

# Annual Sustainability Report



## EAGLE WING TOURS

2012 Report

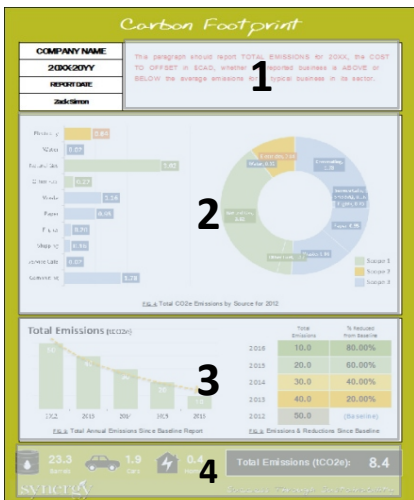
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# Introduction & Page Guide

Eagle Wing Whale Watching Tours (Eagle Wing) has been reporting and offsetting emissions for three years, starting from 2010. Since then, Eagle Wing has made significant efforts to reduce emissions and invest in technologies that will continue to reduce the company's long-term impact. This year, Eagle Wing has expanded the greenhouse gas emissions inventory in the third scope (indirect emissions). In addition to the standard reporting of natural gas, electricity, waste, water and office paper, this report includes all paper products, deliveries and service calls (transportation), shipping of equipment and accurate staff commuting data. This (along with an increase in total number of passengers and lengthened touring times) results in an increase in the total reported carbon footprint for Eagle Wing, but allows the company to measure and manage more emissions sources than in previous years.

Since 2011, the number of passengers on Eagle Wing tours has increased by ~7.7%. The total number of trips has been reduced by ~14.3%, while each trip has lasted an average of half an hour longer. This combination of factors has increased the per-trip emissions produced by 32.9% while keeping the per-passenger increase to a minimum at 9.9%.



## 1: Summary Paragraph

This will report the company's total emissions for the year, approximate cost to offset, and grade it as above or below average in terms of sustainability for its industry.

## 2: Emissions Data Charts

These two graphs detail the company's emissions by source and scope in units of tCO<sub>2</sub>e (tonnes of carbon dioxide equivalent). Emissions sources are explained more thoroughly on later pages.

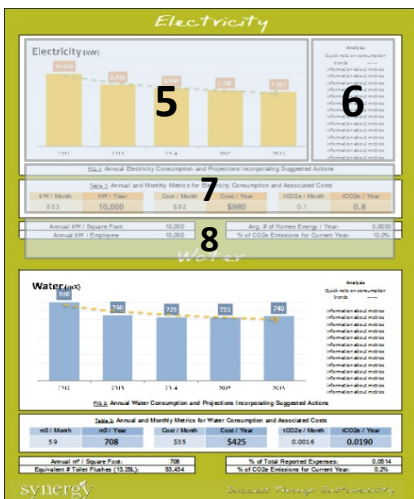
## 3: Historical Emissions Data

Offers up to 5 years worth of emissions totals and total percent reduced since baseline.

## 4: Total Emissions and Equivalencies

Total carbon footprint for the current year and defines that number as three different equivalencies for ease of comprehension.

Fig 1: Example Carbon Footprint Page



## 5: Historical Consumption Data

Details consumption for a specific emissions source over 5 years.

## 6: Analysis Paragraph by Source

A brief description of the adjacent chart with any relevant information re: trends/irregularities.

## 7: Standard Consumption Totals by Month/Year

Totals for units consumed and emissions (in tCO<sub>2</sub>e) by month & year.

## 8: Equivalencies for current Source

Four emissions and/or consumption equivalencies which vary by source.

Fig 2: Example Source Metrics Page

# Carbon Footprint

<b>EAGLE WING TOURS</b>	Total emissions for Eagle Wing Tours for 2012 comes to 436.7 Tonnes of CO <sub>2</sub> e. The vast majority of these emissions are from boat fuel followed by commuting, electricity and paper consumption. Expected cost to offset: ~\$4367.00 (at \$10/tonne)
<b>2012 Report</b>	
<b>March 5th, 2013</b>	
<b>Zack Simon &amp; Jill Doucette</b>	

