

Toronto Eaton Centre  
250 Yonge Street, Toronto  
Greenhouse Gas Inventory Report

March 4, 2013



## TABLE OF CONTENTS

1	SUMMARY .....	1
2	PURPOSE .....	2
3	ORGANIZATION PROFILE .....	2
4	GHG INVENTORY BOUNDARIES .....	3
4.1	Organizational Boundaries.....	3
4.2	Operational Boundaries .....	4
4.2.1	Direct GHG Emissions.....	4
4.2.2	Energy Indirect GHG Emissions.....	5
4.2.3	Other Indirect GHG Emissions.....	6
4.2.4	GHG Removals and Biomass Combustion.....	6
4.3	Base-year GHG Inventory .....	6
5	INVENTORY QUANTIFICATION .....	6
5.1	Natural Gas .....	7
5.1.1	Activity Data .....	7
5.1.2	Emission Factor .....	7
5.2	Refrigerant R-123 and R-22 .....	7
5.2.1	Activity Data .....	7
5.2.2	Emission Factor .....	7
5.3	Diesel .....	8
5.3.1	Activity Data .....	8
5.3.2	Emission Factor .....	8
5.4	Electricity .....	8
5.4.1	Activity Data .....	8
5.4.2	Emission Factor .....	8
6	GHG INVENTORY RESULTS.....	9
6.1	Emissions .....	9
6.2	Emissions Reductions .....	11
6.3	Inventory Uncertainty .....	12
7	QUALITY MANAGEMENT .....	12
7.1	Information Management.....	12
7.2	Document Retention and Record Keeping .....	14
8	GHG INVENTORY VERIFICATION.....	14

## APPENDICES

- Appendix A – Greenhouse Gas Inventory
- Appendix B – Activity Data and Emission Factors
- Appendix C – Standard Reporting Declaration

## 1 SUMMARY

The Cadillac Fairview Corporation (Cadillac Fairview) is registering 250 Yonge St., Toronto in the Canada Green Building Council (CaGBC) LEED Canada Existing Building: Operation and Maintenance (LEED-EB) Program and is targeting the rating system's Energy and Atmosphere Credit 6: Emission Reduction Reporting (EAc6)<sup>1</sup>. To qualify for EAc6, Cadillac Fairview is reporting the building's greenhouse gas (GHG) emissions in a public GHG registry.

This report details 250 Yonge St.'s GHG inventory. A GHG inventory lists the sources<sup>2</sup> of GHG emissions and the quantity of emissions released from each source during the reporting period<sup>3</sup>.

250 Yonge St. emitted 2,368 tonnes of CO<sub>2</sub>e for the April 1, 2011 to March 31, 2012 reporting year. Direct GHG (Scope 1) emissions account for 37% of the reported emissions from building energy use. Energy indirect GHG (Scope 2) emissions account for 63% of the reported emissions. No indirect GHG emissions (Scope 3) were reported. Please refer to Section 6 and Appendix A for 250 Yonge St.'s detailed GHG inventory.

The building is owned and managed by Cadillac Fairview, which has retained Halsall Associates (Halsall) to manage 250 Yonge St.'s LEED submission. Loop Initiatives (Loop) is the agent to Cadillac Fairview and is responsible for the completion of 250 Yonge St.'s GHG inventory and reporting in accordance with CAN/CSA-ISO Standard 14064-1-06<sup>4</sup>. Halsall has provided Loop with property specific information to complete the Emissions Reduction credit submission. 3P Analysis and Consulting has been engaged to provide independent third party verification of the building's GHG inventory.

This report has been written in accordance with CAN/CSA-ISO Standard 14064-1-06 *Greenhouse Gases - Part 1: Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*. In addition, the team has referenced the World Resource Institute (WRI) / World Business Council for Sustainable Development (WBCSD) Standard: Greenhouse Gas

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<sup>1</sup> *LEED Canada for Existing Buildings: Operations and Maintenance 2009 Reference Guide*. 2009, Canadian Green Building Council.

<sup>2</sup> Examples of GHG sources include: boilers (natural gas combustion), electricity production (mixed fossil fuel combustion), etc.

<sup>3</sup> The reporting period is defined as the one year duration for which the quantity of GHG emissions from all sources is calculated.

<sup>4</sup> *CAN/CSA ISO 14064-1 Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*. March 2006, International Standards Organization.

Protocol: A Corporate Accounting and Reporting Standard<sup>5</sup> and CAN/CSA-ISO Standard 14064-3-06 *Greenhouse Gases - Part 3: Specification with Guidance for the Validation of Greenhouse Gas Assertions* as additional resources.

## 2 PURPOSE

Cadillac Fairview has made a commitment to incorporate sustainability in to the design and operation of this building. One important initiative is to participate in LEED-EB, which, among others, includes evaluating building energy, water efficiency and GHG emissions. To achieve LEED-EB credit EAc6, Cadillac Fairview is reporting 250 Yonge St.'s GHG emissions to the CSA CleanStart™ Registry.

## 3 ORGANIZATION PROFILE

250 Yonge St., located in Toronto, Ontario and built in 1991, is a 35-storey office tower with no levels of below grade parking. This building is owned and managed by Cadillac Fairview. 250 Yonge St. is part of the Toronto Eaton Centre complex.

As reported by Halsall, the office space gross floor area (GFA) is 812,638 sq.ft., which mainly includes office space. A fitness centre is also in the building.

