

**Suncor Energy  
Centre  
GHG Inventory  
Report  
2010  
- FINAL -**

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# 1 SUMMARY

This report details the greenhouse gas (GHG) emissions inventory of the Suncor Energy Centre, Calgary, Alberta. This GHG emissions inventory lists the sources of GHG emissions and the quantity of emissions released from each source during the reporting period.

Suncor Energy Centre is owned and managed by Brookfield Properties. Brookfield Properties is registering the Suncor Energy Centre in the Canada Green Building Council's (CaGBC) LEED Canada EB: O&M Program (LEED EB) and is targeting this rating system's Energy and Atmosphere Credit 6: Emission Reduction Reporting (EAc6). Brookfield Properties will use the data from this report to disclose the building's emissions in the CSA CleanStart™ Registry and also as part of Suncor Energy Centre's LEED EB Credit EAc6 documentation package.

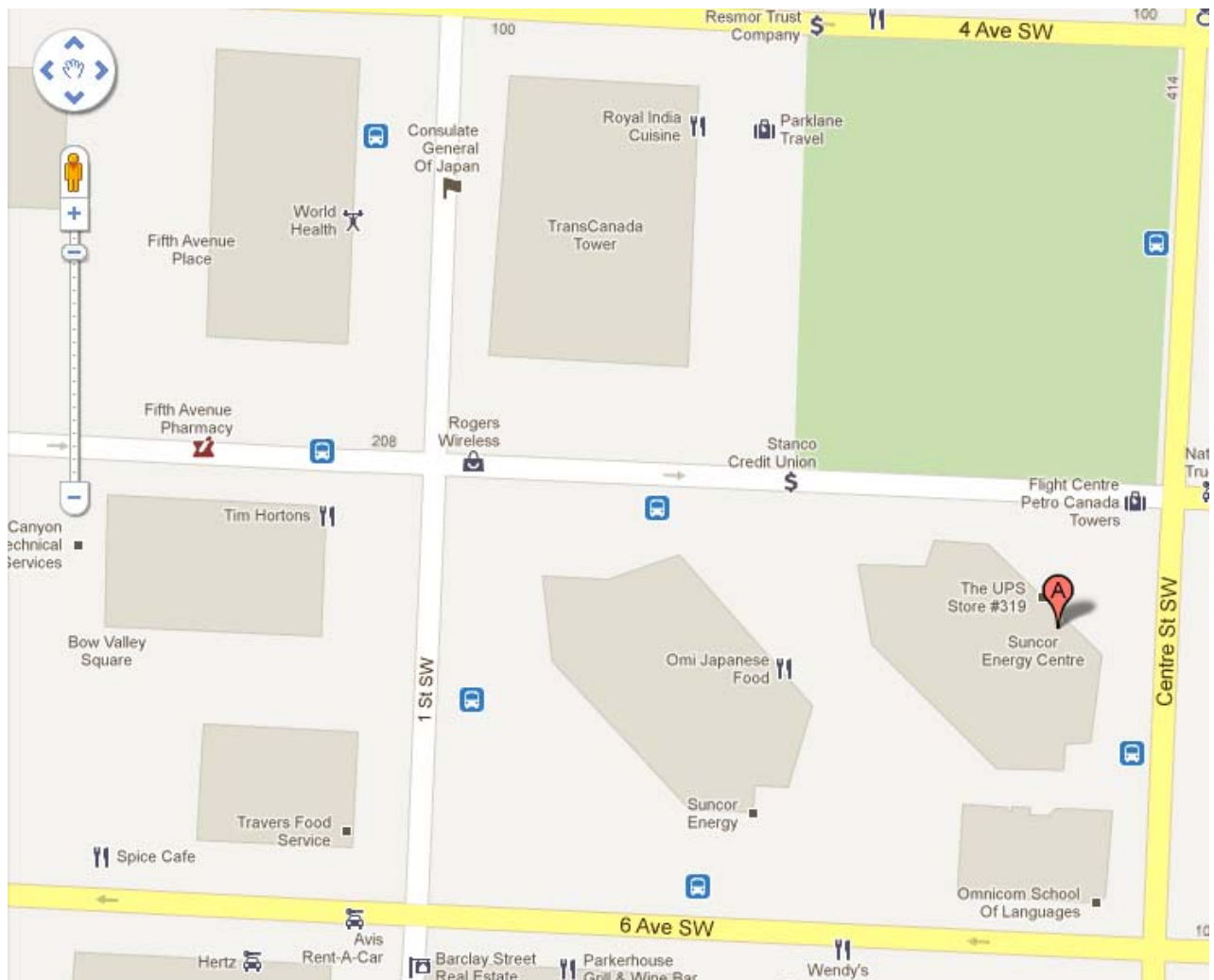
BLJC (Brookfield LePage Johnson Controls) is the agent to the Suncor Energy Centre and is responsible for the completion of Suncor Energy Centre's GHG inventory and reporting in accordance with CAN/CSA-ISO Standard 14064-1-06. An independent third party will be engaged to provide independent verification of this report.

