



604 338 2429

1850 Whyte Ave

Vancouver BC,

Canada, V6J 1B2

info@greenworkplace.ca

www.greenworkplace.ca

Green Workplace Consulting

Business Travel & Employee Commuting Assessment

SAMPLE REPORT



NOTE: This report has been designed to provide a general idea of the detailed information that our assessments provide. Some sections have been omitted.

1. Introduction

Green Workplace: Who We Are and What We Do

Green Workplace is a service of Sustainable Community Enterprises. We are a growing team of young environmental professionals, committed to implementing sustainable innovation in the ways we live and work. We strive to build long-term partnerships with our clients so that progress can be nurtured through the full range of our services. Our aim is to provide our clients with the information and leadership they need to quantify their ecological impacts, set reduction targets, and increase sustainability throughout their operations.

Objective

This assessment makes use of all available air and fuel-related travel procurement data for Client's Head Office for the 2008 year. Green Workplace has also made use of employee commuting data, which we have translated into fuel and/or greenhouse gas consumption (both for personal vehicles and those staff who commute to Head Office via transit). We have quantified all of this information in order to provide Client with a summary of greenhouse gas emissions resulting from employee travel and commuting. This footprint can serve as a useful baseline for setting reduction targets and/or for the purchasing of high quality carbon offsets towards the larger goal of making Client carbon neutral or a non-net contributor to climate warming gas production and emission.

Scope and WRI Standardized Carbon Accounting

Please Note: this assessment is NOT a comprehensive Greenhouse Gas audit. The World Resources Institute (WRI) has created a 3-scope methodology that is widely considered the best and most commonly used approach to organizational greenhouse gas accounting in the world.

These scopes include: Scope 1 (emissions from facilities, equipment, and vehicles owned and/or controlled by the organization), Scope 2 (purchased electricity), and Scope 3 (non-owned and/or controlled emissions sources such as: employee business travel, paper and solid waste). Scopes 1 and 2 are considered 'mandatory' reporting (in non-voluntary markets), while Scope 3 is considered voluntary.

The 3 main areas of this assessment fall under Scope 3, or voluntary GHG accounting.



2. Quantification

2.1 Accounting for the Environmental Impacts of Fossil Fuels

With respect to global warming, Carbon Dioxide (CO₂) is the most prevalent greenhouse gas. It is also the benchmark gas to which all other GHG's, such as methane and nitrous oxide, are commonly converted. Equivalent carbon dioxide (or CO₂e) is an instantaneous measure for describing how much global warming a given type and amount of greenhouse gas may cause, using the functionally equivalent amount or concentration of carbon dioxide (CO₂) as the reference. Recent research indicates that recovery from a large input of atmospheric CO₂ from burning fossil fuels will result in an effective lifetime of tens of thousands of years.¹

Why are Greenhouse Gases harmful?

Climate change, caused by human generated greenhouse gases has the capacity to devastate entire ecosystems, destroy food supplies, spread disease and much worse. However, as a human caused problem, the effects of climate change can also be averted through human innovation. The average Canadian emits about 6 tonnes of greenhouse gases annually.

3. Summary of Employee Air Travel (Distances and Emissions)

| Flight Distance Type | Short Haul | Med Haul | Long Haul | Total |
|---|--------------|-------------|-------------|--------------|
| | <500 km | 500-1600 km | >1600 km | |
| Total Distance (km) | 96,431 | 6,213 | 7,815 | 110,459 |
| **Emissions Factor (tonnes of CO ₂ e/km) | 0.00022 | 0.00023 | 0.00029 | - |
| Total Emissions (tonnes of CO₂e) | 21.33 | 1.46 | 2.25 | 25.04 |

**<http://planetair.ca/modules/smartoffset/offset.php?formid=air>

3.1 Background

Green Workplace was provided with flight lists and receipts for Client's 2008 air travel. We divided each flight into short, medium, and long haul (in accordance with air travel emissions accounting protocol).

¹Archer, David (2005), "Fate of fossil fuel CO₂ in geologic time," Journal of Geophysical Research 110



4. Summary of Emissions from Corporate Vehicle Fuel Consumption

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---------------------------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|
| Total Fuel Expenditure (\$) | \$641 | \$3,449 | \$4,606 | \$3,201 | \$4,900 | \$2,960 | \$4,856 | \$4,857 | \$4,692 | \$7,512 | \$6,971 | \$17,494 | \$66,140 |
| *Fuel Cost (\$ / L) | \$1.04 | \$1.16 | \$1.18 | \$1.25 | \$1.34 | \$1.46 | \$1.39 | \$1.37 | \$1.30 | \$1.08 | \$0.98 | \$0.83 | |
| Litres Purchased (L) | 667 | 4,001 | 5,435 | 4,001 | 6,566 | 4,321 | 6,750 | 6,654 | 6,100 | 8,113 | 6,832 | 14,520 | 73,960 |
| **Total Emissions (Tonnes CO2e) | 1.60 | 9.60 | 13.04 | 9.60 | 15.76 | 10.37 | 16.20 | 15.97 | 14.64 | 19.47 | 16.40 | 34.85 | 178 |