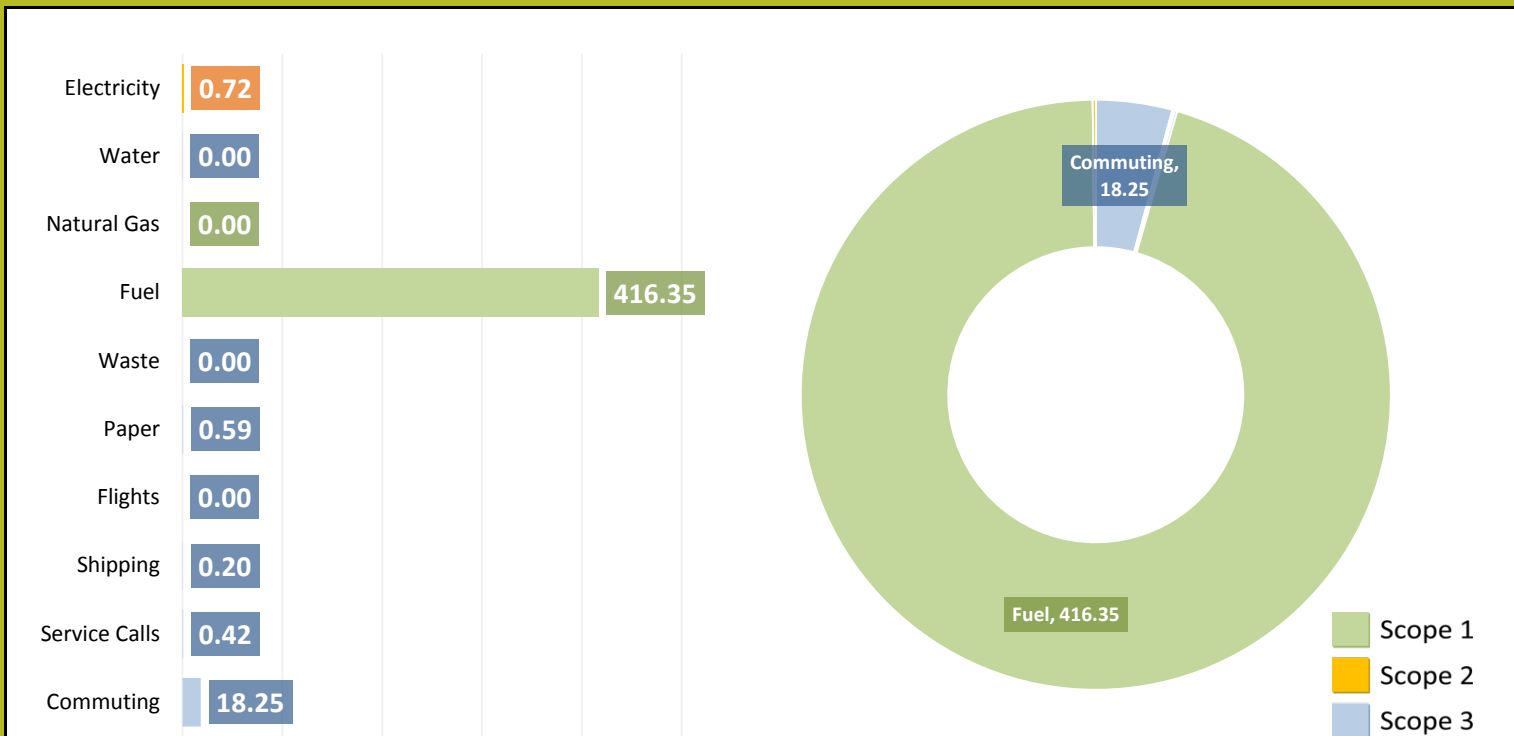


FIG 3: Total CO<sub>2</sub>e Emissions by Source and Scope for Current Reporting Year

