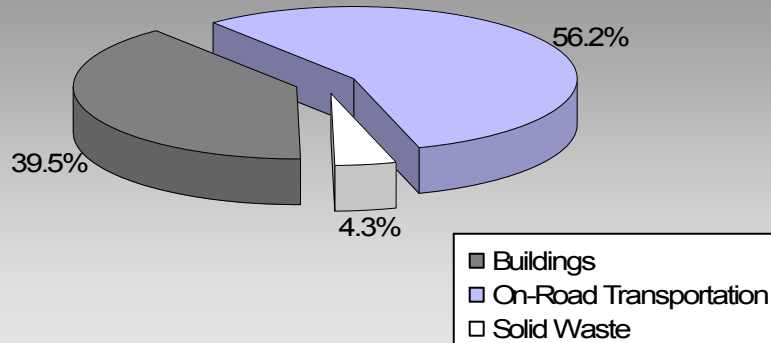


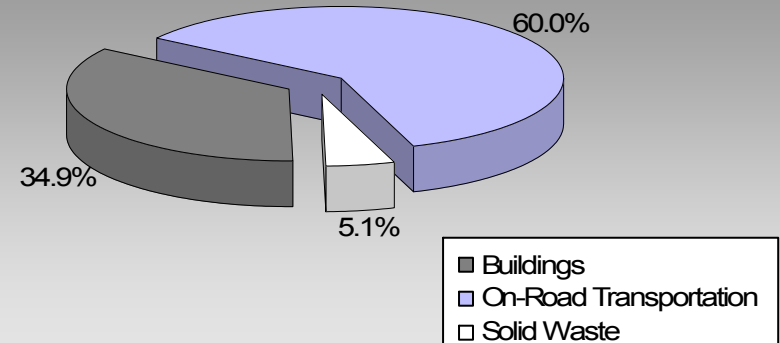
BC's Community Energy and Emission Inventories...supporting efforts towards Complete, Compact, Energy-Efficient Communities

Where are the majority of our community's emissions coming from?

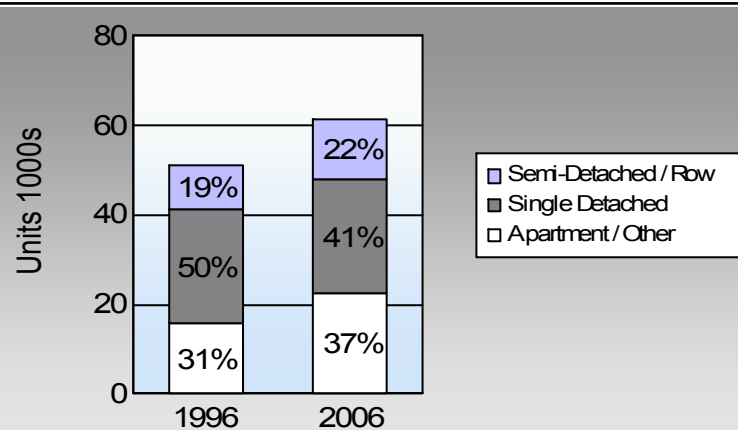
**Richmond City
2007 GHG Emissions Sources**



**Total for BC
Communities**



Are we living more compactly? Housing Type



In BC, single family detached housing made up 49% of housing in 2006.

Are we driving less? Commute To Work

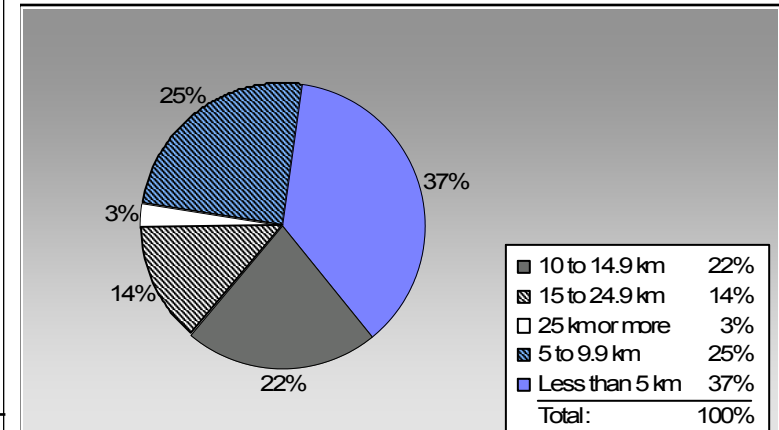
	1996	2006
	77.1%	73.4%
	8.0%	8.9%
	9.4%	11.8%
	3.1%	3.7%
	1.7%	1.3%

In BC, 10% of people took transit, 7% walked, and 2% cycled to work in 2006.