Notes & References

*Avg pump price [Vancouver] for a litre of regular gas: <http://www.cbc.ca/consumer/story/2008/11/17/f-map-pumprices.html>

Prices quoted are for regular unleaded gas and are based on the weekly price survey published by MJ Ervin & Associates (via CBC)

**CO2e = 2.4 kg/litre of regular gasoline

**<http://oee.nrcan.gc.ca/transportation/personal/faq.cfm?attr=16>

Total Emissions: Approximately 178 Tonnes

4.1 Background

Green Workplace was provided with 2008 procurement data showing monthly and annual fuel purchases. We converted these dollar figures into litres based upon monthly average gas prices in Vancouver in 2008. Finally, we applied Natural Resources Canada's Office of Energy Efficiency coefficient of 2.4 kg of CO2e per litre of unleaded gasoline to determine total Greenhouse Gas emissions from purchased fuel.



5. Summary of Emissions from Employee Commuting

5.1 Commuting Emissions from Staff who Travel by Personal Vehicle

| | # of Personal Vehicle Commuters | Year of Vehicle | Vehicle Efficiency* (L/100km) | Return Distance to Office (km/day) | Commuter Days (days/year) | Distance Per Year (kms) | L per Commuter Year (L) | CO2 Commuter Emissions Per Year (tonnes) |
|---------|---------------------------------|-----------------|-------------------------------|------------------------------------|---------------------------|-------------------------|-------------------------|--|
| Average | | 2001 | 10.0 | 40.3 | 191 | 7,697 | 770 | 1.85 |
| Total | 60 | | | 2,418 | 11,460 | 461,838 | 46,184 | 110.8 |

Notes & Assumptions

*Consumption is based on average of city + highway ÷ 2

All available averages have been combined in the event that provided data lacks specifics e.g. AWD vs 4WD and/or 4 cyl vs 6cyl.,

Efficiency Reference for vehicles 1999 - 2008: <http://oee.nrcan.gc.ca/transportation/tools/fuelratings/fuel-consumption.cfm>

Other Efficiency References available upon request

Commuter Days Per Year

Assumed 52 calendar weeks less 4 paid weeks of vacation = 48 weeks per year

Subtracted average 6 sick days/year/person and 9 statutory holidays/year/person

Occasional transit user defined as using transit 15% or less of commuting days

Casual or Occasional Work has been defined as 1 day per week [48 days per year]

Emissions Calculations

2.4 kg of CO₂e per L of gasoline (source: <http://oee.nrcan.gc.ca/transportation/personal/faq.cfm?attr=16>)

Urban Transportation Emissions Calculator

<http://www.wapps.tc.gc.ca/prog/2/UTEC-CETU/Calculator.aspx?lang=eng> Input: BC, 2006

Background

Green Workplace received a list of the postal codes and corresponding personal vehicles (incl. year & make) for all Client staff who commute by personal vehicle. We then determined the roundtrip commuting distance, commuting days per worker per year (based on specific work cycle, less vacation and sick days), and their vehicle's fuel efficiency. NOTE: the above table presents averages and totals but each sum has been determined by adding up each specific driver and their corresponding: vehicle efficiency, roundtrip commute distance and total commuting days. Staff have retained full anonymity as names, addresses, and license plates were not provided.

5.2 Commuting Emissions from Staff who Travel by Public Transit

NOTE: Section 5.2 of this report have been omitted.



6. Cumulative Annual Emissions for all Client Air travel, Purchased Fuel, and Employee Commuting (baseline: 2008)

| Emissions Source | Total Emissions (tonnes of CO2e) |
|------------------------------------|-------------------------------------|
| Air Travel | 25.04 |
| Purchased Fuel (gas) | 178 |
| Staff Commuting (personal vehicle) | 110.8 |
| Staff Commuting (transit) | 67.32 |
| Total | 381.16 |

7. Curbing Client's Air Travel, Purchased Fuel, and Employee Commuting Greenhouse Gas Emissions

There are two primary approaches to addressing Greenhouse Gas emissions on the corporate level: reduction and offsetting. Below is further information on both of these opportunities.

NOTE: Sections 7.1 and 7.2 of this report have been omitted.

7.1 Reduction

7.2 Offsetting