This report has been written in accordance with CAN/CSA-ISO Standard 14064-106 Greenhouse Gases -Part 1: Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals. In addition, the World Resource Institute (WRI)/World Business Council for Sustainable Development (WBCSD) Standard: Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard and CAN/CSA-ISO Standard 14064-3-06 Greenhouse Gases -Part 3: Specification with Guidance for the Validation of Greenhouse Gas Assertions have been used as additional resources.

We have determined that the Suncor Energy Centre produced 49,819 tonnes of CO<sub>2</sub>e for the reporting year spanning July 2010 to June 2011. The emissions were calculated from data and other documentation collected from Brookfield Properties. Please refer to Section 5 and Appendix A for the Suncor Energy Centre's detailed GHG inventory.

## 2 ORGANIZATION PROFILE

The Suncor Energy centre is over two million square feet office complex located in downtown Calgary. It is comprised of two office towers, East and West, of 32 and 52 floors, respectively. There is a parkade that is four levels below grade. The West Tower is one of the tallest in structures in Western Canada. The complex was completed in 1984 and the total gross floor area is 2,514,628 square feet. The utility service address of the site is 111 5 Avenue SW, Calgary, AB (map courtesy Google Maps)



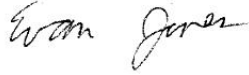
The building has an independent ventilation and heating system and a diesel generator for emergency power.

The chilled water system consists of 5 centrifugal chillers and all use refrigerant HFC-134a.

Brookfield Properties has made a commitment to “greening” this facility, including participating in the LEED Canada EB: O&M Program, which includes evaluating energy, water efficiency and waste management. To achieve LEED EB EAc6, Suncor Energy Centre’s GHG emissions will be reported to the CSA CleanStart™ Registry.

## 2 PERSON RESPONSIBLE

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## 3 GHG INVENTORY DESIGN AND DEVELOPMENT

### 3.1 Organizational Boundaries

For any GHG inventory, an organizational boundary is used to determine how GHG emissions are accounted for. Typically, one of the following approaches is used:

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; or
3. Operational control approach: accounts for GHG emissions based on the control of operations. The organization must report emissions from the sources over which it has operational control.

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 facilities rather than organizations, to meet EAc6 requirements, the Suncor Energy Centre was used as a physical boundary, rather than using any 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) were included in the GHG inventory without taking into consideration whether Brookfield Properties or the tenants have control or ownership. In addition, since LEED EB: O&M credit EAc6 does not take transportation into consideration, emissions from building-owned or leased vehicles are excluded from the inventory.

### 3.2 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:**

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:**

Indirect GHG emissions are released by the production of electricity, steam, hot water and/or chilled water purchased by the facility.

#### **Other Indirect GHG emissions:**

Other indirect GHG emissions are released from all other activities outside of the organizational boundaries. They may include business travel, employee commuting, third party production or manufacture of materials and resources, outsourced activities, and/or combustion of fuel in boilers or furnaces and electricity, steam or chilled water use excluded from the organizational boundary.

### **3.2.1 Direct GHG Emissions at the Suncor Energy Centre**

Direct GHG emissions released from sources at the facility level include the emissions from the combustion of fossil fuels and fugitive refrigerant emissions.

Natural gas is supplied by ENMAX through one main meter. This energy is used for space heating and domestic hot water heating.

As reported by Brookfield Properties, Suncor Energy Centre has five chillers, which all contain refrigerant HFC-134a. According to the ISO 14064-1, HFC-134a is considered a greenhouse gas and therefore is included in this report.

Diesel is used for back-up generators on site. To estimate diesel consumption, the quantity of fuel used was taken from the diesel oil invoices.

As transportation emissions are excluded in LEED EB credit EAc6, no Brookfield Properties-owned vehicles, considered direct GHG emissions, were included in the GHG inventory.