Residential Density

Richmond City: 33.5 people per net ha
BC municipal average: 7.4 people per net ha

Are we living closer to where we work? Commute Distance



In BC, 41% of people lived within 5km of their work in 2006.

Sectors

On Road Transportation		<u>Vehicles</u>	<u>Consumption</u>	<u>Measurement</u>	<u>Average-VKT(km)</u>	<u>Energy (GJ)</u>	<u>CO2e (t)</u>
Small Passenger Cars	Gasoline	45,518	60,747,975	Litres	13,645	2,126,179	143,895
	Diesel Fuel	514	518,110	Litres	13,605	19,844	1,415
	Other Fuel	< 10	6,113	Litres	9,708	234	9
Small Passenger Cars						2,146,257	145,319
Large Passenger Cars	Gasoline	25,474	45,810,289	Litres	15,119	1,603,360	108,083
	Diesel Fuel	488	904,353	Litres	14,183	34,637	2,469
	Other Fuel	41	76,753	Litres	12,302	2,940	118
Large Passenger Cars						1,640,937	110,670
Light Trucks, Vans, SUVs	Gasoline	36,557	72,056,137	Litres	13,648	2,521,965	171,625
	Diesel Fuel	1,002	2,442,468	Litres	18,456	93,547	6,673
	Other Fuel	116	215,175	Litres	10,903	8,241	330
Light Trucks, Vans, SUVs						2,623,753	178,628
Commercial Vehicles	Gasoline	191	881,298	Litres	17,074	30,845	2,066
	Diesel Fuel	992	4,636,494	Litres	21,991	177,578	12,477
	Other Fuel	63	203,364	Litres	11,869	7,789	312
Commercial Vehicles						216,212	14,855
Tractor Trailer Trucks	Gasoline	13	70,643	Litres	11,359	2,472	165
	Diesel Fuel	1,357	46,442,937	Litres	90,379	1,778,764	124,976
	Other Fuel	< 10	23,530	Litres	12,780	901	36
Tractor Trailer Trucks						1,782,137	125,177
Motorhomes	Gasoline	402	498,710	Litres	3,550	17,455	1,168
	Diesel Fuel	116	160,240	Litres	6,453	6,137	431
	Other Fuel	< 10	5,261	Litres	2,189	201	8
Motorhomes						23,793	1,607
Motorcycles, Mopeds	Gasoline	923	382,071	Litres	5,466	13,372	892
Motorcycles, Mopeds						13,372	892
Bus	Gasoline	100	1,096,499	Litres	22,862	38,377	2,578
	Diesel Fuel	156	3,276,328	Litres	38,453	125,483	8,817
	Other Fuel	16	101,278	Litres	15,914	3,879	155
Bus						167,739	11,550

Richmond City

Updated 2007 Community Energy and Emissions Inventory

	Gasoline:	6,354,025	430,472
	Diesel:	2,235,990	157,258
	Other Fuel:	24,185	968
On Road Transportation Totals	All Fuels:	8,614,200	588,698

Buildings	<u>Type</u>	<u>Connections</u>	<u>Consumption</u>	<u>Measurement</u>	<u>Energy (GJ)</u>	<u>CO2e (t)</u>
Residential	Electricity	64,798	570,305,950	Kilowatt Hours	2,053,100	14,068
	Natural Gas	38,064	3,958,435	GigaJoules	3,958,435	201,880
Residential					6,011,535	215,948
Commercial/Small-Medium Industrial	Electricity	10,671	1,076,059,473	Kilowatt Hours	3,873,811	26,543
	Natural Gas	5,571	3,364,939	GigaJoules	3,364,939	171,612
Commercial/Small-Medium Industrial					7,238,750	198,155
					Electricity:	40,611
					Natural Gas:	373,492
					Propane:	
					Wood:	
					Heating Oil:	
Buildings Totals				Buildings:	13,250,285	414,103

