

Instructions - Inventory Quantification Support Spreadsheet

This spreadsheet is intended to be used as a tool to calculate greenhouse gas (eCO₂) emissions for the Halifax Regional Municipality community and includes the residential, industrial, transportation, agriculture and waste sectors. The spreadsheet was adapted from the tool developed by the Partners for Climate Protection and the original version may be found here:

http://www.fcm.ca/home/programs/partners-for-climate-protection/new_program-resources/milestone-toolkit/milestone-1.htm

Cells highlighted in light yellow **must** be filled in in order to calculate eCO₂ emissions.

Cells highlighted in blue **can** be filled in, but are not necessary to calculate eCO₂ emissions.

Cells highlighted in light blue **can** be altered with empirical data if available.

Cells highlighted with dark green contain the eCO₂ emissions which are automatically calculated based on the information you provide.

Tabs highlighted in yellow are community sectors

Tabs highlighted in purple are for emission factors and other reference information

General Info Tab (green), **must be filled in**

General Information

Name of Municipal Government:	Halifax Regional Municipality (HRM)
Province/Territory:	Nova Scotia
Community Inventory Year Baseline:	2009

Population of HRM in 2009:	384,491
Population of Nova Scotia in 2009:	940,300

Notes and References:

1. HRM population 2009 is from Table 3.3 of *Quantifying the Costs and Benefits of Alternative Growth Scenarios, Halifax Regional Municipality, Nova Scotia, Final Report, January 2031*, by Stantec

2. Population of Nova Scotia in 2009 is from Statistics Canada: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo02a-eng.htm>

Residential

Community Inventory

Fuel Type	Units	Total Use	Total eCO ₂ (t)
Electricity	kWh	1,763,555,497	1,375,573
Natural Gas	m ³	4,084,936	7,772
District Energy	GJ		0
Fuel Oil	L	125,287,719	342,681
Diesel	L		0
Propane	L		0
Total	-	1,892,928,152	1,726,027

Indicators	Indicator Values	Total eCO ₂ /Indicator
Population:	384,491	4.489121602
Households:	161,149	10.71075125

Notes and References:

1. Total Use Residential Fuel Type values in Nova Scotia were obtained from Table 1-5, 2-5 and 3-5, Report on Energy Supply and Demand in Canada, 2009 Preliminary, Statistics Canada, available at <http://www.statcan.gc.ca/pub/57-003-x/57-003-x2009000-eng.pdf>
2. Total Use Residential Fuel Type values for HRM were extrapolated by calculating the total use of fuel types per person per year in Nova Scotia
3. Total Use Residential Fuel Type values for District Energy and Propane were not provided in Report on Energy Supply and Demand in Canada, 2009 Preliminary, Statistics Canada
4. HRM population and dwelling units in 2009 is from Table 3.3 of Quantifying the Costs and Benefits of Alternative Growth Scenarios, Halifax Regional Municipality, Nova Scotia, Final Report, January 2031, by Stantec

Commercial

Community Inventory

Fuel Type	Units	Total Use	Total eCO ₂ (t)
Electricity	kWh	1,451,930,919	1,132,506
Natural Gas	m ³	4,906,830	9,336
District Energy	GJ		0
Fuel Oil	L	214,264,898	586,048
Diesel	L	72,048,617	201,001
Propane	L		0
Total	-	-	1,928,891

Indicators	Indicator Values	Total eCO ₂ /Indicator
Floor Area (1000 m ²):		0.00
Employees:		0.00
Establishments:		0.00

Notes and References:

1. Total Use Commercial Fuel Type values for Nova Scotia were obtained from Table 1-5 and Table 3-5, Report on Energy Supply and Demand in Canada, 2009 Preliminary, Statistics Canada, available at <http://www.statcan.gc.ca/pub/57-003-x/57-003-x2009000-eng.pdf>
2. Total Use Commercial Fuel Type values are a summation of the "Commercial and other institutional" and the "Public administration" values from Report on Energy Supply and Demand in Canada, 2009 Preliminary, Statistics Canada.
3. Total Use Commercial Fuel Type values for HRM were extrapolated by calculating the total use of fuel types per person per year in Nova Scotia.
4. Total Use Commercial Fuel Type values for District Energy and Propane were not provided in Report on Energy Supply and Demand in Canada, 2009 Preliminary, Statistics Canada

