipality yield much more significant emissions reductions over a longer timeframe than those considered in this Plan.

Longer range climate protection initiatives form key elements of the City's EcoDensity initiative. EcoDensity is an opportunity for the City to develop a long-range sustainable development plan for Vancouver that relates increases in density to green buildings, transportation planning, local energy opportunities, reducing waste, sourcing food and products locally, and delivering public amenities.

A number of other city initiatives that are underway or envisioned for the near future that may not have a significant impact in reducing GHG emissions by 2012 but are considered key to reducing emissions over the longer-term include:

- ***Green Building Strategy Implementation***  
The City is currently developing green building policy recommendations, including those to reduce energy consumption in new commercial and multi-family buildings to 25% below national standards and exploring changes to parking regulations to support more sustainable transportation choices (as described in the May, 2005 Council Report: Green Building Strategy Progress Report).
- ***Vancouver's Long-Range Green Building Strategy***  
In order to achieve the 2030 carbon-neutral new building target, the City needs to develop a strategy to substantially increase new building energy efficiency and sustainability with proposed changes to organisational structure and resources for the

strategy implementation. To help inform this work and to demonstrate the viability of a next generation of green buildings in the Vancouver context, the City is designing a “net-zero” multi-unit housing project in the Olympic Village that will produce more clean energy than it consumes.

- *Vancouver’s Neighbourhood Energy Strategy*

The City is working to develop a vision and long-range strategy for the expansion of the NEU, seeking to develop and expand around opportunity specific nodes across the city. Vancouver is currently exploring opportunities to expand the NEU for the Olympic Village into existing neighbourhoods adjacent to South East False Creek and plans to explore similar opportunities for the entire False Creek Flats. In addition, the City has partnered with the developer to explore the business case and technical options for a district heating system for the East Fraser Lands.

Research into the feasibility and requirements for neighbourhood energy system nodes around neighbourhood centres, specific energy sources, and other areas identified through EcoDensity would be useful in inform the Neighbourhood Energy Strategy.

- *Long Range Transportation Plan and Targets*

The City needs to work with the Province, TransLink, and other local and regional stakeholders to develop a new Long Range Transportation Plan for the region and an accompanying new plan specifically for Vancouver.

- *Downtown Parking Policy*

The City is working on updates to the Parking By-Law to encourage and support sustainable and low-carbon transportation modes through management of supply, access, and pricing.

- *Enable Electric Mobility*

The City is exploring means to provide re-charging infrastructure to support the use of low-carbon electric vehicles, scooters, and bikes.

- *Vancouver’s Long Range Climate Protection Plan*

City Council has directed staff to develop a Long Range Climate Protection Plan that identifies the changes and actions that will be required in order to meet the new longer-range GHG reduction targets of 33% below 2007 levels by 2020 and 80% below 2007 levels by 2050. Staff will build on existing work (as described in the points above), review research and local plans already developed towards this end (such as CitiesPlus, SHIFT, the Globe Foundation’s “Endless Energy” report), review best practices and plans from other jurisdictions, and consult with stakeholders and experts to inform the development of this plan in 2008.

## FINANCIAL IMPLICATIONS

While some of the initiatives described in this report will be undertaken by existing staff, implementing a number of the new initiatives and strategies will require additional, dedicated financial and staff resources. Staff will identify these resource requirements in association with reports to Council on specific initiatives and a longer range climate change plan.

## CONCLUSION

Vancouver is on track to meet its 2010 Corporate greenhouse gas reduction target. In addition, while it clearly remains a North American leader in limiting and reducing community GHG emissions, ambitious new actions locally, provincially, and nationally will be required in order to meet its 2012 Community GHG reduction target.

While short-term targets and actions are important factors in focusing the city on the concerns of global warming and in initiating change, much more significant long-term actions are required. Toward this end, Council has established aggressive mid-term and long-range targets and staff have begun to develop plans on how to use the City's ability to influence and control land-use, transportation, building design, and energy infrastructure in order to achieve these new goals.

**DEPARTMENTAL APPROVAL AND REPORT CONCURRENCES****General Mgr./Dept. Head:****Report Date:** August 31, 2007**Author:** Sean Pander**Date:****Phone No.:** 604.871.6542

This report has been prepared in consultation with the departments listed to the right, and they concur with its contents.