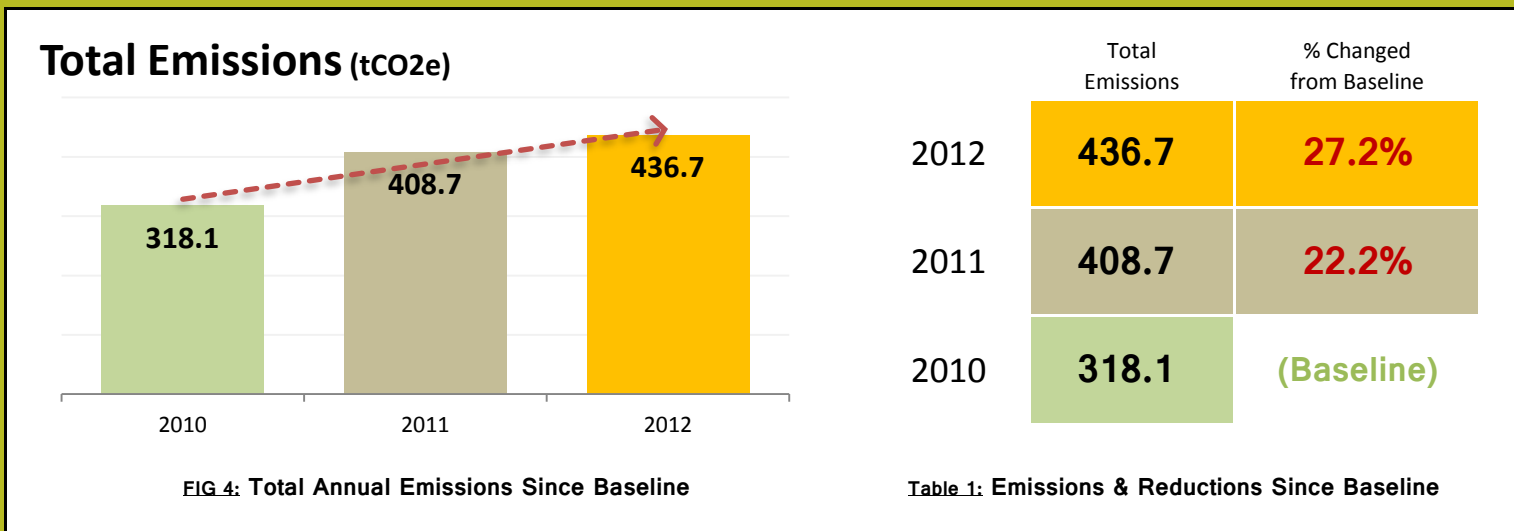


FIG 4: Total Annual Emissions Since Baseline

Table 1: Emissions & Reductions Since Baseline



1,209.1  
Barrels



99.9  
Cars



19.8  
Homes

**Total Emissions (tCO<sub>2</sub>e): 436.7**

# Electricity

## Electricity (kW)

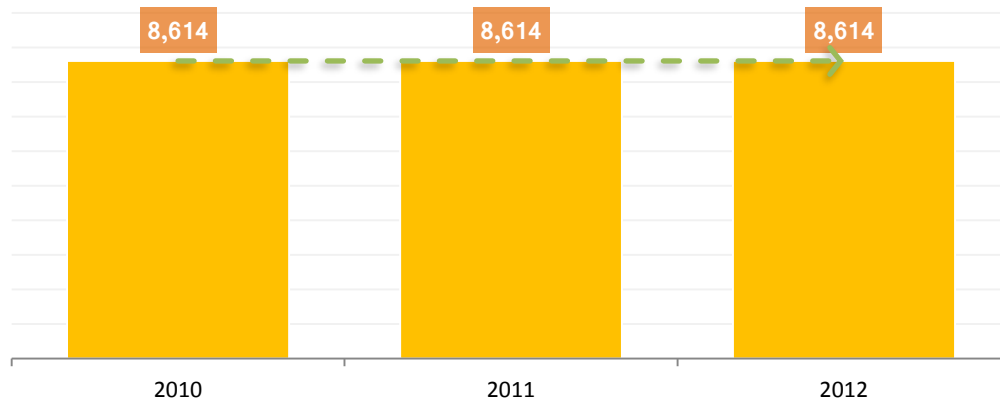


FIG 5: Annual Electricity Consumption

### Analysis

Eagle Wing pays a fixed amount annually for electricity, included in the rental agreement for the floating office at Fisherman's Wharf. This electricity usage is not individually metered; however the office has minimal electricity consumption and the staff are aware of energy-saving practices such as turning monitors off and unplugging devices when not in use. 8,614 kWh was calculated using the average consumption for office space and the total square footage of the Eagle Wing office.

Annual kW / Square Foot:	18
Annual kW / Employee:	861

Avg. # of Homes Energy Use / Year:	0.8
% of CO <sub>2</sub> e Emissions for Current Year:	0.2%

Table 2: Annual and Monthly Metrics for Electricity Consumption

kW / Month	kW / Year	tCO <sub>2</sub> e / Month	tCO <sub>2</sub> e / Year
718	8,614	0.1	0.7