Industrial

Community Inventory

Fuel Type	Units	Total Use	Total eCO ₂ (t)
Electricity	kWh	1,327,829,017	1,035,707
Natural Gas	m ³	27,069,344	51,503
District Energy	GJ		0
Fuel Oil	L	57,164,566	156,354
Diesel	L	46,573,992	129,932
Propane	L		0
Total	-	-	1,373,495

Indicators	Indicator Values	Total eCO ₂ /Indicator
Floor Area (1000 m ²):		#DIV/0!
Employees:		#DIV/0!
Establishments:		#DIV/0!

Notes and References:

1. Total Use Industrial Fuel Type values for Nova Scotia were obtained from Table 1-5 and Table 3-5, Report on Energy Supply and Demand in Canada, 2009 Preliminary, Statistics Canada, available at <http://www.statcan.gc.ca/pub/57-003-x/57-003-x2009000-eng.pdf>
2. Total Use Industrial Fuel Type values are a summation of the "Total industrial" and the "Agriculture" values from Report on Energy Supply and Demand in Canada, 2009 Preliminary, Statistics Canada
3. Total Use Industrial Fuel Type values for HRM were extrapolated by calculating the total use of fuel types per person per year in Nova Scotia
4. Total Use Industrial Fuel Type values for District Energy and Propane were not provided in Report on Energy Supply and Demand in Canada, 2009 Preliminary, Statistics Canada

Transportation

Community Inventory

Select **one** of the two methods below to calculate your transportation emissions

Option 1: Vehicle Kilometers Travelled (Recommended)

Total Annual Vehicle Kilometres Travelled (VKT): 2,640,000,000

eCO₂ Emissions (t)

	Autos	Light Truck	Heavy Truck	Bus	Total	Total Fuel Used (L)
Gasoline	308,191	309,298	24,345	0	641,833	263,096,856
Diesel	818	8,235	258,827	227	268,107	99,912,120
Propane	7,513	0	0	0	7,513	4,866,048
Compressed Natural Gas	0	0	0	0	0	0
Ethanol Blend	0	0	0	0	0	0
Total	316,522	317,533	283,171	227	917,453	-

Notes and References:

- Total Annual Vehicle Kilometres Travelled for 2009 was provided by HRM.
- The following assumptions were made:
 - Total daily car trips were assumed to be the same for weekdays and weekends
 - Total distance is based on the route taken between zone A and B in congested and uncongested conditions
 - Peak travel period are 6-9am and 3-6pm
 - Weekdays are based on 250 days per year
 - Weekends include holidays

If modeled VKT data is not available for your community, consider the following option to estimate this total. VKT can be estimated by looking at the number of households in your community

Number of households	
Average vehicles per household	1.37
Average distance per vehicle	17,427
Estimated annual VKT	0

Percentage Breakdown of VKT by Vehicle Type and Fuel (%)

	Cars	Light Truck	Heavy Truck	Bus	Total
Gasoline	53.17%	32.67%	1.20%	0.00%	87.04%
Diesel	0.15%	0.93%	10.59%	0.01%	11.68%
Propane	1.28%	0.00%	0.00%	0.00%	1.28%
Compressed Natural Gas	0.00%	0.00%	0.00%	0.00%	0.00%
Ethanol Blend (10%)	0.00%	0.00%	0.00%	0.00%	0.00%
Total	0.546	0.336	0.1179	0.0001	100.00%

	Cars	Light Truck	Heavy Truck	Bus
Gasoline	9	14.7	31.5	35.7
Diesel	7.7	12.5	34.5	32
Propane	14.4	15.3	0	0
Compressed Natural Gas**	5.4	8.3	0	0
Ethanol Blend (10%)	8.9	13.2	0	0

* Efficiencies are from NR Can 2007 Vehicle Survey and BC Ministry of the Environment 2011 Methodology for Reporting BC Public Sector Greenhouse Gas Emissions

** expressed in kg/100km

Option 2: Fuel Sales

Description: Insert comment here. (ie. Based on fuel sales at all local stations)

eCO₂ Emissions (t)