**Concurring Departments:**

Community Services - David McLellan

Corporate Services - Estelle Lo

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## APPENDIX A: Greenhouse Gas (GHG) Emissions Inventory Methodologies

### Overview

Municipal greenhouse gas inventories are only as good as the data they are based upon. For some types of emissions, data is not available so proxies and assumptions must be made. In other cases, data that was once available is no longer collected and a new approach and revised baseline must be developed.

Even more complicated is the comparison of GHG inventories between different cities as methodologies and assumptions can differ. Direct comparisons can be misleading as each city operates in a unique context; one significant factor leading to differences in city GHG emissions is the carbon intensity of the electrical power generated. In cities where most of the power is derived from coal, the greenhouse gas impacts of electricity consumption (and conservation) are an order of magnitude more significant than cities, such as Vancouver, where most of the power is hydro-generated.

Despite these challenges and limitations, it is important to estimate past, present and projected future greenhouse gas emissions in order to plan and measure the efficacy of actions. This appendix describes the sources of information and methodologies used to estimate or quantify (where possible) the GHG emissions documented in this Progress Report.

### 1. North American Leading Cities - Changes in GHG Emissions

The information presented in Figure 1 was derived from a number of sources:

- U.S. cities (Seattle, San Francisco, Portland, and Austin) information - Institute for Local Self-Reliance “Lessons from the Pioneers: Tackling Global Warming at the Local Level”;
- Calgary - 2006 State of the Environment Report
- Toronto - data provided by City of Toronto, Environment Office (August 2007)
- Vancouver - as described in the remainder of this appendix

### 2. Conversion Factors

The following conversion factors were used:

- 50 tonnes per terajoule of natural gas (Terasen Gas conversion factor)
- 31 tonnes/GWh (BC Hydro’s 2001 - 2005 five year average carbon intensity of electricity) was used for all inventory years to eliminate single year fluctuations due to changes in rainfall.
- 0.00236 tonnes of CO<sub>2</sub>/litre of gasoline consumed
- 0.00273 tonnes of CO<sub>2</sub>/litre of diesel consumed

### 3. Vancouver Corporate Greenhouse Gas Emissions

#### Corporate Facilities

Natural gas and electricity data for all facilities owned and occupied by the City of Vancouver were provided by Terasen Gas and BC Hydro.

The 2010 projection for GHG emissions from corporate facilities was based on projected impacts of planned facility retrofits and the anticipated changes in energy consumption due to planned new and replacement facilities (summarized in Appendix B).

It is important to note that the Corporate GHG emissions reported here do not include the emissions associated with the new asphalt plant. Staff are working to estimate the original asphalt plant's 1990 emissions levels to enable the inclusion of its emissions as well as those of the newer, more modern plant that replaced it in the inventory without unnecessarily skewing comparisons between baseline and current year.

#### Corporate Fleet

Emissions from City vehicle operations were based on City bulk fuel sales data. Fuel usage records for 1990 to 2006 were pulled from the City's own internal fuel tracking database (which only accounts for fuel that has been dispensed to City vehicles from City pumps). Fuel usage projections were based on the best fit line for annual fuel usage experienced in the last 24 years.

The 2003 Corporate Climate Change Action Plan had overestimated fleet GHG reductions that could be achieved by 2010 by using the historical trend from 1990 to 2000. In the 2003 Plan, emissions for 2000 were under-reported due to incomplete data resulting from a switch to a new fleet management system. Current estimates are based on a broader data sample size as well as better fuel collection data and best efforts to capture fuel purchases from retail gas stations.

#### Street and Traffic Lighting

GHG emissions from street, traffic and parks lighting were based on BC Hydro data.

#### Solid Waste

Corporate solid waste emissions are based on the estimated mass of solid waste collected from City facilities as a percentage (1.5%) of estimated total solid waste originating from within the city limits. The City's proportion was then applied to total community solid waste GHG emissions (as described below under Community Solid Waste Emissions).