# Water

## Water (m<sup>3</sup>)

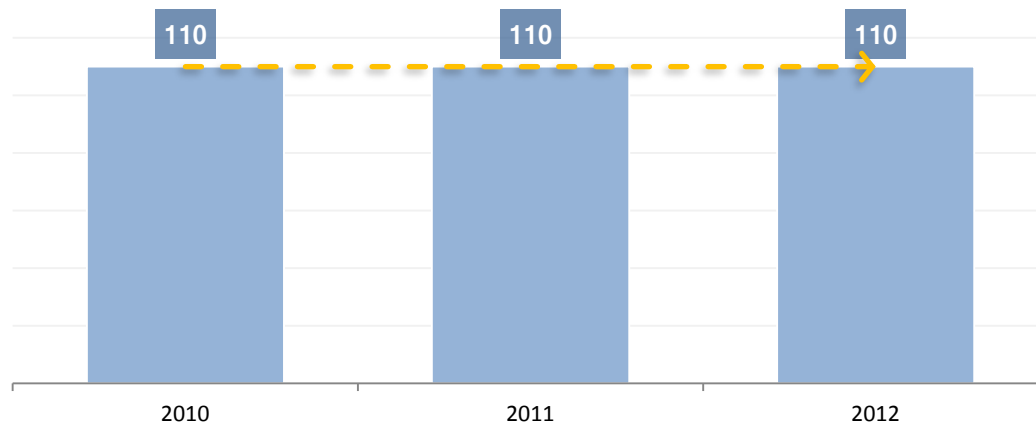


FIG 6: Annual Water Consumption

### Analysis

Eagle Wing pays a fixed amount annually for water, included in their rental agreement, and is not individually metered. Water consumption is minimal in the office. The majority of usage is in washing the four boats. 110 m<sup>3</sup> was calculated using the total office square footage and boat washing practices. Practices have not changed from 2011, therefore, data from the previous year was used for 2012.

Annual m <sup>3</sup> / Square Foot:	0.23
Annual m <sup>3</sup> / Employee:	11.0

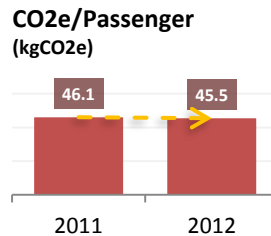
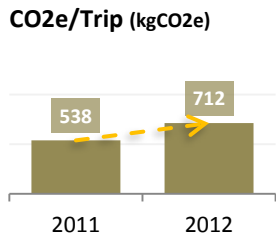
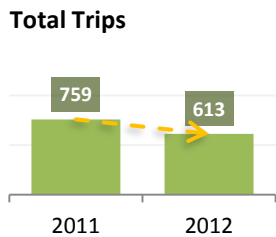
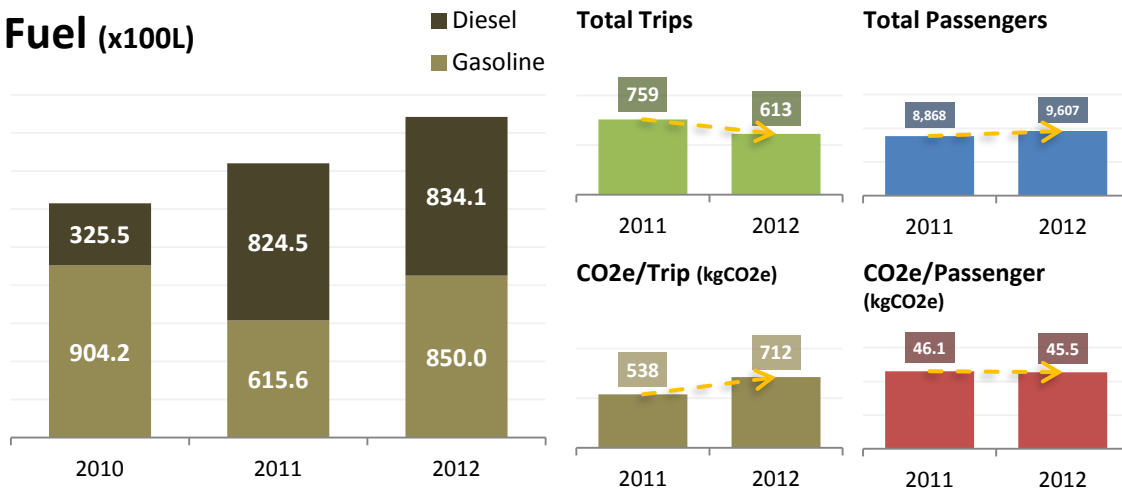
Equivalent # Toilet Flushes (13.25L):	8,302
% of CO <sub>2</sub> e Emissions for Current Year:	0.0%

Table 3: Annual and Monthly Metrics for Water Consumption

m <sup>3</sup> / Month	m <sup>3</sup> / Year	tCO <sub>2</sub> e / Month	tCO <sub>2</sub> e / Year
9	110	0.0002	0.0030

# Fuel

## Fuel (x100L)



**Analysis**  
 In 2012, there were fewer boat tours; however the length of these tours was extended from 2011. Trips carried more passengers each, which resulted in more fuel consumed on average per trip.