Fuel	Total Fuel Used (L)	Total Emissions (t CO ₂ e)	Energy (GJ)
Gasoline		0.00	0.00
Diesel		0.00	0.00
Propane		0.00	0.00
Compressed Natural Gas		0.00	#N/A
Ethanol Blend (10%)		0.00	#N/A
Biodiesel (B5)		0.00	0.00
Biodiesel (B10)		0.00	0.00
Biodiesel (B20)		0.00	0.00
Total	-	0	#N/A

Community Waste

Community Inventory

Tonnes (t) waste to landfill in 2009: 140,560

eCO₂ Emissions from waste in landfill in 2009 (t): 67,708

Methane Emissions (t) in 2009 from decay over time (1999-2009): 2,000

eCO₂ (t) Emissions in 2009 from decay over time (1999-2009): 42,000

Total CO₂e (t) emissions in 2009 from waste to landfill and from decay: 109,708

Notes and References:

1. Residential waste totals (2009/2010 fiscal year) were obtained from a spreadsheet from the Division Planning Coordinator at HRM Solid Waste Resources, Transportation & Public Works
2. Methane Emissions from decay over time were estimated using the IPCC Waste Model, available at: <http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol5.html>
3. eCO₂ emissions from decay over time were calculated by multiplying the methane emissions by 21 (the Global Warming Potential of methane, as published by IPCC in their Third Assessment Report)

Community Inventory Summary

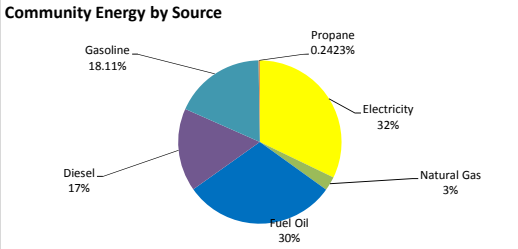
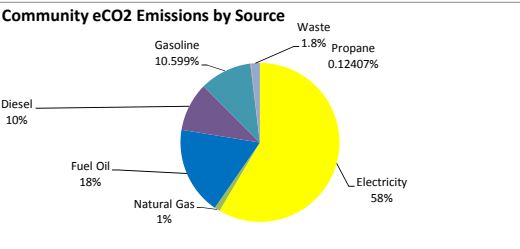
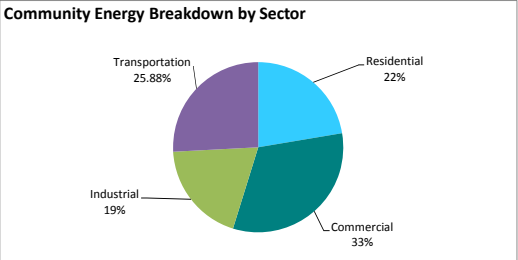
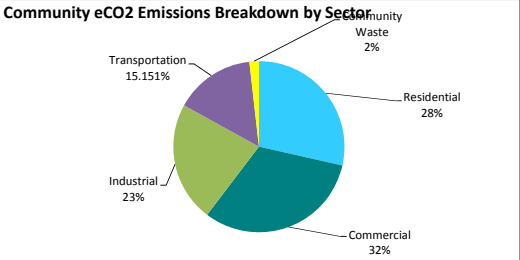
Energy Usage and eCO₂ Emissions by Sector

Sector	Energy (GJ)	Total eCO ₂ (t)
Residential	11,366,947.38	1,726,027
Commercial	16,488,460.85	1,928,891
Industrial	9,822,228.43	1,373,495
Transportation	13,158,183.83	917,453
Community Waste		109,708
Total	50,835,820.49	6,055,574

Energy Usage and eCO₂ Emission by Source

Energy Type	Total Use	Energy (GJ)	Total eCO ₂ (t)
Electricity	4,543,315.432	16,355,936	3,543,786
Natural Gas	36,061,110	1,385,828	68,611
Fuel Oil	396,717.184	15,392,627	1,085,083
Diesel	218,534.729	8,369,880.11	599,039.70
Gasoline	263,096.856	9,208,389.96	641,832.67
Propane	4,866,048	123,159.67	7,513.41
Waste	-	-	109,708
Total	5,462,591,359	50,835,820.49	6,055,573.80