## **5. Vancouver Community Greenhouse Gas Emissions**

#### Community Electricity and Natural Gas Emissions

The original 2005 Community Climate Change Action Plan showed combined emissions relating to electricity and natural gas consumption under end-user categories (residential buildings, commercial buildings and industry). This Progress Report shows the emissions by energy type (electricity and natural gas), as local utilities classify users by consumption amount and not by user types. For example, Terasen Gas classifies multi-family buildings as commercial.

BC Hydro provided electrical use data for Vancouver from 1995 to 2005. For electrical consumption, the annual growth has been relatively stable (approximately 1.8% per year) over the eleven years of data. This annual change was used to both backcast to

1990 and forecast to 2012. BC Hydro advised the City to disregard the data provided for the 2005 Community Climate Change Action Plan as considerable data “clean-up” had been conducted.

For community natural gas use, Terasen Gas provided Vancouver-specific data for 2003 through to 2006, but was unable to re-produce the 1990 and 2000 data specifically for Vancouver that was used in the 2005 Community Climate Change Action Plan. However, they were able to provide the Lower Mainland data 1993 to 2006 that allowed for a ‘reasonableness’ check of the old and new data based on Vancouver’s share of the regional population. The original but unrepeatable 1990 and 2000 Vancouver data varied only a few percentage points from the estimate derived using Metro Vancouver natural gas use data and therefore the original numbers were used again in this report.

To project forward to 2012, relatively stable trends in Vancouver’s natural gas consumption for the past couple of years were projected forward. While this is a flawed approach, especially given the short period of relative stability in the data following considerable market instability preceding this, it was the best estimate that could be made with the available data.

#### Community Light-Duty Vehicle (LDV) Emissions

The original methodology for estimating light-duty vehicle GHG emissions could not be repeated due to changes in how the Air Care program is conducted. The original methodology attributed a percentage of Metro Vancouver fuel sales to Vancouver, based on the ratio of distance-travelled by Vancouver-registered vehicles compared to the distance-travelled by all Metro Vancouver registered vehicles, as derived from Air Care data.

The methodology used for this report is based on Vancouver retail gasoline sales (from clear fuel tax proceeds data) for 1990 to 2006, multiplied by a correction factor of 87% to account for the anticipated differences between Vancouver fuel sales and fuel used by Vancouver residents arising from the fact that significantly more people commute into Vancouver daily than commute out of Vancouver.

The 2012 projection for LDV emissions was based on the 2003 to 2006 Vancouver gasoline retail fuel sales showing decreased sales for 4 years in a row projected forward to 2012. Projecting recent decreasing trends in fuel sales forward was deemed as reasonable given that the stable Vancouver population growth and consistent improvements in the fuel efficiency of the Canadian LDV rolling stock that are forecast for 2000 and 2015 (according to the BC Stats PEOPLE31 model and the Natural Resources Canada “Energy Outlook”). Further supporting this forecast are the results from the 2005 Vancouver Transportation Plan Progress report that indicate increasing transit, walking, and bike trips and decreasing auto trips in and out of Vancouver.

It should be noted that the Vancouver GHG emission inventory does not distinguish between commercial and personal travel GHG emissions. The majority of the current reduction strategies focus on reducing GHG emissions from personal automobile travel. A better understanding of relative magnitude of the commercial emissions would be useful in identifying and prioritizing actions to reduce these emissions.

### Community Heavy Duty Vehicle Emissions

Vancouver's 1990 and 2000 HDV emissions (for vehicles weighing more than 5,000 kg) were based on Metro Vancouver modelling as reported in their "2000 Emission Inventory for the Canadian Portion of the Lower Fraser Valley Airshed: Detailed Listing of Results and Methodology".

A 2010 HDV emission number was derived from the Metro Vancouver forecast for an increase in regional HDV emissions of 19% from 2000 to 2010. The 2010 forecast and 2000 emissions were used to interpolate and extrapolate the 2006 and 2012 emissions, respectively.

Metro Vancouver is expected to update its Regional Emission Inventory in the fall of 2007 and include municipal emissions allocations. If this update indicates changes to Vancouver's HDV emission estimates for 2006 or 2012 that are large enough to significantly impact the accuracy of this 2007 Climate Protection Progress Report, staff will update Council on these changes and their impacts.