Overall, the business has grown, touring more passengers and providing longer tours, resulting in an increase in fuel consumption since 2011.

FIG 8: Annual Fuel Consumption

Equivalent Cars / Year (tCO2e):	95.2
Equivalent Barrels of Oil (tCO2e):	1,152.7

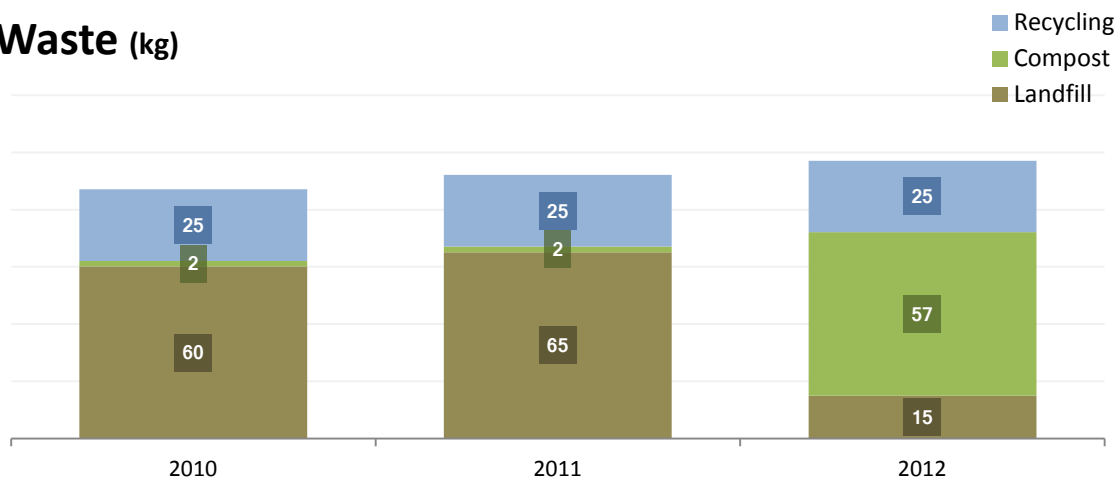
Average kgCO2e / L of Fuel:	2.4722
% of CO2e Emissions for Current Year:	95.3%

Table 5: Annual and Monthly Metrics for Fuel Consumption

Total L / Month	Total L / Year	tCO2e / Month	tCO2e / Year
14,034	168,409	34.7	416.3

# Waste

## Waste (kg)



**Analysis**  
 Compost described mainly as un-compressed paper cups (from hot chocolate) and small amounts of food scraps.

While waste has remained fairly constant since 2010, 2012 marked the first year of composting and advanced recycling, diverting the majority of mass from the landfill.

FIG 9: Annual Waste Disposal

% of Total Waste Composted:	100.0%
% of Total Waste Recycled:	0.0%

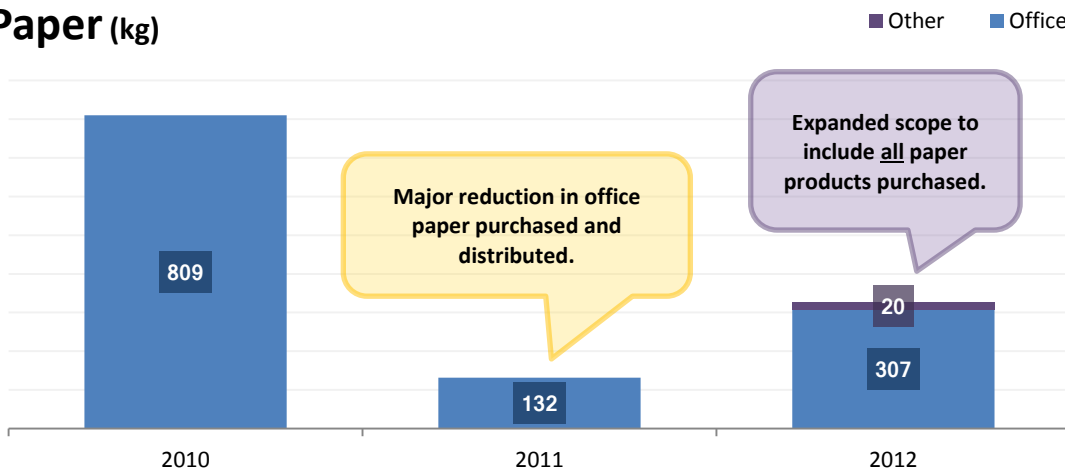
Total Annual kg / Employee:	5.712
% of CO2e Emissions for Current Year:	0.0%

Table 6: Annual and Monthly Metrics for Waste Disposal

kg / Month	kg / Year	tCO2e / Month	tCO2e / Year
5	57	0.0	0.0

# Paper

## Paper (kg)



### Analysis

We are acquiring more data for paper consumption as we continue to produce annual sustainability reports. This year, we are accounting for stationary as well as brochures, business cards, and the "Step Forward" letters, of which 10,000 were distributed, representing a complete carbon footprint for paper consumption for 2012.

