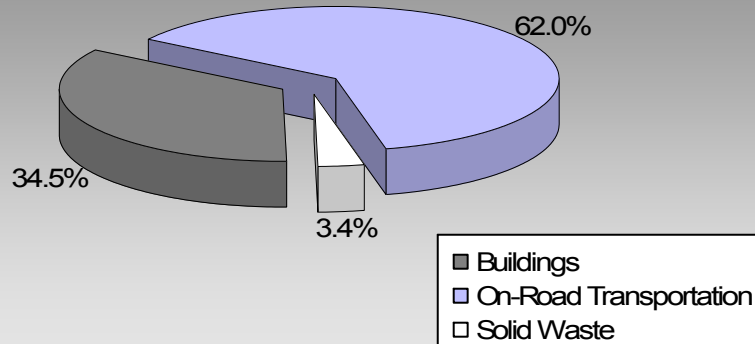


# Updated 2007 Community Energy and Emissions Inventory

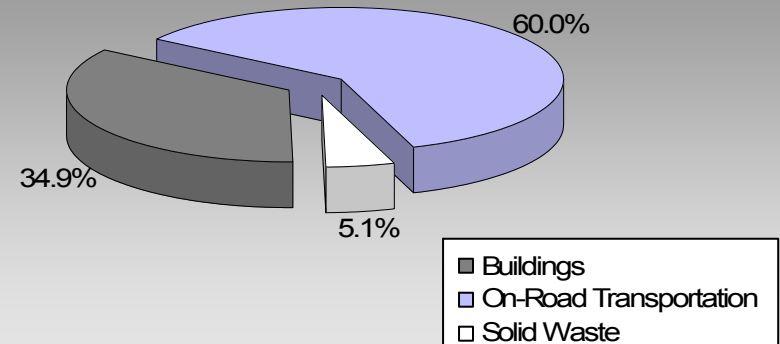
BC's Community Energy and Emission Inventories...supporting efforts towards Complete, Compact, Energy-Efficient Communities

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

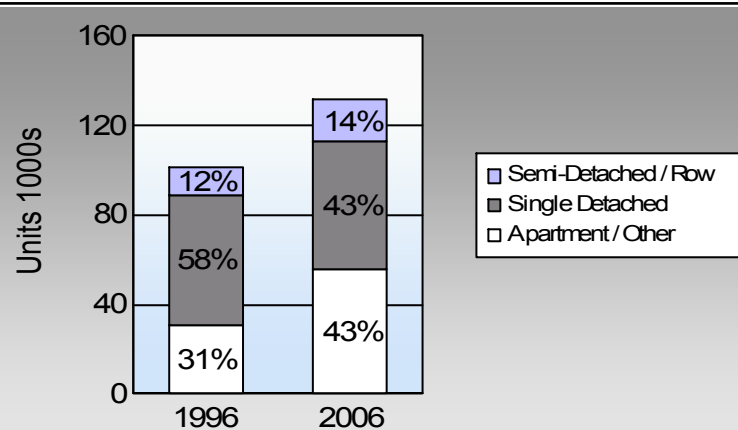
**Surrey City  
2007 GHG Emissions Sources**