### Community Non-Road Mobile Equipment Emissions

Vancouver's 1990 and 2000 Non-Road Mobile Equipment emissions (for fuel consuming equipment used for construction, landscaping, agriculture, etc) were based on Metro Vancouver disaggregation for Vancouver of the regional calculations using EPA protocols as reported in the Metro Vancouver "2000 Emission Inventory for the Canadian Portion of the Lower Fraser Valley Airshed: Detailed Listing of Results and Methodology". In the absence of a Metro Vancouver projection for beyond 2000 or other indicators to inform the change in these emissions for 2006 or ahead to 2012, the 2000 number has been used.

Metro Vancouver is expected to update its Regional Emission Inventory in the fall of 2007 and include municipal emissions allocations. If this update indicates changes to Vancouver's Non-Road Mobile Equipment emission estimates for 2006 or 2012 that are large enough to significantly impact the accuracy of this 2007 Climate Protection Progress Report, staff will update Council on these changes and their impacts.

### Community Solid Waste Emissions

Greenhouse gas emissions result from the decomposition of organic waste in landfills. Vancouver's Community GHG emissions were estimated based on the following:

- 1990  
All solid waste emissions are based on the consultant Conestoga Rovers and Associates' (CRA) 1999 estimate of Vancouver Landfill emissions (300,000 tonnes eCO<sub>2</sub>) and the portion of the landfill waste in place attributable to Vancouver at that time (75%) which is 225,000 tonnes eCO<sub>2</sub>

- 2000  
Vancouver Landfill emissions are based on the CRA 1999 report estimating Vancouver's share of waste (72%). Total landfill emissions were 350,000 t of eCO<sub>2</sub> and Vancouver's portion is estimated at 252,000 t eCO<sub>2</sub>.

Cache Creek Landfill emissions are based on a July 2003 GHG estimate from Metro Vancouver for Cache Creek and Vancouver's portion (7%) of the waste which was about 3,250 t eCO<sub>2</sub>.

Burnaby Incinerator emissions are based on a Metro Vancouver estimate and Vancouver's 13.8% portion of the waste of about 12,250 t eCO<sub>2</sub>. The total Vancouver 2000 emissions were 268,000 t eCO<sub>2</sub>.

- 2006, 2010, 2012  
Vancouver Landfill emissions are based on a 2007 CH2M Hill technical memorandum estimating past, present, and future landfill gas emissions incorporating anticipated increases in waste tonnages and projections of the past assumptions regarding Vancouver portion of waste in place.

These emissions were reduced by Vancouver's portion (50%) of the GHG offsets from the reduction in natural gas usage resulting from heat capture from the Maxim Power co-generation facility (historical and projected future). The offsets for the generation of clean electricity legally belong to BC Hydro and were not attributed to Vancouver's solid waste emissions.

Cache Creek and Burnaby Incinerator emissions for Vancouver were estimated based on Vancouver's portion of total facility emissions provided by Metro Vancouver (Feb. 2007)

## APPENDIX B: Corporate Facility Initiatives

The City of Vancouver owns, manages, and occupies approximately 550,000 square metres of City offices, libraries, recreation and community centres, police space and fire halls<sup>2</sup>. All of these facilities are included in the emissions inventory and most were considered for either retrofit or replacement as a result of the Corporate Climate Change Action Plan.

There are three activities, planned or in-progress, to lower the overall GHG footprint from existing facilities:

- The ten major new and replacement City facilities to be completed by 2010 are all being designed to meet the City's policy for new civic buildings to achieve a LEED Gold rating. The energy use per square meter in these new facilities is 69% less than the facilities that the City has demolished or sold since 1990.
- Ongoing energy retrofits planned through 2010 are improving the energy performance of existing buildings and are managed through energy performance contracts with an Energy Service Company (ESCO). Although the total managed floor space of civic facilities will have increased 27% between 1990 and 2010, the total GHG's will be reduced by 20%. This will represent a 44% improvement in GHG intensity.
- Building operators and some facilities staff are participating in an extensive three-year building operator training course that focuses on energy saving opportunities.

As of the end of 2006, existing civic buildings exceed Kyoto requirements by emitting 11% fewer greenhouses gas than in 1990. Given the planned new facilities and the remaining planned retrofits, civic facilities are on track to be 31% below 1990 levels by 2010.

