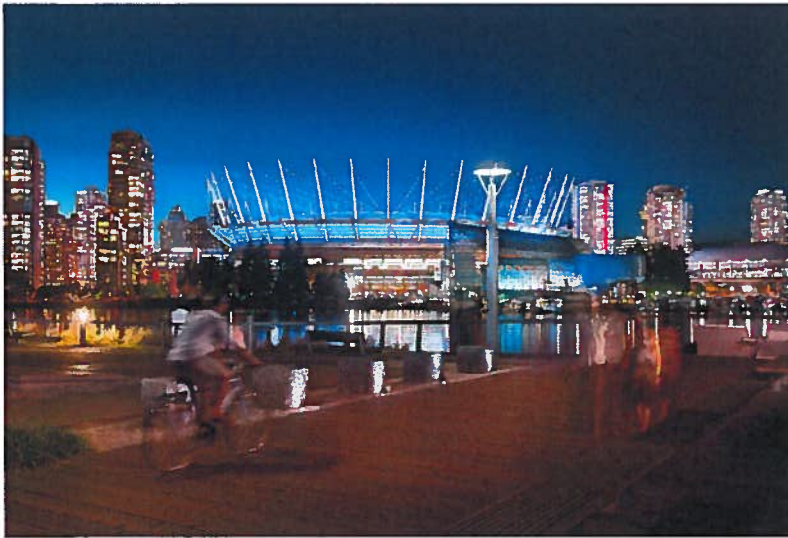




**BC Pavilion Corporation  
2012 Carbon Neutral Action Report**



# Executive Summary

BC Pavilion Corporation (PavCo), a Provincial Crown Corporation reporting to the Ministry of Energy, Mines, and Natural Gas, is a leader in the meetings and events industry. Committed to excellence from our values to our execution, PavCo operates two of BC's iconic facilities: BC Place Stadium and Vancouver Convention Centre (VCC).

## **Mandate**

To create significant economic and community benefits for the people of British Columbia by developing, marketing and operating iconic world class public convention, sports and entertainment facilities.

## **Vision**

As steward of two global icons, the Vancouver Convention Centre and BC Place, PavCo is the recognized leader in event facility development, marketing, and management.

## **Mission**

To deliver inspiring and sustainable experiences for our clients, guests and our community, by hosting conventions, entertainment, sporting and related events that meet their highest expectations.

## **Values**

*Quality and Service* – We set and meet the highest standards of service.

*Respect, Fairness, and Honest Communication* – We treat each other as we wish to be treated, and we openly share information to increase employee understanding and meaningful involvement.

*Financial Responsibility* – We make significant economic contributions to the Province and generate revenues to offset our operating costs.

*Creativity and Innovation* – We take responsible risks to find better ways, new methods and processes to get the job done.

*Enthusiasm* – We show our enjoyment of our work.

*Environmental Responsibility* – We continually look for new ways of conducting our business to reduce environmental impacts.

*Integrity* – We apply our values and deliver our promises.

From hosting global summit meetings to world class sporting and entertainment events, PavCo performs its mandate of generating economic and community benefit for the people of BC through the prudent management of public facilities. PavCo attracts customers internationally and continuously strives to optimize the financial performance of the facilities, which generate significant economic benefit for the Province of British Columbia.

The Vancouver Convention Centre's unique building features and best practices contribute to maintaining an environmental program as they work with clients to attain sustainability. VCC continues to take steps to manage and mitigate its carbon emissions in both the East and West buildings. Monitoring the efficiency of the major building systems, marine habitat skirt and enhanced procurement practices are initiatives continually undertaken.

2012 saw BC Place host a year of popular events after the renovations that took place in 2011. The facility continues to establish baselines for energy savings while at the same time optimizing the improved building systems. Sustainability continues to be a priority in the procurement practices and daily business operations.