Solid Waste	<u>Mass (t)</u>	<u>CO2e (t)</u>
Community Solid Waste	124,926	45,456

Richmond City

Updated 2007 Community Energy and Emissions Inventory

Grand Total	CONSUMPTION	ENERGY (GJ)	CO2e (t)
Diesel Fuel	58,380,930 L	2,235,990	157,258
Electricity	1,646,365,423 kWh	5,926,911	40,611
Gasoline	181,543,622 L	6,354,025	430,472
Natural Gas	7,323,374 GJ	7,323,374	373,492
Other Fuel	631,474 L	24,185	968
Solid Waste	124,926 T	0	45,456
Total of Transportation / Buildings / Solid Waste:		21,864,485 GJ	1,048,257 tonnes

Memo Items

Buildings	Type	Connections	Consumption	Measurement	Energy (GJ)	CO2e (t)
Large Industrial	Electricity	8	withheld	Kilowatt Hours	-	-
	Natural Gas	85	2,101,583	GigaJoules	2,101,583	107,181
Large Industrial					2,101,583	107,181

Supporting Indicators

Below you will find supporting indicators for which data is provided. These are the first five supporting indicators for which data is provided as a part of the updated 2007 CEEI. Columns with all zeros indicate data unavailable in these CEEI reports. Thirteen additional supporting indicators are under consideration for future reports (see next page). Local government feedback is requested on all supporting indicators. Please take the time to complete the short CEEI Survey at <http://www.env.gov.bc.ca/cas/mitigation/ceei/index.html> or contact us directly at CEEIRPT@gov.bc.ca

Housing Type - Private dwellings by structural type

Housing type is important for reducing building-related GHG emissions and energy consumption. A trend toward fewer single family dwellings indicates an increase in residential density, which is known to reduce transportation-related GHG emissions.

	1996		2001		2006	
	Units	%	Units	%	Units	%
Single Detached House	25,285	33	26,865	47	25,255	41
Semi-Detached House	1,985	3	2,180	4	1,865	3
Row House	7,890	10	9,480	17	11,745	19
Apartment, Duplex	1,380	2	1,225	2	3,455	6
Apartment, 5 storeys or higher	1,650	2	3,300	6	3,770	6
Apartment, under 5 storeys	12,580	17	13,510	24	15,090	25
Other Single Attached House	55	0	25	0	15	0
Movable Dwelling	95	0	190	0	220	0

Commute to Work - Employed labour force - by mode of commute

An increase in the number of people choosing to walk, cycle and use transit reduces GHG emissions. More compact, complete, connected communities should see an increase in the use of these transportation modes.

	1996		2001		2006	
	People	%	People	%	People	%
Car, Truck, Van as Driver	49,540	77	55,670	77	57,605	73
Car, Truck, Van as Passenger	5,125	8	6,595	9	7,005	9
Public Transit	6,035	9	5,375	7	9,280	12
Walked	1,980	3	2,595	4	2,910	4
Bicycle	1,080	2	1,020	1	1,045	1
Motorcycle	75	0	80	0	195	0
Taxicab	40	0	95	0	55	0
Other Method	375	1	410	1	425	1

Residential Density

* Net of Crown land, parks, Indian Reserves, water features, airports, ALR, waste disposal sites.

Increasing residential densities is known to reduce vehicle use resulting in fewer transportation-related GHG emissions. There are many additional benefits from more compact development.

2009	
Population	193,255.0
Net Land Area (ha) *	5,773.1
Residential Density (people per net ha)	33.5

Commute Distance

Shorter commute distances generally reduce GHG emissions by increasing the likelihood of people walking, cycling or using transit. Commute distance is also indicative of the 'completeness' of a community from an employment perspective.

2006		
	People	%
Less than 5 km	25,580	37
5 to 9.9 km	17,265	25
10 to 14.9 km	15,175	22
15 to 24.9 km	9,615	14
25 km or more	1,845	3

Parks and Protected Greenspace

* Total is net of Indian Reserves

** The quantity of parkland may be underestimated

Parks and protected greenspaces are important for the protection and enhancement of community carbon sinks.

	2009	
	Area (ha)	%
National Parks	0.0	0.0
Provincial Parks / Protected Areas	707.2	4.7
Local Parks	525.9	3.5
Agricultural Land Reserve	5,181.9	34.3
Other land use	8,703.8	57.6
Total Land Area	15,118.8	100.0

Supporting Indicators Under Consideration

The following supporting indicators are under consideration for inclusion in future CEEI reports. The 2007 CEEI reports provide these 'placeholder' indicators to give indication of data that may be provided in the future by the Province on an ongoing basis to assist in monitoring actions to reduce GHG emissions and energy consumption. Please submit feedback to CEEIRPT@gov.bc.ca (see survey on CEEI website).