### Source of Planned GHG reductions

Greenhouse Gas (GHG) Emissions from Civic Facilities	1990 tonnes of GHG's	2006 tonnes of GHG's	2010 forecast tonnes of GHG's	2010 forecast tonnes of GHG's reduced	% reduction 1990- 2010
New Civic Buildings (net of demolished or sold buildings)	4,971	1,908	1,533	3,438	69%
Existing Civic Buildings (net of planned or completed retrofits)	18,534	19,094	14,731	3,804	20%
<b>Total Tonnes of GHG's from Civic Facilities</b>	<b>23,505</b>	<b>21,002</b>	<b>16,264</b>	<b>7,242</b>	<b>31%</b>
Forecast reduction in GHG's from 1990		11%	31%		

<sup>2</sup> The city also leases out numerous buildings that were considered outside the scope of the emissions inventory as the data for these buildings is not available to the City, energy savings realised could not be captured by the City, and these buildings are not related to City operations.

### Reductions from New Facilities and Demolition or Sale of Old Facilities

\$236 million in capital projects has been approved to add ten new LEED Gold rated civic facilities by 2010. The floor space of these new facilities exceeds that of all of the facilities that the City has replaced, sold, or demolished since 1990 and the net effect disposing of old inefficient buildings and building new efficient ones is a reduction in Corporate GHG's of 3438 tonnes.

Planned New Facilities & Demolitions	Type	GHG Reduction by 2010 (tonnes)	Planned Completion Year
1 One Kingsway	Replacement	80	2008
2 Mountain View Cemetery	Replacement	(36)	2008
3 Trout Lake Ice Rink & Community Centre	Replacement	105	2009
4 Hillcrest Facility (2 phases)	Replacement		2008/2011
5 Sunset Community Centre	Replacement	103	2007
6 Killarney Ice Rink & Community Centre	Replacement	176	2008
7 Fire Hall 15	Replacement	7	On Hold
8 SEFC Community Centre	New - NEU	(100)	2009
9 Shooting Range	new	(50)	2008
10 Dog Squad	new	(25)	
11 Demolished/Sold Buildings		3,179	
<b>Total GHG Reductions from New &amp; Replacement Facilities</b>		<b>3,438</b>	

### Reductions from Retrofits to Existing Facilities

Through \$20 million in new retrofit projects and an accumulation of past upgrades to corporate facilities, by 2010 most facilities will have undergone upgrades to improve their energy performance and reduce overall greenhouse gas emissions. As compared to 1990, emissions from existing facilities will be reduced by 3951 tonnes.

Planned Energy Retrofit Projects	Type	GHG Reduction by 2010 (tonnes)	Planned Completion Year
1 City Hall Campus	ESCO Phase 1	319	2007
2 30 Park Board Buildings/Museum/Space Centre	ESCO Phase 2	2,240	2009
3 Engineering, Main Library (Study underway)	ESCO Phase 3*	400	2009
4 VPD/Theatres	ESCO Phase 4*	350	2009
5 Non Market Housing	ESCO Phase 5*	250	2010
6 Misc. Buildings	Self Funded	303	2010
7 Firehalls	Self Funded	25	2008
8 Parkades		50	2008
9 Other facilities (Note: floorspace increase 1990-2006 = 25%)		(133)	
<b>Total GHG Reductions from Building Retrofits</b>		<b>3,804</b>	

\* Subject to approval by Council

### Reductions through building Operator Training and Facilities Staff

All of the facility engineers including operating supervisors at both Parks & Corporate Services are enrolled in the Douglas College BES (Building Environmental Systems) course. Although no direct GHG reductions are included in the corporate plan, training is a key component to realising the benefits of the energy-related components in the retrofits and new facilities.

### Additional Actions for 2008

Requirement for Council approval of ESCO phases 3 through 5.

**APPENDIX C:**  
**Corporate Fleet Initiatives**

**Overview**

The City of Vancouver Equipment Services Branch maintains over 4000 pieces equipment with the majority of fuel consumption and GHG emissions attributable to the approximate 2000 licensed vehicles in the Corporate Fleet. These range in size from sub-compact 2-seat Smart cars to heavy-duty vehicles such as dump trucks and tractor-trailer trucks.

