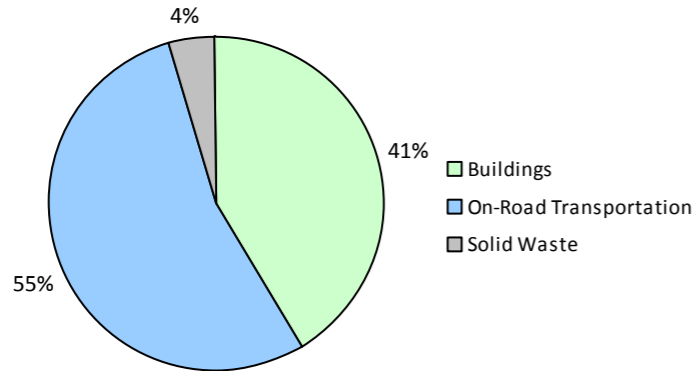


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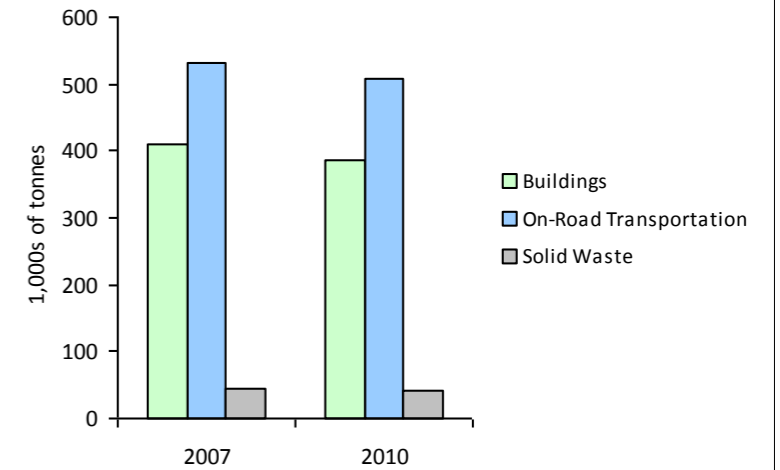
2010 GHG Emissions Sources (Total for this Community)



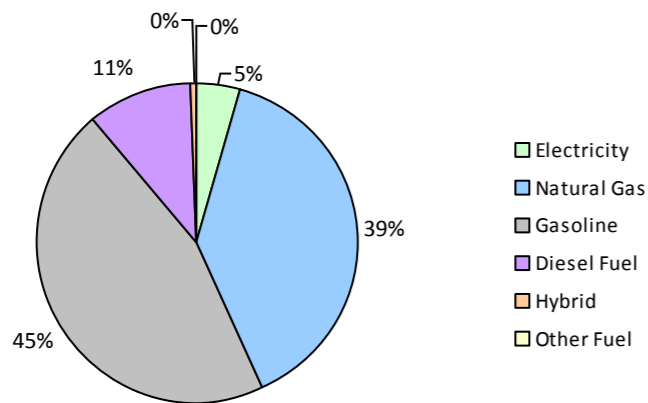
2010 GHG Emissions Sources (Total for BC)



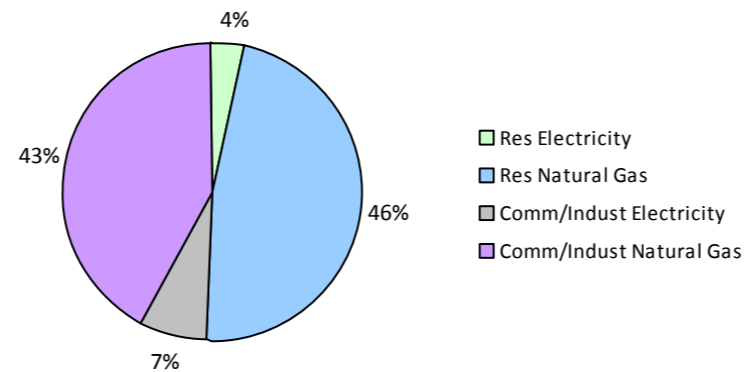
GHG Emissions Comparisons for this Community