As reported by Halsall:

- Ventilation:
  - Two make-up air units (MAUs) which condition the outdoor air prior to distributing it to the floor's compartmental units
  - The compartmental units with variable fan drives (VFDs) on each floor
  - The floor air distribution system is a variable air volume (VAV) system; pneumatic thermostats control the VAV boxes
- Heating:
  - Three boilers original to the building construction which supply hot water to each floor
  - Perimeter convection heaters which use the hot water to distribute heat on office floors
- Cooling:
  - Three chillers converted to use R-123 refrigerants which supply chilled water to each floor
  - Rooftop cooling tower

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<sup>5</sup> *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard*. March 2004. World Resources Institute and World Business Council for Sustainable Development.

- Lighting:
  - 4 ft. fixtures with T8 lamps
  - General Electric lighting control system

250 Yonge St. is occupied by 2,600 tenants. Figure 1 shows the breakdown by leased floor area of 250 Yonge St.'s tenants by industry sector.

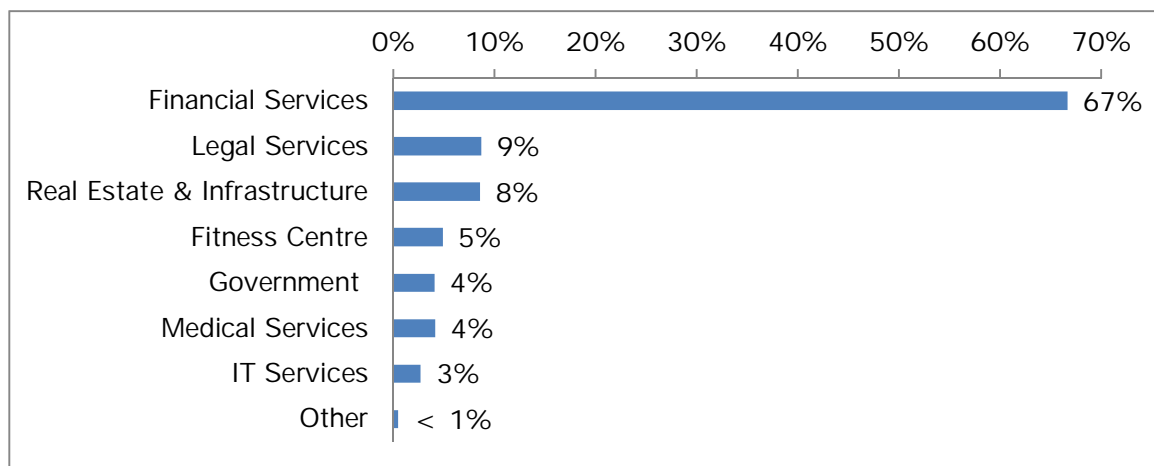


Figure 1: Breakdown of 250 Yonge St.'s Tenants by Industry Sector

## 4 GHG INVENTORY BOUNDARIES

### 4.1 Organizational Boundaries

For any GHG inventory, an organizational boundary is used to determine how GHG emissions are accounted for and reported. Typically, one of the following approaches is used<sup>6</sup>:

1. Equity share approach: accounts for GHG emissions based on share of equity in the operation
2. Financial control approach: accounts for GHG emissions based on the financial control over the operation
3. Operational control approach: accounts for GHG emissions based on the control of operations.

<sup>6</sup> *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard*. March 2004. World Resources Institute and World Business Council for Sustainable Development.

CAN/CSA-ISO Standard 14064-1-06 Section 4.1 states that the organization may use a different consolidation methodology where specific arrangements are defined by a GHG program or legal contract.

Since LEED-EB evaluates buildings rather than organizations, to meet EAc6 requirements the 250 Yonge St. building was used as a physical boundary, rather than using one of the organizational boundaries described above. As such, the emissions from the base building equipment and the tenant equipment (including energy and refrigerant GHG emissions) are included in the GHG inventory without taking into consideration whether Cadillac Fairview or the tenants have control or ownership. In addition, since LEED-EB credit EAc6 does not take transportation into consideration, emissions from building owned or leased vehicles are excluded from the inventory.

## 4.2 Operational Boundaries

Operational boundaries are defined to prevent double counting of reported emissions. These boundaries can be separated into the following three emission types:

### **Direct GHG emissions (Scope 1):**

Direct emissions within the organizational boundary are released from fuel combustion, refrigerant emissions, generation of electricity, steam, or heat in equipment, business travel or employee commuting in company owned or leased vehicles.

### **Energy Indirect GHG emissions (Scope 2):**

Indirect GHG emissions are released by the production of electricity, steam and/or chilled water, purchased for use in the building.

### **Other Indirect GHG emissions (Scope 3):**

Other indirect GHG emissions are released from activities outside of the organizational boundaries. They may include business travel, employee commuting, third party manufacture of materials and resources, outsourced services, and transmission and distribution losses from the electricity network.

### 4.2.1 Direct GHG Emissions

Direct GHG emissions released from sources at the building level include emissions from the combustion of natural gas and diesel, and the release of refrigerant gases.

Natural gas is supplied by Enbridge Gas Distribution (Enbridge). Consumption is measured from two main gas lines that are metered and service the Toronto Eaton Centre, including 250 Yonge St. To isolate 250 Yonge St.'s natural gas consumption from the rest of the complex, Cadillac Fairview owns a natural gas meter dedicated to this office tower. Carma Industries (Carma), who maintains this meter, electronically logs the meter readings and provides Cadillac Fairview with monthly meter reading reports. As reported in Hunter Facilities Management Inc. (HFM)'s energy breakdown calculations, all natural gas use is for space heating.

As reported by Halsall, three chillers containing refrigerant R-123 and two air handling units containing refrigerant R-22 are on site. Each chiller has a refrigerant charge of 1,200 lbs. (reported by Cadillac Fairview). R-123 and R-22 are not refrigerants that have been identified as having "global warming potential" (a.k.a. GWP) by the United Nations Intergovernmental Panel on Climate Change (IPCC) and therefore have not been included in the GHG inventory. Halsall confirmed that there were no PFCs or SF<sub>6</sub>s in the building.