A 21% increase in the size of the corporate fleet, from 1990 to 2006, has contributed to an overall 11% increase in CO<sub>2</sub> emissions. Ongoing and planned fleet initiatives such as the increased use of bio-diesel, fuel efficient driver training, right-sizing of vehicles, and the application of new technologies are expected to reduce CO<sub>2</sub> emissions by 660 tonnes by 2010 from the current 2006 emission.

**Planned/Ongoing Fleet Initiatives**

Description	Description	Status/Impact
Maximize use of Biodiesel	5% Biodiesel blend (B5) = 6% reduction in GHG's  20% Biodiesel blend (B20) = 16% reduction in GHG's	City diesel equipment running on maximum biodiesel blends allowed by engine manufacturers has already contributed to 720t reduction since 2004.  Further increases in biodiesel blends are being pursued as allowed by engine warranties.
Corporate Car Sharing	Reduce the size of the City's light-duty vehicle fleet and out-source vehicle provision and management to a car-sharing company with highly efficient vehicles.	A request for proposals will be issued in the fall of 2007 with projected Corporate GHG reductions of 105 tonnes.  The real impact of this initiative is that by becoming a weekday car sharing client the City helps car-sharing grow as these vehicles are available to the public evenings and weekends.
Fuel Efficient Driver Training for Engineering Services	Reduce GHG by 5% over current engineering driver practices	Anti-idling awareness campaign for Engineering staff has been completed. Fuel efficient driver training will be ongoing. Projected 2010 reductions are 434 tonnes.
Right Sizing Program	Right sizing with more efficient vehicles will result in reductions in CO <sub>2</sub> emissions.	Projected 2010 reductions are 41 tonnes from right-sizing vehicles when they are due for replacement.

Description	Description	Status/Impact
Engine Programming	Re-program engines to operate more efficiently.	Many heavy-duty engines have been re-programmed already to operate in more efficient ranges for certain tasks, to shut off automatically to eliminate unnecessary idling and to limit maximum speed, all of which will further reduce emissions by changing driver behaviour.
Auxiliary Cab Heaters	Allow heat to be generated inside a work vehicle without the engine having to run.	Installation of 90 cab heaters starting in 2007 will result in projected 2010 reductions of 80 tonnes.

### 2007/08 Pilot and Potential Fleet Initiatives

Initiative	Description/ Impact	Status
Nitrogen Tire Inflation Pilot	Recent studies indicate 3% to 5% improvement in fuel economy possible in long-haul trucking fleets using Nitrogen. Benefits for City Fleets still un-proven.	City will run nitrogen pilot in the Fall of 2007 to test the benefits of nitrogen inflated tires in a municipal fleet.
Electronic Control Module (ECM) Data Capture	ECM data capture devices enhance other fuel savings programs.	ECM pilot program underway. If cost to GHG reduction is deemed beneficial, full-scale implementation will be pursued.
Fuel Efficiency Operational Review	Operational Audit of how City vehicles are used, with a focus on fuel savings and related efficiencies. This would be a broad-based study across the whole City.	Business case is under development.
More aggressive right-sizing.	Standardization on sub-compact and micro-compact light duty vehicles with selective introduction of light-duty and medium-duty hybrids as well as electric bikes where appropriate.	Business case is under development.
Higher blend Bio-diesel	Investigate use of biodiesel blends exceeding what is warranty-allowed	Business case is under development.

## APPENDIX D: Community Engagement Initiatives

### Overview

Over 50% of the greenhouse gas emissions in Vancouver result directly from individual behaviours, specifically from passenger vehicles and home energy use. Community engagement, aimed at fostering a widespread behaviour change across the city, is an essential part of reducing Vancouver's community GHG emissions.

Social Science research has shown that awareness and education do not change behaviour. Therefore the City developed One Day, a social marketing program focused on face-to-face personal engagement with individuals promoting and enabling them to take small steps to reduce their personal greenhouse gas emissions at home and on the road. The One Day program was developed using extensive qualitative and quantitative research on the existing values of residents and how these values relate to climate change. This research also helped to establish a baseline for existing personal behaviours to enable comparisons over time.