### **3.2.2 Energy Indirect GHG Emissions at the Suncor Energy Centre**

This report includes Suncor Energy Centre's indirect GHG emissions inventory from electricity. Imported chilled water, steam or hot water is not used at the facility.

Electricity at Suncor Energy Centre is purchased from ENMAX. Consumption is measured using one main meter for the whole complex.

### **3.2.3 Other Indirect GHG Emissions at the Suncor Energy Centre**

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

### **3.2.4 GHG Removals and Biomass Combustion at the Suncor Energy Centre**

GHG removals or combustion of biomass are not present at Suncor Energy Centre.

## **3.3. History of Emissions at Suncor Energy Centre**

Emissions were calculated for the time period between July 2010 and June 2011 to meet LEED-EB's 12 month Performance Period requirement.

Since this is the first year that the Suncor Energy Centre is calculating its GHG emissions, this GHG inventory becomes the building's "base year" emissions. Future annual inventories should be compared to this base year to track the results of emissions reduction efforts.

## 4 QUANTIFICATION

Since it is neither practical, nor in many cases possible to directly measure greenhouse gas emissions, the quantification methodology chosen for each emission component used an emission factor calculation. This methodology yields a considerable level of certainty because both the activity data and emission factors are readily available from reliable sources. This methodology requires three general types of data (as per CAN/CSA-ISO Standard 14064-1-06 Section 4.3.6), the appropriate "activity data", "emission factor" and "global warming potential" which were obtained for the following equation:

$$\text{GHG emissions} = [\text{activity data}] * [\text{emission factor}] * [\text{global warming potential}]$$

Activity data was collected from site utility bills, emission factors from Canada's National Inventory Report (1990-2009) were used and GWP's from CAN/CSA-ISO Standard 14064-1-06.

### 4.1 Natural Gas

#### 4.1.1 Activity Data

Activity data for natural gas is based on ENMAX monthly utility bills. Natural gas consumption is metered and reported by the utility in GJ. A conversion factor of 0.03826 GJ/m<sup>3</sup> was used to convert the measured units to m<sup>3</sup>, taken from a communication with Environment Canada. This was required to match the units of the emission factor

#### 4.1.2 Emission Factor

BLJC used the National Inventory Report (1990-2009) natural gas emission factors to calculate the Suncor Energy Centre's GHG emissions. Alberta specific CO<sub>2</sub> emission factors from Canada's National Inventory Report 1990-2009, Part 2, Annex 8, Table A8-1 were used. 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 kg of emission per m<sup>3</sup> of natural gas.

### 4.2 Diesel

#### 4.2.1 Activity Data

Activity data for diesel is based on invoices for diesel fuel from Jepsen Petroleum (Alberta) Ltd.. Diesel consumption is reported in litres.

#### 4.2.2 Emission Factor

BLJC used the National Inventory Report (1990-2009) diesel emission factors to calculate the Suncor Energy Centre's GHG emissions. National commercial CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O data from Part 2, Annex 8, Table A8-4 were used.

The diesel emission factor units are in kg of emissions per litre of diesel.

## **4.3 Refrigerant HFC-134a**

### **4.3.1 Activity Data**

Activity data for refrigerant HFC-134a is based on the estimated leakage from the chiller's refrigerant loop. A leakage rate of 0.5% of the total refrigerant charge is assumed based on defaults derived from LEED EB credit EAc5: Enhanced Refrigerant Management. Refrigerant charge is converted from pounds (lb) of charge to metric tonnes of charge using a conversion factor of 0.00045359237 tonnes/lb. The total charge of refrigerant HFC-134a is 5,000 lbs

### **4.3.2 Emission Factor**

BLJC used the CAN/CSA ISO-14064-1:2006 Annex C refrigerant global warming potential (GWP) factors for the Suncor Energy Centre's GHG calculations.

## **4.4 Electricity**

### **4.4.1 Activity Data**

Activity data for electricity is based on ENMAX monthly utility bills. Electricity consumption is metered and reported on by the utility in non adjusted kWh. As required by Energy Star and consequently the LEED-EB Program, unadjusted kWhs were used for this GHG inventory.

### **4.4.2 Emission Factor**

BLJC used the National Inventory Report (1990-2009) electricity emission factors. 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 the Suncor Energy Centre.

As BLJC is reporting on one facility in Alberta, 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's Part 3, Annex 13, Table A13-10. The 2009 emission factor in this report was estimated at the time of publication. The 2008 values were used as these were measured values and were felt to be more accurate than using the 2009 estimated factors.