Municipality: *Halifax Regional Municipality (HRM)*
Inventory Year: 2009



Tonnes eCO₂/unit of fuel

TypeName	BaseUnit	EnergyCoefficient	eCO ₂ Coefficient (t)	CO ₂ Coefficient	N ₂ OCoefficient	CH ₄ Coefficient
Alta Bitum. Coal	(tonnes)	30.4	1.7		0.00011	1.50E-05
B.C. Bitum. Coal	(tonnes)	30.4	1.7		0.00011	1.50E-05
CNG	(litres)	0.007612	0.001695	0.002725	0.00E-08	1.29E-05
Coal - Anthracite	(tonnes)	27.7	2.39		0.00011	1.50E-05
Coal - Cdn Bitum.	(tonnes)	27.7	2.765488		0.000120688	1.65E-05
Coal - Lignite	(tonnes)	15	1.49		0.00011	1.50E-05
Coal - Sub-Bitum.	(tonnes)	18.3	1.74		0.00011	1.50E-05
Coal - U.S. Bitum.	(tonnes)	29	2.46		0.00011	1.50E-05
Coke	(tonnes)	28.83	2.48		0.00011	1.50E-05
Diesel (mobile/road)	(litres)	0.03868	0.002683	0.002663	5.10E-08	2.20E-07
District Energy	(GJ)	1	0.05847		0	0
Electricity (2000)	(MWh)	3.6	0.190	0.18	4.00E-06	1.00E-05
Ethanol Blend (10%)	(litres)	0.03244	0.002196		8.50E-07	0
Fuel Oil	(litres)	0.03868	0.002735	0.002725	3.10E-08	2.60E-08
Gasoline (mobile/road)	(litres)	0.03466	0.002440	0.002289	4.70E-07	2.30E-07
Heavy Fuel Oil	(litres)	0.04173	0.003145	0.003124	6.40E-08	5.70E-08
Kerosene	(litres)	0.03768	0.002544	0.002534	3.10E-08	2.60E-08
Landfill Gas Electricity	(GJ)	0.999955453	0		0	0
Landfill Methane	(GJ)	1	0		0	0
MSW	(GJ)	1	0		0	0
Man. Bitum. Coal	(tonnes)	30.4	2.52		0.00011	1.50E-05
N.B. Bitum. Coal	(tonnes)	27	2.23		0.00011	1.50E-05
N.S. Bitum. Coal	(tonnes)	28.5	2.3		0.00011	1.50E-05
Natural Gas	(cubic metres)	0.03806	0.00189		3.50E-08	3.70E-08
Propane	(litres)	0.02553	0.00154	0.00151	1.08E-07	2.70E-08
Solar	(GJ)	1	0		0	0
Wood	(cords)	25	0		0.22225	0.00075
Diesel (stationary)	(litres)		0.002790	0.002663	4.00E-07	1.33E-07
Biodiesel (B5)	(litres)		0.002549			
Biodiesel (B10)	(litres)		0.002415			
Biodiesel (B20)	(litres)		0.002147			
Ethanol (E85)	(litres)		0.000366			

SAR
GWP 100 year

CO ₂	1
CH ₄	21
N ₂ O	310
SF ₆	23900

Notes:

- Unless otherwise stated, all values are taken from Canada's National Inventory Report (NIR), 1990-2010. The report is available here: <http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=492D914C-2EAB-47AB-A045-C62B2CDACC29>
- The emissions factor for diesel (mobile combustion) is taken from Canada's NIR (Annex 8). Assumes light-duty diesel vehicles (LDDVs) with 'Advanced Control' (i.e. Model years 1996-2003). [2,663 g CO₂ + 0.22 g CH₄ + 0.051 g N₂O = 0.00268 tonnes eCO₂/L].
- The emissions factor for gasoline (mobile combustion) is taken from Canada's NIR (Annex 8). Assumes both light-duty gasoline vehicles (LDGVs) and light-duty gasoline trucks (LDGTs) with 'Tier 1: 1994-2003'.
- Every District Energy (DE) system is unique, please enter an emission factor for the local DE system in the yellow cell above to accurately calculate the emissions
- The emissions factor for stationary diesel refers to diesel that is not used for road transportation.
- All emission factors from mobile source are tailpipe emissions and do not take into account life cycle analysis