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Kim Campbell  
BC Pavilion Corporation, Director of Finance

# 2012 Greenhouse Gas Emissions

Source	2011 tC02e	2012 tC02e
Buildings	6537	5785
Fleet	124	86
Carbon Neutral Offset Exempt	-2	-1
Office Supplies	6	14
Total	6667	5884
Carbon Neutral Offset Exempt	-2	-1
<b>Totals</b>	<b>6,665</b>	<b>5,883</b>

## Adjustment 2010 – 2011

Public Sector Organization	Adjustments to Offsets for 2010 and 2011(A)	Offsets for 2012(B)	Balance with Pacific Carbon Trust(C)	Total Offset Purchase Requirement for 2012 (D) = (A+B-C)
BC Pavilion Corporation	45	5,883		5,928

In 2012 PavCo realized success in reducing emissions from 2011 measures in mobile combustion by 20% and purchased energy by 13%.

### Offsets Applied to Become Carbon Neutral in 2012

BC Pavilion Corporation will purchase 5,884 tonnes of carbon offset, worth approximately \$146,000 as well as the adjustment of prior years 2010 and 2011 of 45 tonnes worth approximately \$1,125 to become carbon neutral for 2012.

### Actions Taken to Reduce Greenhouse Gas Emissions in 2012

At the Vancouver Convention Centre continued actions this year included: marketing of the Centre and its best practices for holding sustainable events; integration of lighting/heating controls with the event business management system for improved timing of lights & HVAC with the start and finish of event activities; and continued preventative and scheduled maintenance programs.

At BC Place, there was a continued effort to maintain as small a carbon footprint as possible including: continued procurement practices of green products; maintenance programs for the mechanical and electrical building systems as well as the maintenance programs for the mobile fleet.

### **Operational Changes in 2012**

In 2012 VCC started installation of flux or variable frequency drives on 15 Air Handling Units. These drives will allow the fans to use less energy, calculated based upon the load profiles of both the application and the overall operation. Energy savings from variable frequency drives come from the basic laws of motor operation. Theoretically, motor power input will drop according to the cube of the flow rate (load).

The completion and continued operation of the Integrated Building System in the East Facility allows the event based data to integrate with the mechanical and electrical systems to activate these systems only when required; e.g. daylight harvesting in the lobby to eliminate lighting, etc.

BC Place continues the facility's functionality transitions from indoor to an outdoor facility. Monitoring utility consumption continues, and baseline benchmarking continues to be established with respect to utility usage during event days (reflecting indoor/outdoor situations) as well as non-event days.

With few events booked in both BC Place and the Vancouver Convention Centre during the 2012 December Christmas season, PavCo proactively reduced the number of on-site staff and services to minimize utility usage.

### **Plans to Continue Reducing Greenhouse Gas Emissions 2013 – 2015**

At the Vancouver Convention Centre, full implementation of measurement tools will allow increasingly refined steps towards the facility's targeted goal of 3% annual decreases.

BC Place continues to maintain strategies on sustainability, including an employee/guest awareness program and an enhanced procurement program continues to investigate sources of new and improved environmentally friendly products. As baselines for utility, benchmarks continue to be established for both indoor/outdoor abilities, and BC Place continues to look for efficiencies and enhancements for optimization. The target for the facility continues to be an annual 3% decrease in energy use, following the BC Provincial Government reduction target of 33% by 2020.

### **Link to Publicly Available Sustainability Information**

<http://www.bcpavco.com/resources/>

Please see:

2012 Government Letter of Expectations, page 3

2013 Government Letter of Expectations, page 4

<http://www.bcplacestadium.com/index.php/roof.html>

<http://www.vancouverconventioncentre.com/thefacilities/environment/>



## BC Pavilion Corporation - 2012 Carbon Neutral Action Report

### Actions Towards Carbon Neutrality

The actions listed below contribute to a reduction in greenhouse gas emissions from sources for which public sector organizations are responsible under the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act.