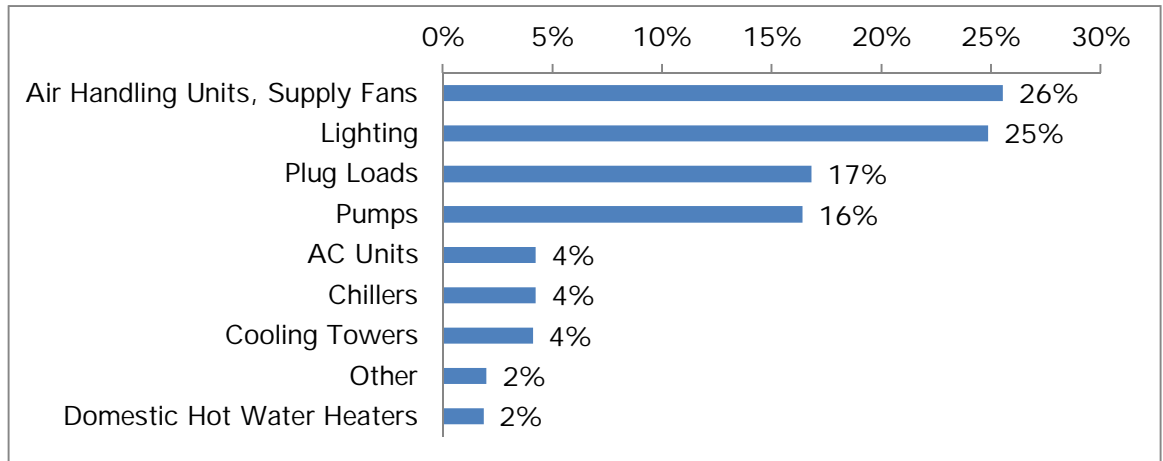
One diesel generator is used on-site for emergency power. It was last refilled in October 2011 and should be included in the GHG inventory for 2010 – 2011. No diesel data has been provided since October 2011, but consumption has been estimated based on data from April 2010 to October 2011 provided by Cadillac Fairview.

As transportation emissions are excluded in LEED-EB credit EAc6, direct emissions from Cadillac Fairview owned or leased vehicles are not included in the GHG inventory.

#### 4.2.2 Energy Indirect GHG Emissions

The GHG inventory includes 250 Yonge St.'s indirect GHG emissions inventory from electricity. Imported chilled water or steam is not used in the building.

Electricity at 250 Yonge St. is purchased from the Toronto Hydro Electric System (Toronto Hydro). Consumption is measured from one main meter that services the entire Toronto Eaton Centre, including 250 Yonge St. To correctly allocate electricity to the 250 Yonge St., Energy Profiles Ltd (Energy Profiles) has been retained by Cadillac Fairview to take meter readings from the Toronto Hydro meter for 250 Yonge St. As reported by HFM's energy breakdown calculations, the building's electricity breakdown is shown in Figure 2:



**Figure 2: Electricity Breakdown**

#### 4.2.3 Other Indirect GHG Emissions

Other indirect GHG emissions are not included as part of the GHG inventory.

#### 4.2.4 GHG Removals and Biomass Combustion

GHG removals or combustion of biomass are not present at 250 Yonge St.

### 4.3 Base-year GHG Inventory

Emissions are calculated for the accounting period April 1, 2011 to March 31, 2012 to meet LEED-EB's 12 month performance period requirement.

Since this is the first year that the 250 Yonge St. GHG emissions are calculated, this GHG inventory describes the building's "baseline"<sup>7</sup> emissions. Future annual inventories should be compared to this year to track the results of emissions reduction efforts.

## 5 INVENTORY QUANTIFICATION

The GHG inventory calculation requires two general types of data. As per CAN/CSA-ISO Standard 14064-1-06 Section 4.3.6, we obtained the appropriate "activity data" and "emission factor" to apply to the following equation:

$$\text{activity data} \times \text{emission factor} = \text{GHG emissions}$$

<sup>7</sup> The base year is the first reporting period for which a GHG inventory is reported.



Activity data was collected from site electricity and natural gas meter readings. Emission factors from Canada's National Inventory Report (1990-2010)<sup>8</sup> were used.

This methodology was chosen as it is impractical to directly measure GHG emissions in a situation like this.

## 5.1 Natural Gas

### 5.1.1 Activity Data

Activity data for natural gas is based on meter readings provided by Carma's monthly meter reading reports. Natural gas consumption is metered and reported in ft<sup>3</sup> and Loop converted the information into m<sup>3</sup>.

### 5.1.2 Emission Factor

Loop used the National Inventory Report (1990-2010)<sup>8</sup> natural gas emission factors to calculate 250 Yonge St.'s GHG emissions. Ontario-specific CO<sub>2</sub> emission factors from Part 2, Annex 8, Table A8-1 were used. Since CH<sub>4</sub> and N<sub>2</sub>O emissions are dependent on a specific sector rather than regional fuel properties, national commercial CH<sub>4</sub> and N<sub>2</sub>O data from Part 2, Annex 8, Table A8-2 were used.

The natural gas emission factor units are in metric tonnes of emission per m<sup>3</sup>.

## 5.2 Refrigerant R-123 and R-22

### 5.2.1 Activity Data

Activity data for refrigerants R-123 and R-22 has not been included in this report since R-123 and R-22 have not been identified by the UN's IPCC as having a GWP and are therefore not required to be reported.

### 5.2.2 Emission Factor

Loop used the ISO-14064-1:2006 Annex C refrigerant global warming potential (GWP) factors for 250 Yonge St.'s GHG calculations. The refrigerant GWP factor is a quantity without a physical unit.