FIG 10: Annual Paper Purchasing

Annual kg / Square Foot:	0.7
Annual kg / Employee:	32.7

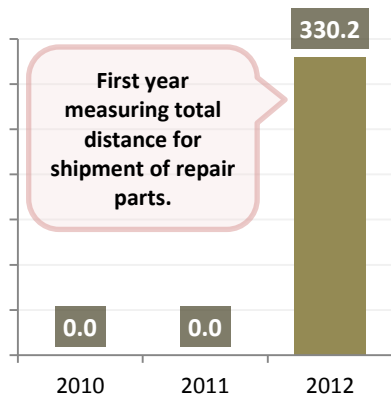
% of Paper from Recycled Sources:	100.0%
% of CO <sub>2</sub> e Emissions for Current Year:	0.1%

Table 7: Annual and Monthly Metrics for Paper Purchasing

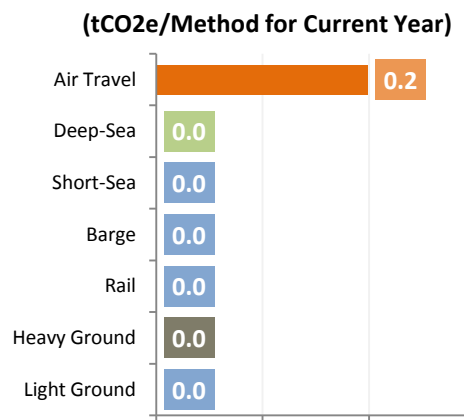
kg / Month	kg / Year	tCO <sub>2</sub> e / Month	tCO <sub>2</sub> e / Year
27.3	327.3	0.0	0.6

# Shipping

## Total Distance (MT/km by Year)



## Total Emissions (tCO<sub>2</sub>e/Method for Current Year)



### Analysis

Began tracking shipment of boat parts for repairs in 2012, transported by plane.

FIG 12: Annual Metric Tonnes/Kilometer and Emissions by Shipping Method

Equivalent Cars / Year (tCO <sub>2</sub> e):	0.0
Equivalent Barrels of Oil (tCO <sub>2</sub> e):	0.6

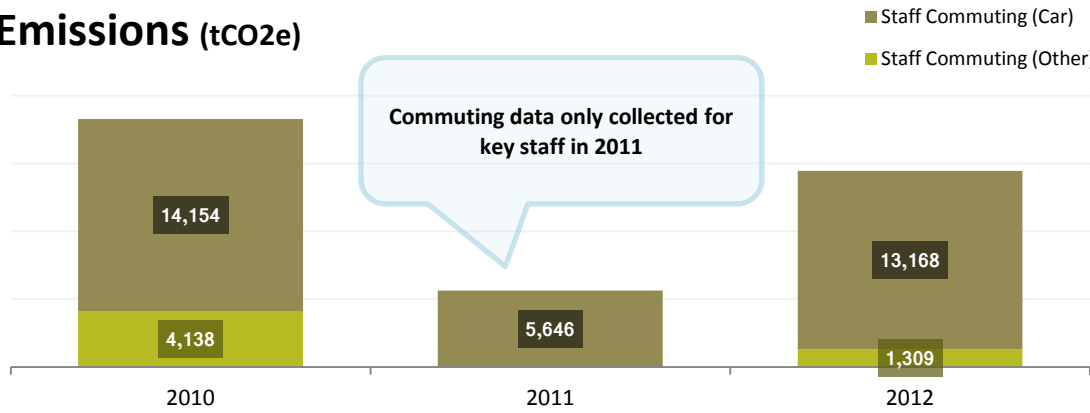
Average kgCO <sub>2</sub> e / MT/km:	1.6611
% of CO <sub>2</sub> e Emissions for Current Year:	0.0%

Table 9: Annual and Monthly Metrics for Shipping (Combined)

MT/km / Month	MT/km / Year	tCO <sub>2</sub> e / Month	tCO <sub>2</sub> e / Year
27.5	330.2	0.0	0.2

# Staff Commuting

## Emissions (tCO2e)



Commuting data only collected for key staff in 2011

**Analysis**  
Commuting data was collected thoroughly for 2012, accounting for distance and method for individual employees. This will be a new standard for all future reports.