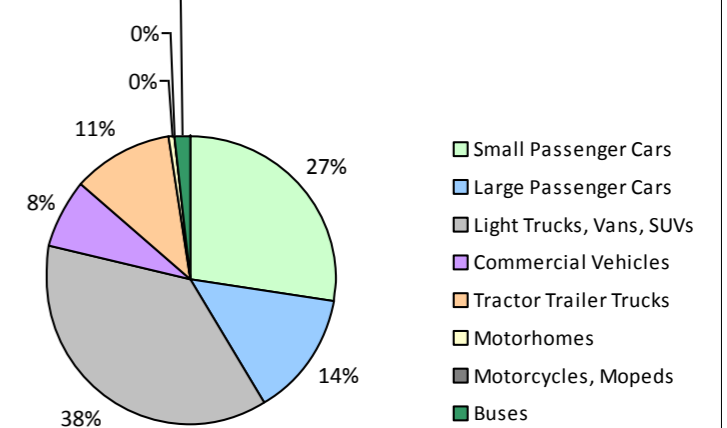
2010 Total Emissions by Fuel Type



2010 Building Emissions by Subsector



2010 On-Road Transportation Emissions by Vehicle Class



Richmond City 2010 Community Energy and Emissions Inventory

Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Core Items

On-Road Transportation		2007					2010				
		Connections	Consumption	Avg VKT (km)	Energy (GJ)	CO2e (t)	Connections	Consumption	Avg VKT (km)	Energy (GJ)	CO2e (t)
Small Passenger Cars	Hybrid	59	44,334 L	16,100	1,552	103	168	151,713 L	16,500	5,310	337
	Gasoline	46,133	62,281,844 L	14,300	2,179,864	147,195	46,094	61,352,607 L	14,000	2,147,341	137,322
	Diesel Fuel	502	552,821 L	16,400	21,173	1,509	460	518,059 L	16,600	19,842	1,374
	Other Fuel			15,300	210	12	10	13,282 L	14,400	336	20
Large Passenger Cars	Hybrid	183	218,704 L	21,400	7,655	512	702	1,092,839 L	26,400	38,249	2,434
	Gasoline	22,619	36,252,071 L	14,200	1,268,823	85,550	19,811	30,437,627 L	13,600	1,065,317	68,119
	Diesel Fuel	139	179,475 L	13,600	6,873	488	120	155,054 L	13,700	5,938	411
	Other Fuel	12	17,458 L	11,300	441	27			11,700	296	18
Light Trucks, Vans, SUVs	Hybrid	78	103,729 L	16,800	3,629	245	267	395,842 L	17,100	13,855	893
	Gasoline	35,487	76,913,776 L	15,600	2,691,983	183,049	38,746	81,205,300 L	15,300	2,842,185	183,568
	Diesel Fuel	441	1,191,888 L	16,100	45,650	3,250	613	1,812,694 L	20,600	69,426	4,805
	Other Fuel	180	380,121 L	12,600	9,616	582	101	196,598 L	11,800	4,975	302
Commercial Vehicles	Hybrid								19,400	241	16
	Gasoline	2,164	6,288,723 L	17,400	220,105	14,782	2,234	6,413,509 L	17,300	224,473	14,349
	Diesel Fuel	2,320	9,184,656 L	19,900	351,772	24,715	2,444	9,490,360 L	19,800	363,482	24,778
	Other Fuel	186	415,286 L	12,200	10,507	637	141	301,861 L	11,900	7,637	463
Tractor Trailer Trucks	Gasoline	11	64,100 L	22,100	2,243	151	10	42,705 L	15,000	1,495	96
	Diesel Fuel	1,275	21,378,819 L	42,100	818,809	57,530	1,355	21,836,906 L	40,800	836,353	57,015
	Other Fuel			95,200	538	32			75,200	424	26
Motorhomes	Gasoline	324	773,982 L	17,200	27,090	1,811	288	687,989 L	17,200	24,079	1,533
	Diesel Fuel	123	379,250 L	16,600	14,525	1,020	119	373,347 L	16,600	14,299	975
	Other Fuel			16,600	189	11			14,200	218	13
Motorcycles, Mopeds	Gasoline	994	239,088 L	5,400	8,368	558	1,043	287,535 L	6,200	10,063	637
Buses	Gasoline	204	940,832 L	29,300	32,930	2,211	252	1,137,970 L	29,100	39,829	2,547
	Diesel Fuel	287	2,408,887 L	31,100	92,261	6,483	314	2,224,440 L	30,000	85,197	5,807
	Other Fuel	39	158,695 L	20,800	4,015	244	26	95,965 L	19,100	2,428	147
Totals		113,760	220,368,539 L	15,199	7,820,821	532,707	115,318	220,368,539 L	15,015	7,823,288	508,005

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Buildings		2007				2010			
		Connections	Consumption	Energy (GJ)	CO2e (t)	Connections	Consumption	Energy (GJ)	CO2e (t)
Residential	Natural Gas	38,064	3,958,435 GJ	3,958,435	198,556	38,435	3,600,347 GJ	3,600,347	180,593
	Electricity	64,798	570,305,950 kWh	2,053,100	14,258	68,457	566,727,510 kWh	2,040,217	14,169
Commercial/Small-Medium Industrial	Natural Gas	5,571	3,364,939 GJ	3,364,939	168,785	5,268	3,278,924 GJ	3,278,924	164,471
	Electricity	10,671	1,076,059,473 kWh	3,873,811	26,902	11,143	1,098,372,015 kWh	3,954,136	27,460
Totals		119,104		13,250,285	408,501	123,303		12,873,624	386,693

Solid Waste		2007				2010			
		Connections	Consumption	Energy (GJ)	CO2e (t)	Connections	Consumption	Energy (GJ)	CO2e (t)
Community Solid Waste	Solid Waste	0	108,274 t	N/A	45,456	0	85,061 t	N/A	40,347
Totals		0			45,456	0			40,347