kg/kWh

National Inventory Report - Environment Canada 1990-2010

Electricity eCO₂ Coefficients, by Province

InventoryYear	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland	Northwest Territories	Nova Scotia	Nunavut	Ontario	Prince Edward Island	Quebec	Saskatchewan	Yukon
1990	0.980	0.017	0.023	0.370	0.045	0.340	0.760	0.340	0.200	1.260	0.014	0.810	0.190
1991	1.000	0.010	0.020	0.350	0.035	0.240	0.773	0.240	0.196	1.268	0.004	0.797	0.240
1992	1.004	0.020	0.010	0.391	0.041	0.190	0.785	0.190	0.197	1.471	0.007	0.878	0.190
1993	1.003	0.042	0.011	0.346	0.033	0.210	0.776	0.210	0.127	1.186	0.002	0.831	0.210
1994	0.970	0.037	0.011	0.392	0.019	0.230	0.754	0.230	0.103	1.500	0.003	0.876	0.230
1995	0.970	0.050	0.010	0.550	0.034	0.240	0.750	0.240	0.120	1.730	0.002	0.860	0.240
1996	0.992	0.006	0.010	0.393	0.032	0.220	0.722	0.220	0.135	2.222	0.002	0.863	0.220
1997	0.993	0.012	0.007	0.513	0.029	0.260	0.739	0.260	0.172	1.429	0.002	0.901	0.260
1998	0.970	0.026	0.030	0.512	0.023	0.280	0.747	0.280	0.232	3.333	0.010	0.909	0.280
1999	0.956	0.010	0.020	0.453	0.020	0.140	0.739	0.140	0.237	2.500	0.006	0.893	0.140
2000	0.910	0.033	0.032	0.470	0.019	0.190	0.840	0.190	0.290	1.150	0.003	0.820	0.060
2001	0.890	0.050	0.015	0.540	0.042	0.160	0.780	0.160	0.270	1.040	0.003	0.880	0.160
2002	0.880	0.014	0.017	0.530	0.043	0.110	0.640	0.110	0.260	0.760	0.002	0.850	0.110
2003	0.950	0.015	0.038	0.470	0.038	0.110	0.720	0.110	0.280	0.680	0.010	0.820	0.110
2004	0.920	0.023	0.014	0.490	0.032	0.110	0.840	0.110	0.200	0.380	0.009	0.860	0.110
2005	0.850	0.028	0.014	0.480	0.028	0.350	0.930	0.350	0.230	0.170	0.005	0.740	0.050
2006	0.950	0.031	0.012	0.440	0.016	0.390	0.860	0.390	0.190	0.080	0.006	0.730	0.050
2007	0.980	0.022	0.014	0.450	0.026	0.400	0.870	0.400	0.210	0.100	0.010	0.720	0.050
2008	0.930	0.031	0.012	0.510	0.021	0.390	0.780	0.390	0.170	0.030	0.003	0.680	0.050
2009	0.860	0.031	0.005	0.570	0.021	0.380	0.780	0.380	0.100	0.020	0.003	0.760	0.040
2010	0.840	0.030	0.002	0.510	0.017	0.320	0.810	0.320	0.130	0.003	0.002	0.770	0.050
2011	0.840	0.030	0.002	0.510	0.017	0.320	0.810	0.320	0.130	0.003	0.002	0.770	0.050
2012	0.840	0.030	0.002	0.510	0.017	0.320	0.810	0.320	0.130	0.003	0.002	0.770	0.050

All emission factors have been updated from the National Inventory Report 1990-2010 - Greenhouse Gas Sources and Sinks in Canada. Annex 13. Released April 11, 2012

Available to download from: <http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=492D914C-2EAB-47AB-A045-C62B2CDACC29>

All **red text** reflects emissions factors that have been changed since the last National Inventory Report.