On-Road Transportation (and Land Use)

Proximity to Transit	Persons, dwelling units (du) and employment within 400m of a quality transit stop/line
Proximity to Services	Persons and dwelling units (du) within 400m of services (e.g. grocery store, school, other retail etc.)
Transit Ridership	Annual per capita transit ridership

Buildings

Residential; Public Building Energy Intensity	Average energy use per person per square metre of floor space
Floor Space	Average residential dwelling unit size

Solid Waste (and Water)

Waste Diversion	Tonnes of waste diverted
Avoided Waste Emissions	Tonnes of CO ₂ e of avoided future emissions due to reduced waste since 2007
Water Use	Per capita residential water use

Land-Use Change

Impervious Surface Cover	% change in impervious surface cover
Tree Canopy Cover	% change in tree canopy cover

Community and Renewable Energy Supply

District Energy	# and energy output (e.g. buildings connected, energy consumed in GJ or kWh) of district energy systems by energy type (e.g. renewable or non-renewable)
On-Site Renewable Energy	# and energy output (in GJ or kWh) from households producing and/or consuming on-site renewable heat (e.g. biomass, solar thermal, geo-exchange) and/or electrical (e.g. solar photovoltaic, small wind, small scale hydro) energy
Energy Recovery From Waste	Energy (GJ or kWh) recovered from waste (e.g. from landfill gas, sewage treatment, industrial operations, farm)

This is your local government's Updated 2007 Community Energy and Emissions Inventory (CEEI) Report

What is a CEEI Report?

CEEI Reports are a result of a multi-agency effort to provide a province-wide solution to assist local governments in BC to track and report on community-wide energy consumption and greenhouse gas (GHG) emissions every two years. CEEI Reports are one of the many resources available through the Climate Action Toolkit (<http://www.toolkit.bc.ca>), a web-based service provided through the ongoing collaboration between UBCM and the Province.

Why does my local government need a CEEI Report?

A community energy and GHG emissions inventory can be a valuable tool that helps local governments plan and implement GHG and energy management strategies, while at the same time strengthening broader sustainability planning at the local level. CEEI reports fulfill local governments' Climate Action Charter commitment to measure and report their community's GHG emissions profile, establish a base year inventory for local governments to consider as they develop targets, policies, and actions related to BC's *Local Government Act* requirements, and fulfill Milestone One requirements for those local government members of the Federation of Canadian Municipalities' (FCM's) Partners in Climate Protection (PCP) program.

A first in North America!

CEEI is a first in North America and a first step for BC communities. The 2007 CEEI Reports are based on best available province-wide data. The accuracy and detail of CEEI reports will continue to improve to meet increasing local and provincial government information needs. Improvements have been made from the original draft 2007 CEEI Reports posted in Spring 2009. These include estimates for residential heating oil, propane and wood use, breaking out small and medium from large industrial buildings, including updated land-use change and new agricultural sectors as 'memo items', and the first of a suite of 'supporting indicators'. Following the 2010 CEEI Reports, inventories will be generated every two years, and will continue to improve as government information needs, international protocols and new data sources emerge.

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For More Information:

- The full list of all BC local government Updated 2007 CEEI Reports, CEEI Data Summary Report, Technical Methods and Guidance Document, and additional information on the Secondary Indicators are available at: <http://www.env.gov.bc.ca/cas/mitigation/ceei/index.html>.
- For guidance on target setting and community actions, go to <http://www.toolkit.bc.ca> and <http://www.cd.gov.bc.ca/lgd/greencommunities/targets.htm>.

We Need Your Feedback:

- To continue to guide us on CEEI, particularly now with the new Indicators. Please take the time to complete the short CEEI Survey at <http://www.env.gov.bc.ca/cas/mitigation/ceei/index.html> or contact us directly at CEEIRPT@gov.bc.ca

Notice to the Reader: This CEEI Report uses information from a variety of sources to estimate GHG emissions. While the methodologies, assumptions and data used are intended to provide reasonable estimates of greenhouse gas emissions, the information presented in this report may not be appropriate for all purposes. The Province of BC and the data providers do not provide any warranty to the user or guarantee the accuracy or reliability of the data contained in this report. The user accepts responsibility for the ultimate use of such data. We need your help to make these reports better, where you do note inaccuracies, please contact us.