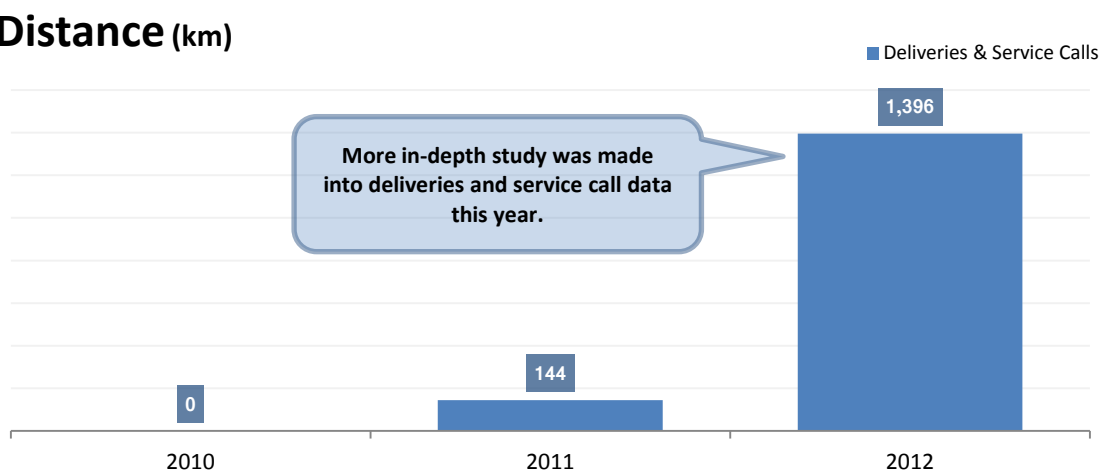
FIG 13: Annual Commuting Distance by Method



FIG 14: Total Commuting Distance by Method

# Deliveries & Service Calls

## Distance (km)



More in-depth study was made into deliveries and service call data this year.

**Analysis**  
Further to the efforts of improving emission accountability, all deliveries and pick-ups were accounted for in 2012. This includes several commutes by boat maintenance contractor to service Eagle Wing boats.

FIG 15: Annual Distance Travelled for Deliveries & Service Calls

Equivalent Cars / Year (tCO2e):	0.1
Equivalent Barrels of Oil (tCO2e):	1.2

Equivalent L of Gasoline Used:	183
% of CO2e Emissions for Current Year:	0.1%

Table 10: Annual and Monthly Metrics for Deliveries & Service Calls			
km / Month	km / Year	tCO2e / Month	tCO2e / Year
116.3	1,396.0	0.0	0.4

# References

**Table 11: Emissions Factor Reference Table**

Emission Source	Per Unit	CO <sub>2</sub> e (kg's)
Natural Gas	GJ	50.3014
Heating Oil	L	2.9393
Gasoline		2.2718
Propane		1.6117
Diesel		2.6765
Bio-Diesel		1.6059
Electricity	kWh	0.084
Plane (0-400km)	psg/km	0.2600
Plane (401-1,000km)		0.3600
Plane (1,001-3,700km)		0.2000
Plane (3,701-16,000km)		0.2300
BC Ferries		0.1365
Bus (Urban Diesel)		0.0342
Taxis		km
Hotel Room	Night	15.4221
Landfill Waste	kg	1.1600
Organics (Compost)		0.0000
Recycling (Mixed)		0.0000
Municipal Water	m <sup>3</sup>	0.0269
Paper (Virgin)	Ream	7.6522
Paper (100%PCR)		3.8506
Light Ground Shipping	MT/km	0.0310
Heavy Ground Shipping		0.0620
Rail Shipping		0.0220
Barge Shipping		0.0310
Short-Sea Shipping		0.0160
Deep-Sea Shipping		0.0080
Air Shipping		0.6020