Emission factors for 2011 and 2012 are assumed to be same as the latest year with available data (2010)

kg/kWh

InventoryYear	CH4Coefficient												
	Ontario	British Columbia	Manitoba	New Brunswick	Newfoundland	Northwest Territories	Nova Scotia	Nunavut	Ontario	Prince Edward Island	Quebec	Saskatchewan	Yukon
1990	0.00019	3.99E-06	5.39E-06	6.86E-05	4.31E-05	1.67E-05	0.000124	1.72E-06	3.39E-05	9.11E-05	2.37E-06	0.000201	1.72E-06
1991	0.000191	3.66E-06	3.75E-06	6.92E-05	3.32E-05	1.75E-05	0.000128	1.72E-06	2.92E-05	8.91E-05	7.94E-07	0.000199	1.72E-06
1992	0.00019	7.79E-06	3.28E-06	7.93E-05	3.73E-05	3.11E-05	0.000132	1.72E-06	2.85E-05	8.98E-05	1.64E-06	0.000212	1.72E-06
1993	0.000174	1.18E-05	3.01E-06	6.47E-05	3.65E-05	2.32E-05	0.000128	1.41E-05	1.84E-05	7.96E-05	4.34E-07	0.0002	1.41E-05
1994	0.000172	1.44E-05	2.36E-06	6.28E-05	1.76E-05	2.75E-05	0.000114	2.09E-05	1.47E-05	7.49E-05	1.43E-07	0.00021	2.09E-05
1995	0.000173	1.20E-05	3.91E-06	6.74E-05	3.20E-05	0.000972	0.000111	0.000358	1.65E-05	0.0001	8.27E-07	0.000204	0.000358
1996	0.000169	6.45E-06	5.09E-06	6.25E-05	3.70E-05	0.000445	0.000113	0.000156	1.89E-05	8.07E-05	8.06E-07	0.000208	0.000156
1997	0.000167	6.47E-06	2.00E-06	8.41E-05	2.71E-05	0.000701	0.000106	0.000504	2.49E-05	9.21E-05	7.89E-07	0.00019	0.000504
1998	0.000167	6.47E-06	2.00E-06	8.41E-05	2.71E-05	0.000701	0.000106	0.000504	2.49E-05	9.21E-05	7.89E-07	0.00019	0.000504
1999	0.000159	6.17E-06	8.85E-07	7.72E-05	5.97E-06	0.000337	7.97E-05	0.00015	3.47E-05	8.68E-05	2.42E-06	0.000188	0.00015
2000	0.000157	6.25E-06	5.98E-07	8.10E-05	0.000254	5.87E-05	5.87E-05	9.85E-05	4.22E-05	9.22E-05	1.68E-06	0.000176	9.85E-05

kg/kWh

Inventory Year	N ₂ O Coefficient												
	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland	Northwest Territories	Nova Scotia	Nunavut	Ontario	Prince Edward Island	Quebec	Saskatchewan	Yukon
1990	0.00942	0.000264	0.000286	0.0042	0.00291	0.00446	0.00677	0.00184	0.0017	0.00572	0.000154	0.0099	0.00184
1991	3.06E-05	7.53E-05	6.55E-07	1.39E-05	7.20E-06	1.50E-05	2.23E-05	0.00184	0.000106	1.82E-05	1.79E-05	6.73E-05	0.00184
1992	0.00945	0.00044	0.000178	0.00488	0.00248	0.00763	0.00721	0.00184	0.0015	0.00556	0.000109	0.0105	0.00184
1993	0.00866	0.000645	0.00016	0.00394	0.00244	0.00573	0.00692	0.00203	0.000922	0.00504	3.85E-05	0.00988	0.00203
1994	0.00856	0.000766	0.000131	0.00364	0.00112	0.00711	0.00592	0.00161	0.000744	0.00455	2.29E-05	0.0104	0.00161
1995	0.00848	0.000585	0.000131	0.00149	0.000205	0.0221	0.00447	0.00814	0.000808	0.00213	2.81E-05	0.0101	0.00814
1996	0.00826	0.000243	0.000171	0.00159	0.000342	0.0103	0.00494	0.00355	0.000923	0.00193	2.42E-05	0.0101	0.00355
1997	0.00818	0.000286	6.86E-05	0.00159	0.000205	0.0161	0.00456	0.0114	0.00122	0.00167	2.71E-05	0.00923	0.0114
1998	0.00798	0.000356	0.000296	0.00172	0.000128	0.0189	0.00345	0.00515	0.0017	0.00174	7.89E-05	0.00962	0.00515
1999	0.00787	8.21E-05	1.65E-05	0.00152	3.82E-05	0.00782	0.00259	0.00341	0.00157	0.00018	1.56E-05	0.00909	0.00341
2000	0.00526	0.0002	1.12E-05	0.000988	0.00405	0.00125	0.00185	0.00152	0.00141	0.00103	4.25E-05	0.00585	0.00152