The electricity emission factor is measured in kg of emission per kWh.

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

## **5 GHG INVENTORY COMPONENTS**

### **5.1 Emissions**

The total emissions from direct and indirect GHG emissions sources during the reporting year are 49,819 tonnes of CO<sub>2</sub>e. Building natural gas, diesel, refrigerant leakage and electricity account for 100% of the Suncor Energy Centre's reported emissions. The breakdown is as follows:

**Table 1: Emission Summary**

Source	Emissions [t CO2e]	% of total
<b>DIRECT GHG EMISSIONS</b>		
Natural Gas	5,691.0	11.4%
Diesel	50.7	0.1%
Refrigerant	14.7	0.0%
<b>ENERGY INDIRECT EMISSIONS</b>		
Electricity	44,062.9	88.4%
<b>TOTAL emissions</b>	<b>49,819.3</b>	<b>100.0%</b>

CO<sub>2</sub> emissions account for 99.25% of the total GHG emissions, HFC-134A emissions account for 0.03% of the total GHG emissions, while CH<sub>4</sub> and N<sub>2</sub>O emissions make up the difference.

Refer to Figure 1 for the monthly energy consumption and Figure 2 for a detailed GHG breakdown by Source.

Figure 1: Monthly Energy Consumption

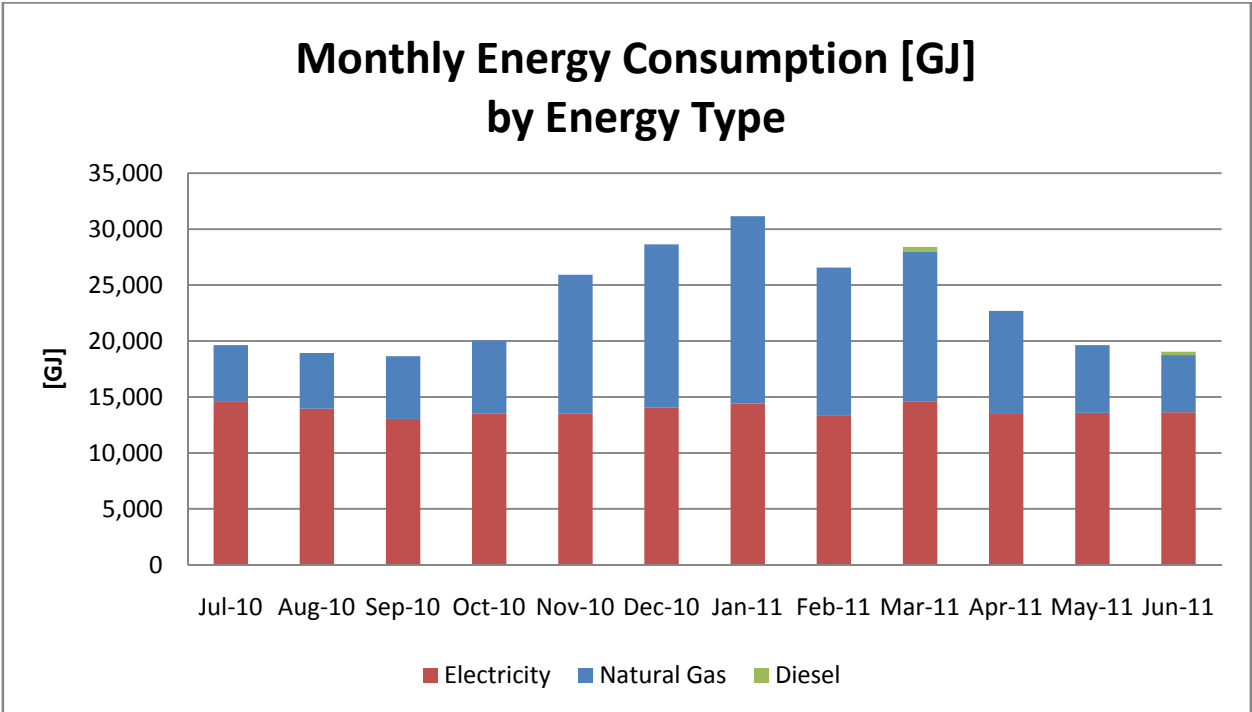
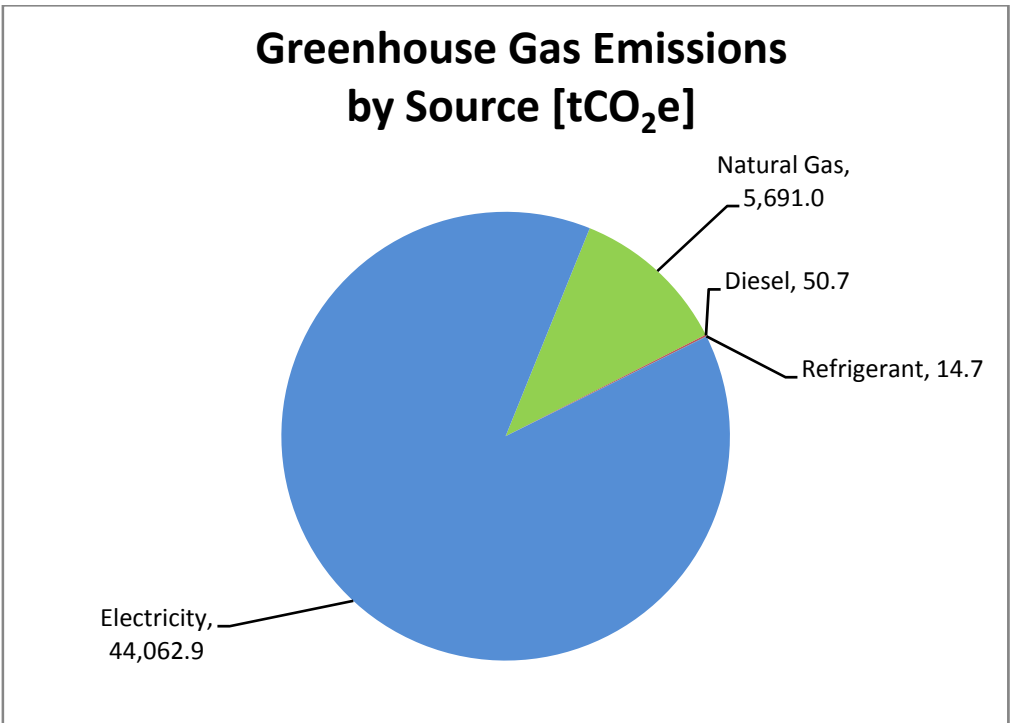
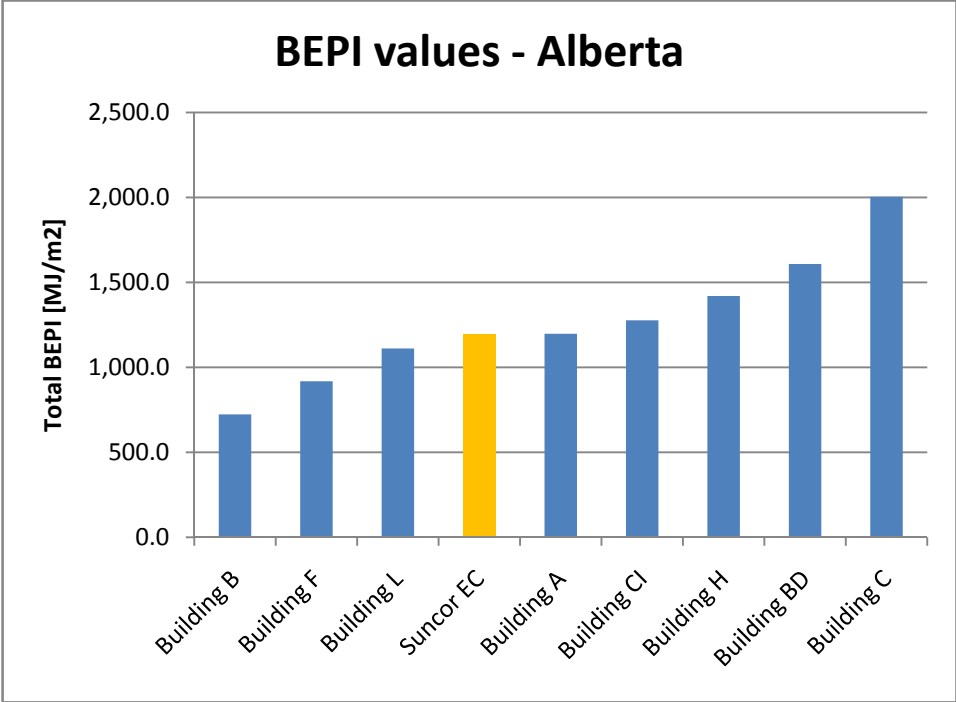


Figure 2: Greenhouse Gas Breakdown



With an energy intensity - Building Energy Performance Index (BEPI) - of 1,195.1 MJ/m<sup>2</sup>, the Suncor Energy Centre building energy footprint is close to the average of other office towers in Alberta that BLJC has worked with, as seen in Figure 3.