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<sup>8</sup> *National Inventory Report (1990-2010) Greenhouse Gas Sources and Sinks in Canada*. April 2012, Environment Canada GHG division.

### 5.3 Diesel

#### 5.3.1 Activity Data

Activity data for diesel between October 2011 and March 2012 is based on the average consumption per month using April 2010 to October 2011 consumption reports provided by Cadillac Fairview. Cadillac Fairview has confirmed that they have not topped up any diesel since October 2011.

#### 5.3.2 Emission Factor

Loop used the National Inventory Report (1990-2010)<sup>8</sup> diesel emission factors. The calculations used CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emission factors from the National Inventory Report's Part 2, Annex 8, Table A8-4

The diesel emission factor is measured in metric tonnes emission per L.

### 5.4 Electricity

#### 5.4.1 Activity Data

Activity data for electricity is based on meter readings provided by Energy Profiles. Electricity consumption is metered and reported on by Energy Profiles in unadjusted kWh as required by Energy Star and this inventory.

#### 5.4.2 Emission Factor

Loop used the National Inventory Report (1990-2010)<sup>8</sup> electricity emission factors.

As Cadillac Fairview is reporting on only one building in Ontario, the calculations used provincial CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emission factors from the National Inventory Report Part 3, Annex 13, Table A13-7. The finalised 2009 emission factors found in the 2012 inventory are used. The 2010 emission factors are not used since they are still preliminary.

The electricity emission factor is measured in metric tonnes emission per kWh.

Published electricity grid emission factors do not account for Transmission and Distribution (T & D) losses. As per the Greenhouse Gas Protocol, companies that purchase electricity from a T & D grid but do not own any part of the system should not include T & D losses in a scope 2 inventory. For this reason, T & D losses have not been included in the calculations for 250 Yonge St.

Refer to Appendix B for summary of data collection sources and emission factor sources.

## 6 GHG INVENTORY RESULTS

### 6.1 Emissions

The total emissions from direct and indirect GHG emissions sources during the reporting year are 2,368 tonnes of CO<sub>2</sub>e. Building natural gas, diesel and electricity account for 100% of the 250 Yonge St.'s emissions. The breakdown is as shown in Figure 3. The emissions relate to the approximately 19,500,000 ekWh consumed over the course of the reporting year. The trending by month is shown in Figure 4.

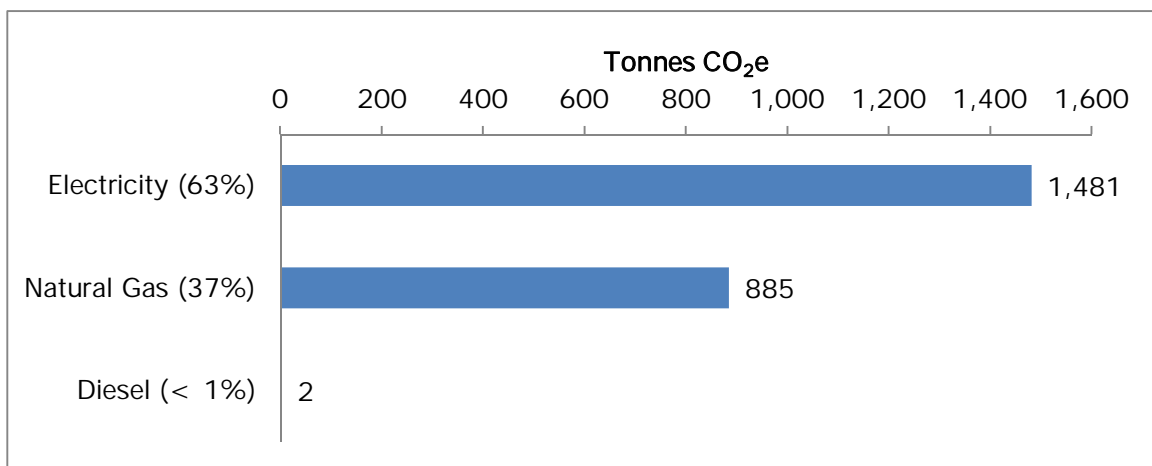
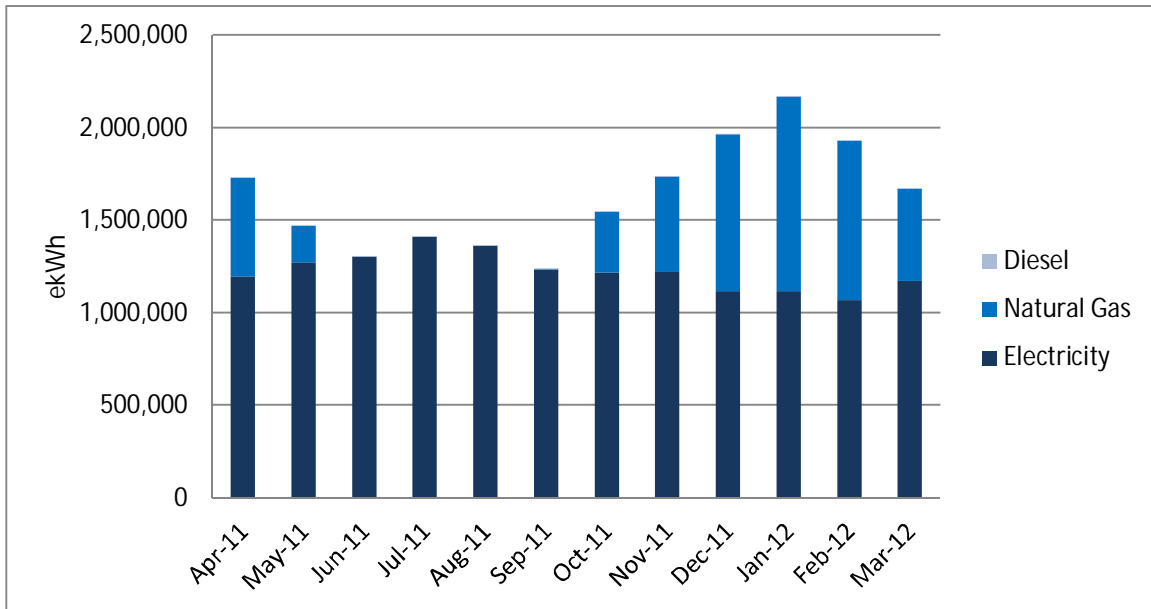