References
Fuel emissions and mixed landfill emissions taken from <a href="http://www.ghgprotocol.org/">http://www.ghgprotocol.org/</a>
Equivalency results for CO <sub>2</sub> e/household extrapolated from <a href="http://www.env.gov.bc.ca/cas/mitigation/ghg_inventory/pdf/pir-2010-full-report.pdf">http://www.env.gov.bc.ca/cas/mitigation/ghg_inventory/pdf/pir-2010-full-report.pdf</a>
Organics and mixed recycling CO <sub>2</sub> e ratios obtained by contacting <a href="http://www.ec.gc.ca/gdd-mw/default.asp?lang=en&amp;n=D6A8B05A-1">http://www.ec.gc.ca/gdd-mw/default.asp?lang=en&amp;n=D6A8B05A-1</a>
Solid landfill waste density and recycled materials weight values taken from <a href="http://www.mass.gov/dep/recycle/approvals/dsconv.pdf">http://www.mass.gov/dep/recycle/approvals/dsconv.pdf</a>
Municipal water CO <sub>2</sub> e values extrapolated from <a href="http://www.wateregulation.ca/factsheets/pdf/FS_Water_Use.pdf">http://www.wateregulation.ca/factsheets/pdf/FS_Water_Use.pdf</a>
Office and washroom paper CO <sub>2</sub> e values extrapolated from <a href="http://www.papercalculator.org">http://www.papercalculator.org</a>
Equivalency results for CO <sub>2</sub> e/barrel of oil taken from <a href="http://www.epa.gov/RDEE/energy-resources/calculator.html#results">http://www.epa.gov/RDEE/energy-resources/calculator.html#results</a>
CO <sub>2</sub> e/kWh BC Hydro electricity (incl. Imports) taken from <a href="http://www.rfi.org/RFF/Documents/RFF-DP-07-18.pdf">http://www.rfi.org/RFF/Documents/RFF-DP-07-18.pdf</a>
Airplane CO <sub>2</sub> e/psg-km values taken from <a href="http://www.carbonplanet.com/downloads/Flight_Calculator_Information_v9.2.pdf">http://www.carbonplanet.com/downloads/Flight_Calculator_Information_v9.2.pdf</a>
Hotel CO <sub>2</sub> e/night value taken from <a href="http://hotelexecutive.com/business_review/1318/understanding-the-limitations-of-current-environmental-initiatives-in-the-us-hospitality-market">http://hotelexecutive.com/business_review/1318/understanding-the-limitations-of-current-environmental-initiatives-in-the-us-hospitality-market</a>
Emissions factors for rail & barge shipping taken from a report by <a href="http://www.cefic.org">http://www.cefic.org</a> (Full URL available on request.)
BC Ferries CO <sub>2</sub> e/psg-km value extrapolated from <a href="http://www.env.gov.bc.ca/cas/mitigation/pdfs/Methodology_for_Reporting_BC_Public_Sector_GHG_Emissions.pdf">http://www.env.gov.bc.ca/cas/mitigation/pdfs/Methodology_for_Reporting_BC_Public_Sector_GHG_Emissions.pdf</a>
kWh / home / year equivalent number extrapolated from <a href="http://www.livesmartbc.ca/learn/emissions.html">http://www.livesmartbc.ca/learn/emissions.html</a>
Additional cross-referencing of emissions data done through <a href="http://www.offsetters.ca/content/Offsetters_2010_GHG_Report.pdf">http://www.offsetters.ca/content/Offsetters_2010_GHG_Report.pdf</a>

## GLOSSARY of TERMS & UNITS

CFL	<b>Compact Fluorescent Lamp.</b>
DHW	<b>Domestic Hot Water.</b>
GHG	<b>Greenhouse Gas (emissions):</b> Atmospheric gasses contributing to the greenhouse gas effect, including Carbon Dioxide (CO <sub>2</sub> ), Methane (CH <sub>4</sub> ), Nitrous Oxide (N <sub>2</sub> O), etc.
GJ	<b>Gigajoule:</b> Unit of natural gas equal to 38.26 L, or 1/6 the volume of a barrel of oil.
HVAC	<b>Heating, Ventilation &amp; Air Conditioning.</b>
KPI	<b>Key Performance Indicators (Highlights.)</b>
kWh	<b>Kilowatt hour:</b> Unit of energy equal to 1,000 Watts, commonly used for billing.
LED	<b>Light Emitting Diode.</b>
m <sup>3</sup>	<b>Cubic meter:</b> Unit of measurement equal to 1,000 Litres, used here to quantify water.

MT-km	<b>Metric Tonnes per kilometer:</b> A unit of measurement used in shipping.
OTC	<b>Once-Through Cooling,</b> AKA water-cooling.
PCR%	<b>Post-Consumer Recycled Content (by percent.)</b>
psg-km	<b>Passenger Kilometer:</b> Unit separating total emissions between passengers/km.
ream	Standard unit of paper measurement equal to 500 sheets, with 10 reams in a box.
T12/T8	Models of common fluorescent tube lighting.
tCO <sub>2</sub> e	<b>Metric Tonnes of Carbon Dioxide Equivalent:</b> GHGs have different warming potential, measured collectively as CO <sub>2</sub> equivalent, hence "e".