Action	Status	Steps Taken	Steps Planned	Start Year	End Year
<b>Mobile Fuel Combustion (Fleet and other)</b>					
<b>Behaviour change program</b>					
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	All staff maintain valid operating licenses and are trained on off road equipment that they operate. Courses are offered for new staff when the need arises.	Continue with the policy above.	2008	2012
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Ongoing/In Progress	Both BC Place and VCC continue with their anti-idling policy for trucks in loading bays and truck routes.	Rarely, truck drivers will need to be reminded to switch off their engines. These reminders will continue where needed.	2008	2012
Encourage carpooling in fleet vehicles	Ongoing/In Progress	Staff are encouraged to combine trips and activities when able.	Continue with policy noted above.	2008	2012
Promote alternatives to fleet vehicle travel where possible (e.g., bicycles, public transit, walking)	Ongoing/In Progress	Facilities are accessible via public transit and PavCo is part of Translink's company offering. Bike racks are also available to staff and guests.	Continued with policy above.	2008	2012
<b>Vehicle fuel efficiency</b>					
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	A five year need assessment plan is in place for the fleet which will depend on available funds.	Same five year plan to continue.	2008	2012
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	Part of the five year needs assessment plan for both organizations.	Same five year plan for both organizations to continue.	2008	2012
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	Regular and repair maintenance is a continuum to ensure operating efficiency.	Regular and repair maintenance to continue.	2008	2012
<b>Stationary Fuel Combustion, Electricity</b>					
<b>Behaviour change program</b>					
Help staff reduce personal energy use through ""workstation tune-ups""	Not Yet Evaluated				No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Not Yet Evaluated				No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Not Yet Evaluated				No End Date (Continuous)
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Not Yet Evaluated				No End Date (Continuous)
Encourage staff to use air dry setting on dishwashers	Not Yet Evaluated				No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	Not Yet Evaluated				No End Date (Continuous)
Encourage use of stairs instead of elevators	Not Yet Evaluated				No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Not Yet Evaluated				No End Date (Continuous)
Promote hot water conservation	Not Yet Evaluated				No End Date (Continuous)
<b>IT power management</b>					
Install power management software which shuts down computers outside of regular business hours	Completed (in Previous Year)				No End Date (Continuous)
Implement server virtualization	Completed (in Previous Year)				No End Date (Continuous)

## BC Pavilion Corporation - 2012 Carbon Neutral Action Report

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Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Apply auto-sleep settings on computer monitors and CPUs	Completed (in Previous Year)				No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices as part of a print management strategy	Ongoing/In Progress	Ongoing, upgraded when required and money is available.	Ongoing, upgraded when required and money is available.	2008	2012
Apply auto-sleep settings on printers, fax machines, and/or multi-function devices	Completed (in Previous Year)				No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Completed (in Reporting Year)	All new computers are Energy Star rated.		2011	2012
<b>Leased buildings</b>					
Establish energy performance baseline for leased buildings	Ongoing/In Progress	VCC East installed additional CARMA meters to allow for forecasting on baselines. Reporting module yet to be complete.	Reporting module to be complete.	2011	2013
<b>Owned buildings</b>					
Establish energy performance baseline for owned buildings	Ongoing/In Progress	BC Place is still gathering data volumes for baselines since renovations. VCC has baselines established by both BC Hydro and FortisBC, however both facilities need to be aware that these baselines and forecasts may fluctuate as do Event numbers and attendance.	Continue to refer to baselines from Utilities to formulate in-house baselines with event numbers and attendance.	2011	2012
Register for performance labelling/certification for operations and maintenance of owned buildings (e.g., LEED EB:O&M)	Not Yet Evaluated				No End Date (Continuous)
Register for performance labelling/certification for commercial interiors of owned buildings (e.g., LEED CI)	Not Yet Evaluated				No End Date (Continuous)
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	Completed (in Previous Year)				No End Date (Continuous)
Perform energy retrofits on existing, owned buildings	Ongoing/In Progress	VCC is undergoing a process to add variable speed drives (Flux Drives) to their Air Handling equipment. BC Place continues to adjust systems to ensure optimal performance since retrofit in 2010 / 2011.	Continue with variable speed drives (Flux Drives) to Air Handling equipment at VCC. Continue at BC Place to adjust systems.	2011	2012
Incorporate a refrigerant management strategy into regular building management/maintenance to reduce fugitive emissions	Ongoing/In Progress	Continue with procurement of Energy Star appliances when required.	Continue with procurement of Energy Star appliances when required.	2008	2012
<b>Planning/management</b>					
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	VCC changed over from QuadLogic to CARMA meters with additional CARMA meters installed at both VCC East & West. Reporting package yet to be complete.	Reporting package to be defined.	2011	2012
<b>Retrofit details for owned buildings</b>					
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	Continued assessment of systems both at BC Place and at VCC.	Continue assessment of systems both at BC Place and at VCC.	2009	2012
Upgrade lighting systems during retrofits	Ongoing/In Progress	Continued assessment of systems both at BC Place and at VCC. Integration of Event Based Management System to allow for better lighting and heating controls implemented.	Continue with assessments.	2010	2012
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	Additional refinements to Building Automation Controls completed. Ongoing throughout sites.	Continue with policy above.	2011	2012
Improve building insulation (including windows) during retrofits	Completed (in Reporting Year)	Continued to completion for renovations at BC Place. VCC - not applicable.		2011	2012
<b>Supplies (Paper)</b>					
<b>Behaviour change program</b>					