Figure 3: Greenhouse Gases by Emission Source

CO<sub>2</sub> emissions account for 100% of the total GHG emissions, while CH<sub>4</sub> and N<sub>2</sub>O emissions are negligible (they account for less than 1% of total GHG emissions). However, to meet CAN/CSA-ISO 14064-1-06<sup>9</sup> requirements, they have been included in the greenhouse gas inventory.

<sup>9</sup> CAN/CSA ISO 14064-1 Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. March 2006, International Standards Organization.



**Figure 4: Energy Consumption Breakdown**

With a carbon intensity of 2.9 kg CO<sub>2</sub>e/ sq.ft, 250 Yonge St.'s carbon performance is superior to the average Toronto office building in Loop's building performance database. The carbon intensity of comparable Toronto buildings ranges between 1.6 kg CO<sub>2</sub>e/ sq.ft. and 7.5 kg CO<sub>2</sub>e/ sq.ft., averaging at 3.9 kg CO<sub>2</sub>e/ sq.ft. (Figure 5).

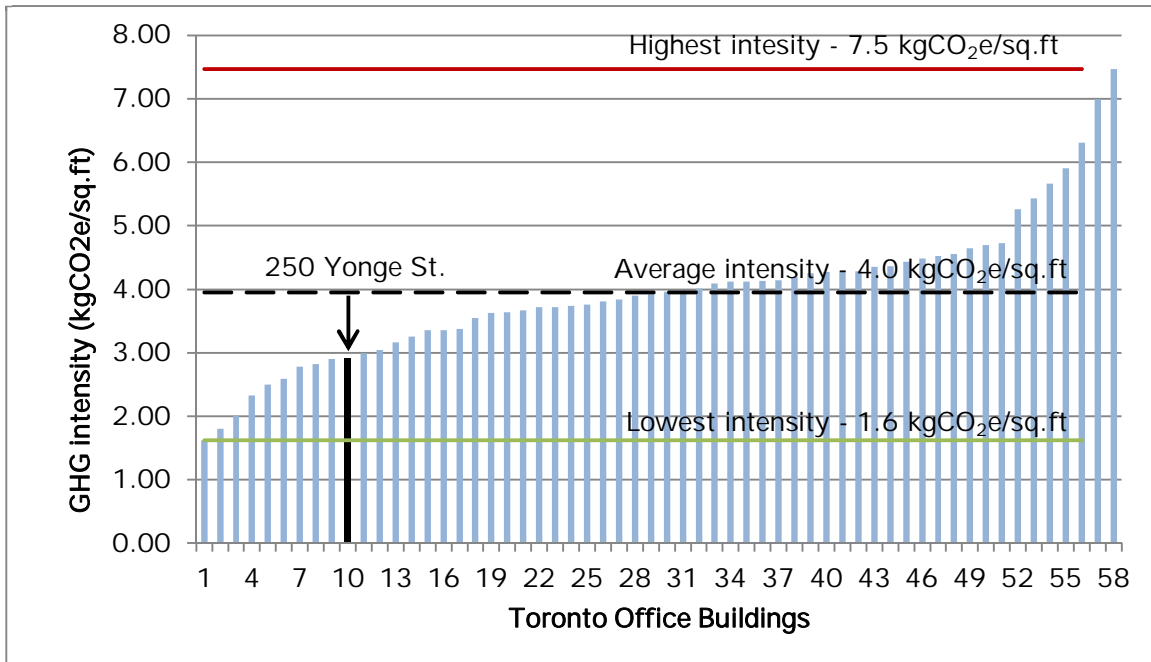


Figure 5: GHG Intensity for Comparable Toronto, Office Buildings<sup>10</sup>

## 6.2 Emissions Reductions

250 Yonge St. has focused on energy reduction measures to achieve GHG reductions. Even though energy reductions measures have been completed in the April 1, 2011 to May 31, 2012 reporting period, there has been an increase of 121 tonnes of CO<sub>2</sub>e (5%) compared to the previous 12 months.

HFM prepared an ASHRAE Level 1 Walk Through in which several strategies for energy conservation were recommended; Cadillac Fairview has since implemented the following suggested strategies:

- Utilize free cooling using outside air conditions
- Implement sequence of operations of condenser water pumps
- Reduce set point temperature in unoccupied floors to “unoccupied” setting

<sup>10</sup> Halsall Associates Ltd./Loop Initiatives Energy and Carbon database (2006-2009). Data is not weather normalized. Intensity is calculated using the Energy Star™ definition of gross floor area.

### 6.3 Inventory Uncertainty<sup>11</sup>

Table 1 presents our opinion of the level of uncertainty related to this GHG inventory. Our opinion of uncertainty is based on Table 3: Certainty Ranking for Common Emission Sources, found in “Measurement and Estimation Uncertainty of GHG Emissions” by the Greenhouse Gas Protocol Initiative.