Figure 3: GHG Intensity for Comparable Alberta Buildings



**5.2 Directed Actions to Reduce GHG Emissions**

GHG reduction strategies for this facility have focused on energy measures. In the Suncor Energy Centre’s current baseline, implemented energy saving retrofits have resulted in energy and carbon reductions compared to the previous years.

Some of the past and planned major GHG reduction strategies are shown in Table 2.



**Table 2: GHG Reduction Strategies**

Measure Description	Explanation	Energy Type	Estimated Savings [Equivalent kWh]
CSM-E1 - Implement Day Cleaning for the whole floors for east and west towers	Currently, Day cleaning is being implemented at 41 floors. Lights are on till 12 AM midnight even though the offices are occupied till 6PM	Electricity	278,933
CSM-E2 - Review schedules for the lights on east and west tower floors and inspect relays and identify failed relays	Review all the schedules and inspect lighting circuits	Electricity	130,169
CSM-M1 – Implement time schedule for secondary loop cooling pumps	Schedule the pumps off when building is unoccupied and OAT is above 7.5°C	Electricity	301,179
CSM-M2 – Schedule Atrium and Retail AHU's off on Saturdays	Atrium and Retail AHU's are operational on Saturdays	Electricity/Gas	93,029
CSM-M3 – Utilize free cooling and economizer control for Atrium and Retail AHU's.	Utilize free cooling and economizer control for Atrium and Retail AHU's. Modify sequences of operations to improve energy efficiency of these units	Electricity	75,766
CSM-M4 – Lower Static Pressure set point on Compartment unit as originally specified.	Lower Static Pressure set point on Compartment unit as originally specified and investigate why original set point changed	Electricity	353,700
CSM-M5 – Control Canopy Heaters Based on OAT	Install programming to control Canopy heaters based on OAT	Electricity	84,904
CSM-M6 – Cycle Parkade MAU's based on OAT and space temperature	Cycle MAU's when OAT is below -10°C (HOW MANY MAU's run when OAT is above -10°C )	Gas	238,774
CSM-M7 – Schedule Escalator off during weekends	Schedule escalator that goes from the plus 15 to the plus 30 on weekends	Electricity	27,930
		TOTAL	1,584,384

### **5.3 Estimation of Uncertainty**

Table 3 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 3 – Uncertainty Ranking

Activity Data	Uncertainty Assessment
Natural Gas Consumption	Low Uncertainty – The meter is calibrated and verified by ENMAX. 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.
Diesel Oil Consumption	Fair Uncertainty – Diesel consumption is based on the quantity of fuel purchased. Diesel emission factors are consistent and quite accurate.
Refrigerant Amount	High Uncertainty – Refrigerant leakage is assumed to be 0.5% of total refrigerant charge, based on LEED EAc5 guidelines.
Electricity Consumption	Fair Uncertainty – The meter is calibrated and verified by ENMAX. Submetering of electrical loads has been considered for checking the accuracy of the electricity meter but is cost-prohibitive. The emission factor is based on an annual provincial grid average, containing multiple fuel sources such as coal, natural gas, hydro and nuclear. The factor for 2009 was estimated and the previous year's value was used for this report.

## 6 GHG INVENTORY QUALITY MANAGEMENT

### 6.1 GHG 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.

Name	Role	Company
Candace Walker	Property Manager	Brookfield Properties
Kristina Schwartz	Director, Operations and Sustainability	Brookfield Properties

Responsibilities:

- To provide BLJC with required energy data (via utility bills);
- To provide BLJC with refrigerant data information; and,
- To approve and sign the CSA CleanStart™ Registry application form.

Name	Role	Company
Evan Jones	Lead Quantifier	BLJC
Peter Rombos	Quantification Co-ordinator	BLJC
Michael Wymant	LEED Director	BLJC

Responsibilities:

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

Name	Role	Company
Emil Breza	3 <sup>rd</sup> Party Verifier	Brezaworks

Responsibilities:

- To verify that BLJC Initiative's 14064-1 report meets CSA CleanStart™ Registry requirements and CAN/CSA-ISO Standard 14064-3-06; and,
- To issue a verification statement.