Province	Newfoundland and Labrador	Prince Edward	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Northwest Territories	Yukon	Nunavut
Emission Factor (tonnes eCO ₂ /m ³)	0.001903	0.001903	0.001903	0.001903	0.001890	0.001891	0.001889	0.001832	0.001930	0.001928	0.002466	0.002466	0.002466

↑: The eCO₂ emission factors for natural gas are for marketable gas (fuel consumed by the electric utilities, manufacturing industries, residential/commercial and transportation sectors), and are taken from Canada's National Inventory Report (NIR), 1990-2010 (Annex 8). They have not been broken down by year as fuel properties, such as carbon content, density, heating value, and to a lesser extent the combustion technology, remain relatively constant over time.

No data was available for Yukon and Nunavut. Assumed emissions factor similar to NWT.
No data was available for PEI; Assumed emission factor similar to other Atlantic provinces

GHG Emission Factors for Natural Gas

Province	CO ₂ (tonnes/m ³)	CH ₄ (g/m ³)	N ₂ O (g/m ³)	CO ₂ e (tonnes/m ³)
Newfoundland and Labrador	0.001891	0.037	0.035	0.001903
Prince Edward Island	0.001891	0.037	0.035	0.001903
Nova Scotia	0.001891	0.037	0.035	0.001903
New Brunswick	0.001891	0.037	0.035	0.001903
Quebec	0.001878	0.037	0.035	0.001890
Ontario	0.001879	0.037	0.035	0.001891
Manitoba	0.001877	0.037	0.035	0.001889
Saskatchewan	0.001820	0.037	0.035	0.001832
Alberta	0.001918	0.037	0.035	0.001930
British Columbia	0.001916	0.037	0.035	0.001928
Northwest Territories	0.002454	0.037	0.035	0.002466
Yukon	0.002454	0.037	0.035	0.002466
Nunavut	0.002454	0.037	0.035	0.002466

←: The CH₄ and N₂O emission factors are also taken from Canada's NIR (Annex 8). These values have been incorporated in the eCO₂ figure listed above. The 0.037 and 0.035 are values associated with Residential, Construction, Commercial/Institutional, and Agricultural uses of natural gas. They are also very similar to the values listed for Manufacturing Industries and Industrial use of natural gas.

Waste Share Breakdown

Waste to Lanfill	Waste Share (%)
Paper Products	38
Food Waste	13
Plant Debris	10
Wood/Textiles	4
All Other Waste	35

Tonnes of eCO₂/tonne of waste: 0.4817

EPA uncompacted mixed solid waste volume to weight conversion: 150-300lbs/y³ MSW = average of 225lbs/y³

www.epa.gov/osw/conservation/tools/recmeas/docs/guide_b.pdf

Solid Waste Association of North America, Manager of Landfill Operations Training and Certification Course. January 1989. Revised June 1991 and October 1994.

Converted to metric units

Tonnes of waste per cubic yard: 0.1021

VKT Averages

National

Year	Average distance travelled by light vehicles (km)	Light vehicles per household
2000	16,944	1.43
2001	16,877	1.42
2002	16,782	1.44
2003	16,334	1.44
2004	16,036	1.44
2005	15,976	1.44
2006	16,015	1.45
2007	15,794	1.46
2008	15,153	1.48
2009	15,366	1.47

Provincial

Province	2009	
	Average distance travelled by light vehicles (km)	Light vehicles per household
Alberta	16,144	1.87
British Columbia	12,892	1.43
Manitoba	14,963	1.42
New Brunswick	16,118	1.55
Newfoundland and Labrador	15,056	1.40
Northwest Territories	15,366	1.49
Nova Scotia	17,427	1.37
Nunavut	15,366	1.49
Ontario	16,196	1.45
Prince Edward Island	15,091	1.44
Quebec	14,834	1.35
Saskatchewan	15,338	1.79
Territories	15,366	1.49
Yukon	15,366	1.49
Canadian Average	15,366	1.47

Taken from Figure 10, 11, 14, 15, and 22 of NR Can 2009 Vehicle Survey

<http://oee.nrcan.gc.ca/publications/statistics/cvs09/pdf/cvs09.pdf>