Memo Items

Buildings		2007				2010			
		Connections	Consumption	Energy (GJ)	CO2e (t)	Connections	Consumption	Energy (GJ)	CO2e (t)
Large Industrial	Natural Gas	85	2,101,583 GJ	2,101,583	105,415	80	1,573,338 GJ	1,573,338	78,919
	Electricity	8		0	0	7	282,062,153 kWh	1,015,423	7,052
Totals		93		2,101,583	105,415	87		2,588,761	85,971

Richmond City 2010 Community Energy and Emissions Inventory

Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Totals for Transportation, Buildings and Solid Waste

Fuel Type	2007 (Population: 186,376)			2010 (Population: 196,858)		
	Consumption	Energy (GJ)	CO2e (t)	Consumption	Energy (GJ)	CO2e (t)
Hybrid	366,767 L	12,836	860	1,640,394 L	57,655	3,680
Gasoline	183,754,416 L	6,431,406	435,307	181,565,242 L	6,354,782	408,171
Diesel Fuel	35,275,796 L	1,351,063	94,995	36,410,860 L	1,394,537	95,165
Other Fuel	971,560 L	25,516	1,545	607,706 L	16,314	989
Natural Gas	7,323,374 GJ	7,323,374	367,341	6,879,271 GJ	6,879,271	345,064
Electricity	1,646,365,423 kWh	5,926,911	41,160	1,665,099,525 kWh	5,994,353	41,629
Solid Waste	108,274 t	0	45,456	85,061 t	0	40,347
Grand Totals		21,071,106	986,664		20,696,912	935,045

Monitoring and reporting on progress towards greenhouse gas emissions reduction targets

Supporting Indicators

No new supporting indicator data have been provided in the 2010 reports. Work is currently underway to produce a complete second round of data for the indicators below in the 2012 reports (available in 2014). In the interim, we are including the same supporting indicator data that was provided in the 2007 reports. Feedback is requested on all supporting indicators; please contact us directly at

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	
	Units	%	Units	%	Units	%
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

Parks and Protected Greenspace

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

	2009	
	Units	%
National Parks	0	0
Provincial Parks / Protected Areas	707	5
Local Parks	526	3
Agricultural Land Reserve	5,182	34
Other land use	8,704	58
Total Parks and Protected Area	1,230	8
Total Land Area	15,119	100

* Total is net of Indian Reserves
 ** Quantity of parkland may be underestimated

Residential Density

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	
	Units	%
National Parks	0	0
Provincial Parks / Protected Areas	707	5
Local Parks	526	3
Agricultural Land Reserve	5,182	34
Other land use	8,704	58
Total Parks and Protected Area	1,230	8
Total Land Area	15,119	100

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

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

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Supporting Indicators Under Consideration

Work is currently underway to produce a complete second round of supporting indicators for the 2012 reports (available in 2014). These reports will new data for the five supporting indicators included in the 2007 and 2010 Reports:

- **Housing Type:** Private dwellings by structural type
- **Commute to Work:** Employed labour force - by mode of commute
- **Commute Distance**
- **Residential Density**
- **Parks and Protected Greenspace**

And in addition, the 2012 reports we are working to be able to include:

- **Proximity to Transit**
- **Building Energy Intensity**
- **Building Floor Space**
- **Waste Diversion**

We are continuing to work towards reporting on even more supporting indicators in the future including:

- **Proximity to Services** (e.g. destinations such as grocery store, school, other retail etc.)
- **Transit Ridership**
- **Water Use**
- **Impervious Surface Cover:** % change in impervious surface cover
- **Tree Canopy Cover:** % change in tree canopy cover
- **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)

Please give us feedback by contacting us directly at CEEIRPT@gov.bc.ca

Many local governments have been undertaking a significant amount of climate action in both the corporate and community-wide spheres, as demonstrated in both the public reports from the Climate Action Revenue Incentive Program (CARIP) <http://www.cscd.gov.bc.ca/lgd/greencommunities/carip.htm>, and on the <http://toolkit.bc.ca> website. These two resources may be helpful to those who are interested in learning from other BC local governments. The toolkit also contains additional information and resources including decision-support/planning frameworks and tools for undertaking actions to reduce GHG emissions and energy consumption.

This is your local government's 2010 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 as well as supporting indicators 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, fulfill Milestone One requirements for those local government members of the Federation of Canadian Municipalities' (FCM's) Partners in Climate Protection (PCP) program, as well as supporting local government efforts to monitor progress towards Regional Growth Strategy objectives.

A first in North America!

CEEI is a first in North America and a first step for BC communities. The 2010 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 from large industrial buildings, including updated land-use change and new agricultural sectors as 'memo items'. 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.

For More Information

The full list of all BC local government 2010 CEEI Reports, User Guide, Technical Methods and Guidance Document, and additional information on the Supporting 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, please take the time to 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,