**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
	77.6%	76.1%
	7.6%	8.9%
	10.2%	10.9%
	3.0%	2.6%
	0.6%	0.4%

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

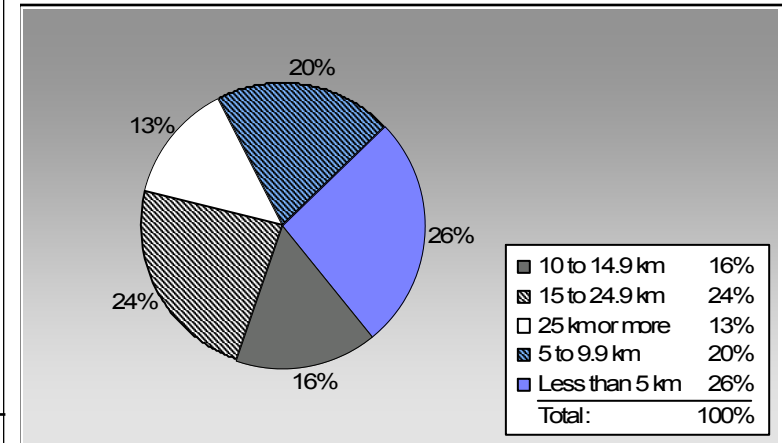
#### Residential Density

Surrey City: 21.8 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

<b>On Road Transportation</b>		<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	85,328	113,642,326	Litres	13,478	3,977,481	270,035
	Diesel Fuel	1,623	1,695,381	Litres	13,635	64,933	4,631
	Other Fuel	17	18,394	Litres	9,736	704	28
<b>Small Passenger Cars</b>						<b>4,043,118</b>	<b>274,694</b>
Large Passenger Cars	Gasoline	43,494	75,803,528	Litres	14,739	2,653,123	179,447
	Diesel Fuel	815	1,453,976	Litres	13,949	55,687	3,969
	Other Fuel	110	216,862	Litres	12,091	8,306	332
<b>Large Passenger Cars</b>						<b>2,717,116</b>	<b>183,748</b>
Light Trucks, Vans, SUVs	Gasoline	82,947	160,325,297	Litres	13,505	5,611,385	382,766
	Diesel Fuel	4,063	9,113,166	Litres	17,046	349,034	24,897
	Other Fuel	361	714,620	Litres	10,735	27,370	1,095
<b>Light Trucks, Vans, SUVs</b>						<b>5,987,789</b>	<b>408,758</b>
Commercial Vehicles	Gasoline	430	1,987,476	Litres	15,832	69,562	4,657
	Diesel Fuel	2,236	10,247,753	Litres	20,870	392,489	27,577
	Other Fuel	110	404,592	Litres	12,372	15,496	620
<b>Commercial Vehicles</b>						<b>477,547</b>	<b>32,854</b>
Tractor Trailer Trucks	Gasoline	29	170,627	Litres	14,396	5,972	400
	Diesel Fuel	5,552	187,792,171	Litres	88,029	7,192,440	505,343
	Other Fuel	< 10	16,068	Litres	7,085	615	25
<b>Tractor Trailer Trucks</b>						<b>7,199,027</b>	<b>505,768</b>
Motorhomes	Gasoline	1,227	1,387,924	Litres	3,193	48,577	3,249
	Diesel Fuel	217	241,657	Litres	4,811	9,255	650
	Other Fuel	31	20,628	Litres	2,189	790	32
<b>Motorhomes</b>						<b>58,622</b>	<b>3,931</b>
Motorcycles, Mopeds	Gasoline	2,789	1,213,338	Litres	5,587	42,467	2,832
<b>Motorcycles, Mopeds</b>						<b>42,467</b>	<b>2,832</b>
Bus	Gasoline	161	1,526,648	Litres	21,289	53,433	3,587
	Diesel Fuel	109	2,345,611	Litres	36,898	89,837	6,312
	Other Fuel	< 10	53,109	Litres	15,933	2,034	81
<b>Bus</b>						<b>145,304</b>	<b>9,980</b>

# Surrey City

## Updated 2007 Community Energy and Emissions Inventory

	Gasoline:	12,462,000	846,973
	Diesel:	8,153,675	573,379
	Other Fuel:	55,315	2,213
<b>On Road Transportation Totals</b>	<b>All Fuels:</b>	<b>20,670,990</b>	<b>1,422,565</b>

Buildings	<u>Type</u>	<u>Connections</u>	<u>Consumption</u>	<u>Measurement</u>	<u>Energy (GJ)</u>	<u>CO2e (t)</u>	
Residential	Electricity	125,077	1,361,870,444	Kilowatt Hours	4,902,730	33,593	
	Natural Gas	94,656	10,424,718	GigaJoules	10,424,718	531,661	
<b>Residential</b>					<b>15,327,448</b>	<b>565,254</b>	
Commercial/Small-Medium Industrial	Electricity	14,802	1,233,810,889	Kilowatt Hours	4,441,716	30,434	
	Natural Gas	8,342	3,849,239	GigaJoules	3,849,239	196,311	
<b>Commercial/Small-Medium Industrial</b>					<b>8,290,955</b>	<b>226,745</b>	
					Electricity:	9,344,446	64,027
					Natural Gas:	14,273,957	727,972
					Propane:		
					Wood:		
					Heating Oil:		
<b>Buildings Totals</b>	<b>Buildings:</b>				<b>23,618,403</b>	<b>791,999</b>	

Solid Waste	<u>Mass (t)</u>	<u>CO2e (t)</u>
Community Solid Waste	215,300	78,341

# Surrey City

## Updated 2007 Community Energy and Emissions Inventory

Grand Total	CONSUMPTION	ENERGY (GJ)	CO2e (t)
Diesel Fuel	212,889,715 L	8,153,675	573,379
Electricity	2,595,681,333 kWh	9,344,446	64,027
Gasoline	356,057,164 L	12,462,000	846,973
Natural Gas	14,273,957 GJ	14,273,957	727,972
Other Fuel	1,444,273 L	55,315	2,213
Solid Waste	215,300 T	0	78,341
<b>Total of Transportation / Buildings / Solid Waste:</b>		<b>44,289,393 GJ</b>	<b>2,292,905 tonnes</b>

### Memo Items

Buildings	Type	Connections	Consumption	Measurement	Energy (GJ)	CO2e (t)
Large Industrial	Electricity	8	withheld	Kilowatt Hours	-	-
	Natural Gas	104	2,171,481	GigaJoules	2,171,481	110,746
	<b>Large Industrial</b>				<b>2,171,481</b>	<b>110,746</b>

### 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](mailto: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	57,995	37	64,060	55	56,790	43
Semi-Detached House	2,750	2	3,175	3	3,505	3
Row House	9,210	6	10,820	9	15,000	11
Apartment, Duplex	9,585	6	13,385	12	23,320	18
Apartment, 5 storeys or higher	2,450	2	2,665	2	2,610	2
Apartment, under 5 storeys	17,360	11	19,770	17	28,050	21
Other Single Attached House	180	0	170	0	160	0
Movable Dwelling	1,320	1	1,665	1	1,705	1

#### 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	102,180	78	123,320	79	140,295	76
Car, Truck, Van as Passenger	9,990	8	12,130	8	16,315	9
Public Transit	13,480	10	12,955	8	20,040	11
Walked	3,900	3	4,390	3	4,830	3
Bicycle	835	1	995	1	765	0
Motorcycle	190	0	215	0	320	0
Taxicab	145	0	120	0	180	0
Other Method	985	1	1,080	1	1,610	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	446,561.0
Net Land Area (ha) *	20,494.1
Residential Density (people per net ha)	21.8

#### 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	40,315	26
5 to 9.9 km	31,325	20
10 to 14.9 km	24,560	16
15 to 24.9 km	36,475	24
25 km or more	20,695	13

### 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	216.6	0.7
Local Parks	2,198.3	6.8
Agricultural Land Reserve	9,296.1	28.7
Other land use	20,687.9	63.9
Total Land Area	32,398.9	100.0

## Updated 2007 Community Energy and Emissions Inventory

### 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](mailto:CEEIRPT@gov.bc.ca) (see survey on CEEI website).

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#### 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

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#### Buildings

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

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#### Solid Waste (and Water)

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

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#### Land-Use Change

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

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#### 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)

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# 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](mailto: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.