**Table 1 – Uncertainty Ranking**

<b>Major Emission Category</b>	<b>Certainty Ranking</b>
Natural Gas	Fair – The meter is calibrated and verified by Carma Industries. Natural gas emission factors are less dependent on location and are almost always standard and accurate. Uncertainty may be derived from fluctuations in measurement equipment.
Refrigerant	High – Refrigerant leakage has not been included since R-123 and R-22 are refrigerants that have been identified as not having a GWP by the UN’s IPCC.
Diesel	Poor- The data provided was based on April 2010 to October 2011 consumption reports provided by Cadillac Fairview. No bills or other evidence were provided to verify this figure. To obtain an estimate of consumption for the period since October 2011, the average consumption per month was used.
Electricity	Fair – The meter is calibrated and verified by Energy Profiles Ltd. The emission factor is based on an annual provincial grid average, containing multiple fuel sources such as coal, natural gas, hydro and nuclear.

## 7 QUALITY MANAGEMENT

### 7.1 Information Management

In an effort to maintain a credible GHG inventory, roles and responsibilities were assigned to ensure consistency, accuracy, completeness, transparency and conformance with CAN/CSA-ISO Standard 14064-1-06.

<sup>11</sup> *Measurement and Estimation Uncertainty of GHG Emissions*. 2003, The Greenhouse Gas Protocol Initiative.

Name	Role	Company
Mike Ricketts	Director of Property Operations	The Cadillac Fairview Corporation

**Responsibilities:**

- To provide Halsall/Loop with required energy data (via natural gas, diesel and electricity bills)
- To provide Halsall with refrigerant data information
- To approve and sign the CSA CleanStart™ Registry application form

Name	Role	Company
Adrien Deveau	Project Principal	Halsall Associates <sup>12</sup>
Jason Manikel	Project Manager	Halsall Associates
Matthew Hirsch	Project Associate	Halsall Associates
Mark Pasini	Project Associate	Halsall Associates

**Responsibilities:**

- To provide Loop with required energy data (via natural gas, diesel and electricity bills)
- To provide Loop with refrigerant data information

Name	Role	Company
Francisca Quinn	Project Director	Loop Initiatives
Jia Shin	Project Manager	Loop Initiatives
Caryn Levin	Project Analyst	Loop Initiatives

**Responsibilities:**

- To request and analyze received activity data for acceptable accuracy, to collect appropriate emission factors and perform GHG calculations
- To produce a report consistent with both the CSA CleanStart™ Registry requirements and CAN/CSA-ISO Standard 14064-1-06

Name	Role	Company
Evan Jones	Independent Verifier	3P Analysis and Consulting

**Responsibilities:**

- To verify that the Loop14064-1 report meets CSA CleanStart™ Registry requirements and CAN/CSA-ISO Standard 14064-3-06
- To issue a verification statement

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<sup>12</sup> Halsall Associates is the LEED-EB Consultant for 250 Yonge St.

## 7.2 Document Retention and Record Keeping

The following activities, conducted by the property management company, maintain a credible GHG inventory and reporting:

- Cadillac Fairview should continue to record 250 Yonge St.'s natural gas, diesel and electricity cost and consumption
- Cadillac Fairview should keep this GHG inventory report for their records as it contains boundary definitions, emission factors, baseline year activity data, refrigerant history, and GHG emission quantities. This information is required should Cadillac Fairview choose to again register 250 Yonge St. with the CSA CleanStart™ Registry or externally report on its emissions

## 8 GHG INVENTORY VERIFICATION

Evan Jones from 3P Analysis and Consulting was engaged to provide independent third party verification as per CAN/CSA-ISO Standard 14064-3-06. The verification is completed at a reasonable level of assurance.

Loop prepared for 250 Yonge St.'s verification by:

- Engaging a third party verifier to provide a reasonable level of assurance
- Agreeing to verification objectives, scope, materiality and criteria with the verifier
- Reviewing each section using the CSA Registry checklist
- Using an internal review process for quality control for the inventory and the document
- Clarifying anomalous data with Halsall Associates

Third party verification is required by LEED-EB. This provides an impartial and objective review of the reported GHG emissions.

Reporting content summary for declarations to the CSA standard is presented in Appendix C.



We hope this report will assist Cadillac Fairview to successfully manage and further reduce 250 Yonge St.'s GHG emissions.

If you have any questions, please do not hesitate to contact us at (416) 644-1540 and (416) 644-0625.

Yours truly,  
**LOOP INITIATIVES INC.**



Jia Shin, M.Sc.(Eng.), P.Eng., LEED AP  
Project Manager



Francisca Quinn, M. Sc.  
Project Director

## APPENDIX A – GREENHOUSE GAS INVENTORY

### 1 Emissions

Table A1.1 – Summary by Source Greenhouse Gas Inventory  
Baseline Year (April 2011 to March 2012)

Source and Fuel	Quantity of Activity	Activity Unit	Emissions (t CO <sub>2</sub> e)
<b>DIRECT GHG EMISSIONS</b>			
Natural Gas			
Apr-11	51,650	m <sup>3</sup>	98
May-11	19,142	m <sup>3</sup>	36
Jun-11	0	m <sup>3</sup>	0
Jul-11	0	m <sup>3</sup>	0
Aug-11	0	m <sup>3</sup>	0
Sep-11	28	m <sup>3</sup>	< 1
Oct-11	31,828	m <sup>3</sup>	60
Nov-11	50,177	m <sup>3</sup>	95
Dec-11	82,119	m <sup>3</sup>	155
Jan-12	101,686	m <sup>3</sup>	192
Feb-12	83,421	m <sup>4</sup>	158
Mar-12	48,040	m <sup>5</sup>	91
<b>Total Natural Gas</b>	<b>468,092</b>	<b>m<sup>3</sup></b>	<b>885</b>
Diesel			
Apr-11	58	L	< 1
May-11	58	L	< 1
Jun-11	58	L	< 1
Jul-11	58	L	< 1
Aug-11	58	L	< 1
Sep-11	58	L	< 1
Oct-11	58	L	< 1
Nov-11	83	L	< 1
Dec-11	83	L	< 1
Jan-12	83	L	< 1
Feb-12	83	L	< 1
Mar-12	83	L	< 1
<b>Total Diesel</b>	<b>821</b>	<b>L</b>	<b>2</b>