The City of Vancouver is at the leading edge of this work. A number of other cities and government agencies in Canada and the US are looking to our One Day program as a means to engage their residents as they work on climate protection initiatives.

### City-Led Community Outreach Initiatives

Initiative	Description	Impact	Status
One Day - Small Business Partners	Encourage small businesses to engage their customers in One Day through personal discussions with staff, information posters, providing weekly energy saving tips, and signing them up for the E-newsletter.	42 grocery stores, yoga studios, and coffee shops have engaged customers in One Day	On-hold until Social Marketing Strategy Review is completed
One Day - Events Outreach.	Attend public events and make public presentations to educate and encourage Vancouverites to take personal actions to reduce their GHG emissions.	130 events; 25 public presentations; 1,600 CoV water saver kits sold	On-hold until Social Marketing Strategy Review is completed
One Day - Website	Build and promote a single website to support and encourage specific personal changes in travel mode, vehicle choice and operation, and home energy use. Focus on benefits, specific action oriented information and incentives, story telling, and upcoming related events. Site is designed for cross-promotion of behaviours.	2005 - fall site launch; 2006 - averaged 650 site visitors per week	Ongoing

Initiative	Description	Impact	Status
One Day - Monthly Electronic Newsletter	Publish and promote a monthly electronic newsletter featuring stories about change, upcoming events, and providing information about a specific personal behaviour change to reduce GHG emissions.	Since May 2006, 6,000 people have signed-up	Ongoing

### Community Partnerships

Partnerships with community organisations to engage the public on climate change where the City played an important catalytic role but another agency was responsible for securing the majority of the funding from non-City sources and delivering the program.

Initiative	Description	Impact	Status
Vancouver Area Cycling Coalition - Commuter Cycling Skills Training	Provide by-donation one day cycle skills training for commuters to build confidence and improve safety.	2006 - 9 classes in Vancouver 2007 - 17 classes planned for Vancouver	Ongoing - Funded through 2007
Science World - Climate Change Show	Bring the Climate Change Show traveling exhibit to Science World and promote it with Vancouver schools.	12,000 people attended the exhibit.	Complete
BC Sustainable Energy Association - Climate Change Game and Contest	Class room video and game for grades 4 to 6 dealing with climate change and a contest for taking personal action.	85 Vancouver classes participated in the 2006 pilot.	100 Vancouver classes planned for 2007/2008
FORED BC - Adult Basic Education Curriculum	Create and distribute adult basic education materials on climate change.	Information not currently available.	Complete
Fraser Basin Council - One Day at Home Chinese Media Campaign	A media campaign targeting Chinese speakers to promote and enable home energy assessments and improvements.	377 phone queries; 68 workshop attendees; 1055 visitors to <a href="http://onedayathome.ca/chinese">onedayathome.ca/chinese</a>	Complete
Better Environmentally Sound Transportation - Going Active Campaign	Provide free valet bike parking, cycling maps and local route information, and bike safety information at community and sporting events in 2006 and 2007.	50 events (some multi-day) in Vancouver including 32 with free valet parking for approximately 6000 bikes	Complete

## **Additional Community Engagement Actions Planned for 2007/2008**

### Social Marketing Strategy Review

Community values and behaviours take a long time to shift, especially for something as wide-ranging as greenhouse gas emissions. To date, the strategy implementation has been uneven; the success in building a brand and a shared vision has not been matched by programs that make the desired behaviours easier and more attractive.

While it remains pre-mature to measure the effectiveness of the campaign in direct GHG reductions, an assessment of the overall strategy and the effectiveness of specific initiatives within that strategy needs to be conducted in order to inform the City's community engagement plan for moving forward.

### Internal Engagement

While this strategy review is important, it is clear that there are numerous untapped opportunities to use existing City channels to engage the public on climate change. Focusing on these channels would be both cost effective while at the same time help educate staff on the issues and desired changes.

### Business Engagement

While the City has been engaging individuals around specific greenhouse gas reducing behaviour changes, a high-level initiative to engage medium and large sized businesses, especially those with large carbon-foot prints needs to be developed and launched.