## **6.2 Document Retention and Record Keeping**

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

- Brookfield Properties scans each utility bill for Suncor Energy Centre's utility accounts and maintains them on a secure server. This has a dual purpose in that it tracks both energy and operating costs.
- Brookfield Properties measures diesel oil volumes on a periodic basis and stores this information on a secure server.
- This is the first year that BLJC will calculate and register Suncor Energy Centre's greenhouse gas emissions. BLJC keeps a copy of all utility bills, refrigerant data, GHG emissions and other important information used to generate the GHG inventory on a secure server

## **6 ORGANIZATION'S ROLE IN VERIFICATION ACTIVITIES**

Emil Breza of Brezaworks was contracted to provide independent third party verification as per CAN/CSA-ISO Standard 14064-3-06. The verification was completed to a reasonable level of assurance.

BLJC prepared for the Suncor Energy Centre's verification by:

- Engaging an objective 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; and,
- Using an internal review process for quality control for the inventory and the document.

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.

# APPENDIX A – GREENHOUSE GAS INVENTORY

Table A1 – Summary of Activity Data for Greenhouse Gas Inventory

(July 2010 to June 2011)

Source and Fuel	Quantity of Activity	Unit
<b>Activity Data - Direct Emissions</b>		
<b>Natural Gas</b>		
Jul-10	5,002.92	GJ
Aug-10	4,984.56	GJ
Sep-10	5,595.62	GJ
Oct-10	6,510.53	GJ
Nov-10	12,378.24	GJ
Dec-10	14,594.61	GJ
Jan-11	16,725.91	GJ
Feb-11	13,256.57	GJ
Mar-11	13,442.21	GJ
Apr-11	9,208.54	GJ
May-11	6,043.63	GJ
Jun-11	5,096.34	GJ
<b>Total Natural Gas</b>	<b>112,839.68</b>	<b>GJ</b>
<b>Diesel</b>		
Jul-10		L
Aug-10		L
Sep-10		L
Oct-10		L
Nov-10		L
Dec-10		L
Jan-11		L
Feb-11		L
Mar-11	10,151	L
Apr-11		L
May-11		L
Jun-11	8,015	L
<b>Total Diesel</b>	<b>18,166</b>	<b>L</b>
<b>Refrigerant</b>		
Annual Estimated Leakage	0.0113	t
<b>Total Refrigerant</b>	<b>0.0113</b>	<b>t</b>

<b>Activity Data - Energy Indirect Emissions</b>		
Electricity - Mixed Fossil Fuels	Consumption	Units
Jul-10	4,063,090	kWh
Aug-10	3,874,795	kWh
Sep-10	3,623,152	kWh
Oct-10	3,761,147	kWh
Nov-10	3,762,805	kWh
Dec-10	3,899,083	kWh
Jan-11	4,007,075	kWh
Feb-11	3,696,791	kWh
Mar-11	4,046,567	kWh
Apr-11	3,744,369	kWh
May-11	3,772,433	kWh
Jun-11	3,789,506	kWh
<b>Total Electricity</b>	<b>46,040,813</b>	<b>kWh</b>

Table A2 – Summary of Greenhouse Gas Emissions (July 2010 to June 2011)

Source and Fuel	Quantity of Activity	Activity Unit	Carbon Dioxide Emissions (CO <sub>2</sub> ) [t CO <sub>2</sub> e]	Methane Emissions (CH <sub>4</sub> ) [t CO <sub>2</sub> e]	Nitrous Oxide Emissions (N <sub>2</sub> O) [t CO <sub>2</sub> e]	Refrigerant Emissions (HFC-134a) [t CO <sub>2</sub> e]	Total Emissions [t CO <sub>2</sub> e]
<b>DIRECT GHG EMISSIONS</b>							
Natural Gas	112,840	GJ	5,656.7	2.2916	31.9998		5,691.0
Diesel	18,166	L	48.4	0.0507	2.2526		50.7
Refrigerant	0.0113	t				14.74	14.7
<b>ENERGY INDIRECT EMISSIONS</b>							
Electricity	46,040,813	kWh	43,738.8	38.6743	285.4530		44,062.9
<b>TOTAL emissions</b>			<b>49,443.9</b>	<b>41.0</b>	<b>319.7</b>	<b>14.7</b>	<b>49,819.3</b>

## APPENDIX B –EMISSION FACTORS and GLOBAL WARMING POTENTIALS

### EMISSION FACTORS and ENERGY CONVERSION FACTORS

Table B1 summarizes the emission factors and energy conversion factors used in the calculations for Suncor Energy Centre’s GHG inventory.