ENERGY INDIRECT EMISSIONS			
Electricity – Mixed Fossil Fuels			
Apr-11	1,196,206	kWh	121
May-11	1,271,576	kWh	128
Jun-11	1,304,347	kWh	132
Jul-11	1,409,524	kWh	142
Aug-11	1,363,579	kWh	137
Sep-11	1,234,201	kWh	124
Oct-11	1,216,625	kWh	123
Nov-11	1,218,593	kWh	123
Dec-11	1,115,086	kWh	112
Jan-12	1,117,399	kWh	113
Feb-12	1,066,779	kWh	108
Mar-12	1,173,510	kWh	118
<b>Total Electricity</b>	<b>14,687,425</b>	<b>kWh</b>	<b>1,481</b>
<b>TOTAL OFFICE EMISSIONS</b>	<b>2,368</b>		
<b>CARBON INTENSITY</b>	<b>2.9 kg CO<sub>2</sub>e/sq.ft.</b>		
	<b>0.9 tCO<sub>2</sub>e/FTE</b>		

Table A1.2 – Summary by Emission Type Greenhouse Gas Inventory  
Baseline Year (April 2011 to March 2012)

Source and Fuel	Quantity of Activity	Activity Unit	CO <sub>2</sub> Emissions	CH <sub>4</sub> Emissions	N <sub>2</sub> O Emissions
<b>DIRECT GHG EMISSIONS</b>					
<b>Natural Gas</b>					
Breakdown Conversion	468,092	m <sup>3</sup>	880 tCO <sub>2</sub>	< 1 tCH <sub>4</sub>	< 1 tN <sub>2</sub> O
CO <sub>2</sub> e emissions	885	tCO <sub>2</sub> e	880 tCO <sub>2</sub> e	< 1 tCO <sub>2</sub> e	5 tCO <sub>2</sub> e
<b>Diesel</b>					
Breakdown Conversion	821	L	2 tCO <sub>2</sub>	< 1 tCH <sub>4</sub>	< 1 tN <sub>2</sub> O
CO <sub>2</sub> e emissions	2	tCO <sub>2</sub> e	2 tCO <sub>2</sub> e	< 1 tCO <sub>2</sub> e	< 1 tCO <sub>2</sub> e
<b>ENERGY INDIRECT EMISSIONS</b>					
<b>Electricity - Mixed Fossil Fuels</b>					
Breakdown Conversion	14,687,425	kWh	1,469 tCO <sub>2</sub>	< 1 tCH <sub>4</sub>	< 1 tN <sub>2</sub> O
CO <sub>2</sub> e emissions	1,481	tCO <sub>2</sub> e	1,469 tCO <sub>2</sub> e	3 tCO <sub>2</sub> e	9 tCO <sub>2</sub> e
<b>TOTAL Breakdown Conversion</b>			<b>2,351 tCO<sub>2</sub></b>	<b>&lt; 1 tCH<sub>4</sub></b>	<b>&lt; 1 tN<sub>2</sub>O</b>
<b>TOTAL CO<sub>2</sub>e Emissions</b>	<b>2,368</b>	<b>tCO<sub>2</sub>e</b>	<b>2,351 tCO<sub>2</sub>e</b>	<b>3 tCO<sub>2</sub>e</b>	<b>14 tCO<sub>2</sub>e</b>

Combined Emissions

Table A3.1 – Summary by Scope Greenhouse Gas Inventory  
Baseline Year (April 2011 to March 2012)

Emissions Scope	Emissions (t CO <sub>2</sub> e)	Proportion of emissions
Scope 1 (Energy Direct Emissions)	887	37%
Scope 2 (Energy Indirect Emissions)	1,481	63%
TOTAL emissions	2,368	100%

## APPENDIX B – ACTIVITY DATA AND EMISSION FACTORS

### 1 ACTIVITY DATA

Activity data was collected by Loop Initiatives using the methodology summarized in Table B1.

**Table B1 – Activity Data**

Activity Data	Collection Methodology
Natural Gas	Halsall Associates submitted 250 Yonge St.'s Carma Industries monthly natural gas meter reading reports to Loop Initiatives on behalf of Cadillac Fairview.
Refrigerant	Halsall Associates provided the number of chillers and air handling units and their respective refrigerant charge and confirmed that no PFCs or SF <sub>6</sub> s are present on the premises on behalf of Cadillac Fairview. Note the type of refrigerant used by the chillers and air handling units are refrigerants that have been identified as not having GWP, as per the IPCC (United Nations).
Diesel	Halsall Associates submitted April 2010 to October 2011 diesel usage data to Loop Initiatives on behalf of Cadillac Fairview.
Electricity	Halsall Associates submitted 250 Yonge St.'s Energy Profiles Ltd monthly electricity meter readings to Loop Initiatives on behalf of Cadillac Fairview.

## 2 EMISSION FACTORS

Table B2 summarizes the emission factors and sources used in the calculations completed for the 250 Yonge St.'s GHG inventory.