## BC Pavilion Corporation - 2012 Carbon Neutral Action Report

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Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress	Ongoing training for staff in Event Based Management System and other software when required.	Continue with policy above.	2008	No End Date (Continuous)
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	Ongoing/In Progress	Extensive use of shared drives for file sharing.	Continue with policy above.	2008	2012
<b>Electronic media in place of paper</b>					
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Completed (in Previous Year)				No End Date (Continuous)
Use electronic document library for filing common documents	Ongoing/In Progress	Extensive use of share drives at facilities for file sharing.	Continue extensive use of share drives.	2008	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Completed (in Previous Year)				No End Date (Continuous)
<b>Paper Type</b>					
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	BC Place uses 30% post consumer recycled paper.	Continue with BC Place purchasing 30% post consumer recycled paper or better.	2008	No End Date (Continuous)
Purchase 100% post-consumer recycled paper	Ongoing/In Progress	VCC uses 100% post-consumer recycled paper.	Continue with VCC purchasing 100% post-consumer recycled paper.	2008	No End Date (Continuous)
<b>Printer/document settings</b>					
Switch networked printers and photocopiers to automatic double-sided	Ongoing/In Progress	Printers and photocopiers default to double sided where available and required.	Continue with policy for double sided print jobs where available and required.	2010	No End Date (Continuous)

## BC Pavilion Corporation - 2012 Carbon Neutral Action Report

### Actions to Reduce Provincial Emissions and Improve Sustainability

The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act. Public sector

Action	Status	Steps Taken	Steps Planned	Start Year	End Year
<b>Business Travel</b>					
<b>Behaviour change program</b>					
Train staff in web-conferencing	Completed (in Previous Year)				No End Date (Continuous)
Encourage staff to consider virtual attendance/presentation at events where possible	Completed (in Previous Year)				No End Date (Continuous)
Encourage carpooling to meetings	Completed (in Previous Year)				No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Completed (in Previous Year)				No End Date (Continuous)
<b>Virtual meeting technology</b>					
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Completed (in Previous Year)				No End Date (Continuous)
Make desktop web-cameras available to staff	Not Yet Evaluated				No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	Completed (in Previous Year)				No End Date (Continuous)
<b>Education, Awareness, and Engagement</b>					
<b>Awards/Recognition</b>					
Establish a sustainability/green awards or recognition program	Not Yet Evaluated				No End Date (Continuous)
<b>Staff Professional Development</b>					
Support green professional development (e.g., workshops, conferences, training)	Not Yet Evaluated				No End Date (Continuous)
Include green options in employee performance measurement system	Not Yet Evaluated				No End Date (Continuous)
<b>Staff awareness/education</b>					
Provide education to staff about the science of climate change	Not Yet Evaluated				No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Not Yet Evaluated				No End Date (Continuous)
Provide green tips on staff website or in newsletters	Not Yet Evaluated				No End Date (Continuous)
Provide sustainability education during new staff orientation	Not Yet Evaluated				No End Date (Continuous)
<b>Team-building</b>					
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Not Yet Evaluated				No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Not Yet Evaluated				No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Not Yet Evaluated				No End Date (Continuous)
<b>Other Sustainability Actions</b>					
<b>Adaptation to Climate Change</b>					