**Table B1 – Emission Factors and Energy Conversion Factors**

<b>Emission Source</b>	<b>Emission Factor</b>	<b>Source of Emissions Factor</b>
Natural gas (Carbon Dioxide) (Alberta)	1.918 kg CO <sub>2</sub> /m <sup>3</sup>	Canada's National Inventory Report 1990-2009, Part 2, Annex 8, Table A8-1, written in 2011
Natural gas (Methane) (Canada)	0.000037 kg CH <sub>4</sub> /m <sup>3</sup>	Canada's National Inventory Report 1990-2009, Part 2, Annex 8, Table A8-2, written in 2011
Natural gas (Nitrous Oxide) (Canada)	0.000035 kg N <sub>2</sub> O/m <sup>3</sup>	
Diesel (Carbon Dioxide) (Canada)	2.663 kg CO <sub>2</sub> /L	Canada's National Inventory Report 1990-2009, Annex 8, Table A8-4, April 2011
Diesel (Methane) (Canada)	0.000133 kg CH <sub>4</sub> /L	
Diesel (Nitrous Oxide) (Canada)	0.0004 kg N <sub>2</sub> O/L	
Electricity (Carbon Dioxide) (Alberta): 2008	0.95 kg CO <sub>2</sub> /kWh	Canada's National Inventory Report 1990-2009, Part 3, Annex 13, Table A13-10, April 2011 (2008 data used)
Electricity (Methane) (Alberta): 2008	0.00004 kg CH <sub>4</sub> /kWh	
Electricity (Nitrous Oxide) (Alberta): 2008	0.00002 kg N <sub>2</sub> O/kWh	
<b>Energy Type</b>	<b>Conversion Factor</b>	<b>Source of Conversion Factor</b>
Natural gas in cubic meters	0.03826 GJ/m <sup>3</sup>	Communication from Environment Canada

## GLOBAL WARMING POTENTIALS

Table B2 summarizes the global warming potential values used in the calculations for Suncor Energy Centre's GHG inventory.

**Table B2 – Global Warming Potentials**

Greenhouse Gas	Global Warming Potential	Source of Emissions Factor
Carbon Dioxide GWP (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 GWP (100-yr)	21	
Nitrous Oxide GWP (100-yr)	310	
Refrigerant HFC-134a (100-yr GWP)	1300 t CO <sub>2</sub> e/ tonne of refrigerant	

## APPENDIX C – STANDARD REPORTING DECLARATION

### 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 BLJC’s assertion for Suncor Energy Centre’s inventory. Note: This GHG inventory report is the first GHG inventory report issued from BLJC for the Suncor Energy Centre

No.	CSA Reporting Requirement	Declaration
A	Description of the reporting organization.	Brookfield Properties is the owner and manager for the Suncor Energy Centre and has registered the building in the Canadian Green Building Council’s LEED-EB Program. Brookfield Properties is targeting LEED-EB Energy and Atmosphere credit 6: Emission Reduction Reporting and are reporting the greenhouse gas (“GHG”) emissions with the CSA Registry. The Suncor Energy Centre building emits GHGs through the combustion of natural gas and diesel, potential refrigerant leakage, and energy indirect electricity consumption. The total gross floor area of the building is approximately 2,514,628 square feet and the building occupancy is approximately 5,000 people.
B	Person responsible	Evan Jones, Energy and Sustainability Information Manager, BLJC
C	Reporting period covered	July 1, 2010 to June 30, 2011
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, Table A2.
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.
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 direct and energy indirect GHG emissions sources. GHG sinks are not applicable to this inventory.
I	Energy indirect GHG emissions associated with the generation of	See Appendix A, Table A2.

	imported electricity, heat or steam, quantified separately in tonnes of CO <sub>2</sub> e.	
J	The historical base year selected and the base-year GHG inventory.	Base year: July 2010 to June 2011. This base year for the CSA CleanStart Registry was chosen due to the performance period requirements of the Canadian Green Building Council LEED-program. It is a starting point for potential future GHG inventories.
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 as this methodology has a considerable level of certainty and the most cost-effective to implement.
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 utility bills received by BLJC from Brookfield Properties. Refrigerant data is based on total refrigerant charge received from Brookfield Properties and default leakage rates. Based on these sources, the level of uncertainty is assumed to be fair.
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 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	This GHG inventory report will undergo third party verification to a reasonable level of assurance by Brezaworks. See the third party verification report for further details.