**Table B2 – Emission Factors**

Emission Source	Emission Factor	Source of Emissions Factor
Natural gas (Carbon Dioxide) (Ontario)	1.879 kg/m	Canada's National Inventory Report, 2012, Part 2, Annex 8, Table A8-1
Natural gas (Methane) (Ontario)	0.000037 kg/m	Canada's National Inventory Report, 2012, Part 2, Annex 8, Table A8-2
Natural gas (Nitrous Oxide) (Ontario)	0.000035 kg/m	Canada's National Inventory Report, 2012, Part 2, Annex 8, Table A8-2
Electricity (Carbon Dioxide) (Ontario): 2009	100 g CO <sub>2</sub> /kWh	Canada's National Inventory Report, 2012, Part 3, Annex 13, Table A13-7 (most recent year: 2009)
Electricity (Methane) (Ontario): 2009	0.01 g CH <sub>4</sub> /kWh	Canada's National Inventory Report, 2012, Part 3, Annex 13, Table A13-7 (most recent year: 2009)
Electricity (Nitrous Oxide) (Ontario): 2009	0.002 g N <sub>2</sub> O/kWh	Canada's National Inventory Report, 2012, Part 3, Annex 13, Table A13-7 (most recent year: 2009)
Diesel (Carbon Dioxide)	2663 g CO <sub>2</sub> /L	Canada's National Inventory Report, 2012, Part 2, Annex 8, Table A8-4
Diesel (Methane)	0.133 g CH <sub>4</sub> /L	Canada's National Inventory Report, 2012, Part 2, Annex 8, Table A8-4
Diesel (Nitrous Oxide)	0.4 g N <sub>2</sub> O/L	Canada's National Inventory Report, 2012, Part 2, Annex 8, Table A8-4
Carbon Dioxide Conversion (100-yr)	1	CAN/CSA ISO 14064-1 Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. Annex C. March 2006, International Standards Organization.
Methane Conversion (100-yr)	21	
Nitrous Oxide Conversion (100-yr)	310	

## APPENDIX C – STANDARD REPORTING DECLARATION

### 1 REPORTING INFORMATION

The following table provides a summary of the reporting information required by CAN/CSA-ISO Standard 14064-1-06 provided in the “declaration” column is Cadillac Fairview’s assertion for 250 Yonge St.’s inventory.

Note: This GHG inventory report is the first GHG inventory developed for 250 Yonge St. on behalf of Cadillac Fairview.

**Table C1 – Reporting Information**

No.	CSA Reporting Requirement	Declaration
A	Description of the reporting organization.	The Cadillac Fairview Corporation is 250 Yonge St. property owner and manager. Cadillac Fairview has registered the building in the Canada Green Building Council’s LEED-EB Program and is targeting LEED-EB Energy and Atmosphere credit 6: Emission Reduction Reporting. As part of Cadillac Fairview’s initiative to green this 35 floor building, they are reporting the 250 Yonge St. greenhouse gas (“GHG”) emissions with the CSA Registry. 250 Yonge St. emits GHG’s through their use of natural gas, diesel and electricity. The total gross floor area of the building is approximately 813,000 sq.ft. (excluding parking) and the building occupancy is approximately 2,600 people (tenants).
B	Person responsible	Francisca Quinn, Project Director and Agent to Mike Ricketts, Director of Property at Cadillac Fairview.
C	Reporting period covered	April 1, 2011 to March 31, 2012
D	Documentation of organizational boundary.	“Physical facility approach” defined by the LEED-EB Canada Energy and Atmosphere credit 6 Emissions Reduction Reporting Program; this is a different consolidation methodology than typically defined, but is still within CSA/ISO14064-1 guidelines.
E	Direct GHG emissions, quantified separately for each GHG, in tonnes of CO <sub>2</sub> e.	See Appendix A.
F	A description of how CO <sub>2</sub> emissions from the combustion of biomass are treated in the GHG inventory.	Not applicable to this inventory.

No.	CSA Reporting Requirement	Declaration
G	If quantified, GHG removals, quantified in tonnes of CO <sub>2</sub> e.	Not applicable to this inventory.
H	Explanation for the exclusion of any GHG sources or sinks from quantifications.	This inventory includes all energy indirect GHG emissions. GHG sinks are not applicable to this inventory.
I	Energy indirect GHG emissions associated with the generation of imported electricity, heat or steam, quantified separately in tonnes of CO <sub>2</sub> e.	See Appendix A.
J	The historical base year selected and the base-year GHG inventory.	Base year: April 1, 2011 to March 31, 2012. This baseline year was chosen due to the performance period requirements of the Canada Green Building Council LEED-program. It is a starting point for future GHG inventories. See Appendix A for the CSA CleanStart Registry's base year GHG emission summary.
K	Explanation of any change to the base year or other historical GHG data, and any recalculation of the base year or other historical GHG inventory.	Not applicable to this inventory.
L	Reference to, or description of, quantification methodologies including reasons for their selection.	Calculations are based on GHG activity data multiplied by GHG emission factors.
M	Explanation of any change to quantification methodologies previously used.	Not applicable to this inventory.
N	Reference to, or documentation of, GHG emission or removal factors used.	See Appendix B for details.
O	Description of the impact of uncertainties on the accuracy of the GHG emissions and removals data.	Uncertainties in calculations include error margins in emissions factors and measured activity data. Emission factors were determined by the most local and credible source available at the time of reporting. Activity data is based on natural gas, diesel and electricity consumption received by Halsall on behalf of Cadillac Fairview.



No.	CSA Reporting Requirement	Declaration
P	A statement that the GHG report has been prepared in accordance with ISO Standard 14064-1.	This report has been prepared in accordance with the following standard: CAN/CSA-ISO Standard 14064-1-06 - Part 1: Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals.
Q	A statement describing whether the GHG inventory, report or assertion has been verified, including the type of verification and level of assurance achieved	Evan Jones at 3P Analysis and Consulting will provide third party verification for this GHG inventory report and will provide a reasonable level of assurance. See the third party verification report for further details.