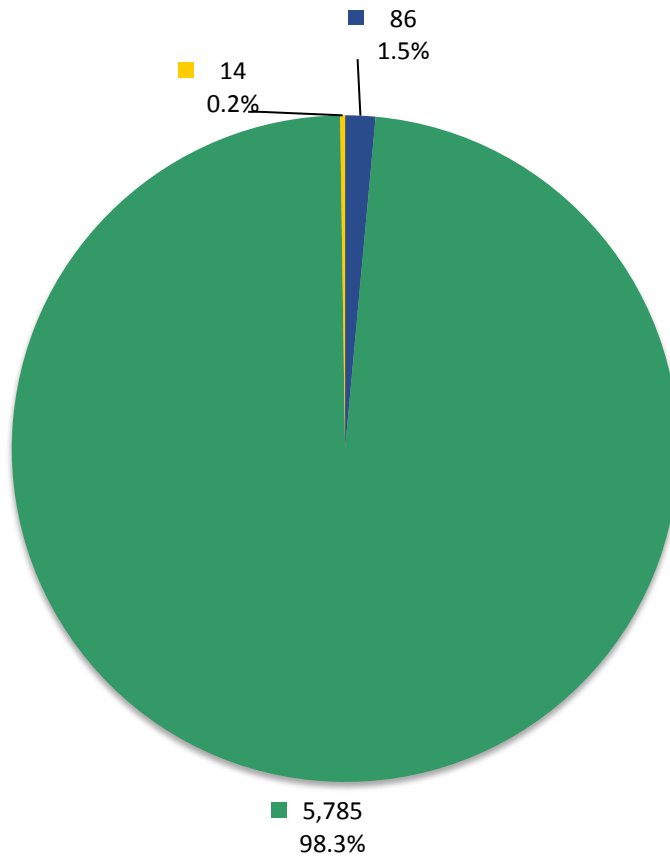
## BC Pavilion Corporation - 2012 Carbon Neutral Action Report

### Actions to Reduce Provincial Emissions and Improve Sustainability

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Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Assessed whether extreme weather events and/or long term changes in climate will affect the organization's business areas	Not Yet Evaluated				No End Date (Continuous)
Integrated considerations of extreme weather events and/or long term changes in climate into the organization's decision making.	Not Yet Evaluated				No End Date (Continuous)
<b>Building construction, renovation</b>					
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Completed (in Previous Year)				No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	Not Yet Evaluated				No End Date (Continuous)
<b>Commuting to and from home</b>					
Introduce telework/work from home policy	Not Yet Evaluated				No End Date (Continuous)
Encourage commuting by foot, bicycle, carpool or public transit	Completed (in Previous Year)				No End Date (Continuous)
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Completed (in Previous Year)				No End Date (Continuous)
Provide secure bicycle storage	Completed (in Previous Year)				No End Date (Continuous)
<b>Procurement (non-paper supplies)</b>					
Incorporate minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)	Completed (in Previous Year)				No End Date (Continuous)
Establish green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)	Completed (in Previous Year)				No End Date (Continuous)
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	Completed (in Previous Year)				No End Date (Continuous)
<b>Waste reduction/diversion</b>					
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	Completed (in Previous Year)				No End Date (Continuous)
Implement a hazardous waste reduction and disposal strategy	Completed (in Previous Year)				No End Date (Continuous)
<b>Water conservation</b>					
Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models	Completed (in Previous Year)				No End Date (Continuous)
Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features	Completed (in Previous Year)				No End Date (Continuous)
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	Completed (in Previous Year)				No End Date (Continuous)

**BC Pavilion Corporation  
Greenhouse Gas Emissions by Source  
for the 2012 Calendar Year (tCO<sub>2</sub>e\*)**



**Total Emissions: 5,884**

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

**Offsets Applied to Become Carbon Neutral in 2012 (Generated May 27, 2013 12:05 PM)**

Total offsets required: **5,883**. Total offset investment: **\$147,075**. Emissions which do not require offsets: **1** \*\*

\*Tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

\*\* Under the *Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act*, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.