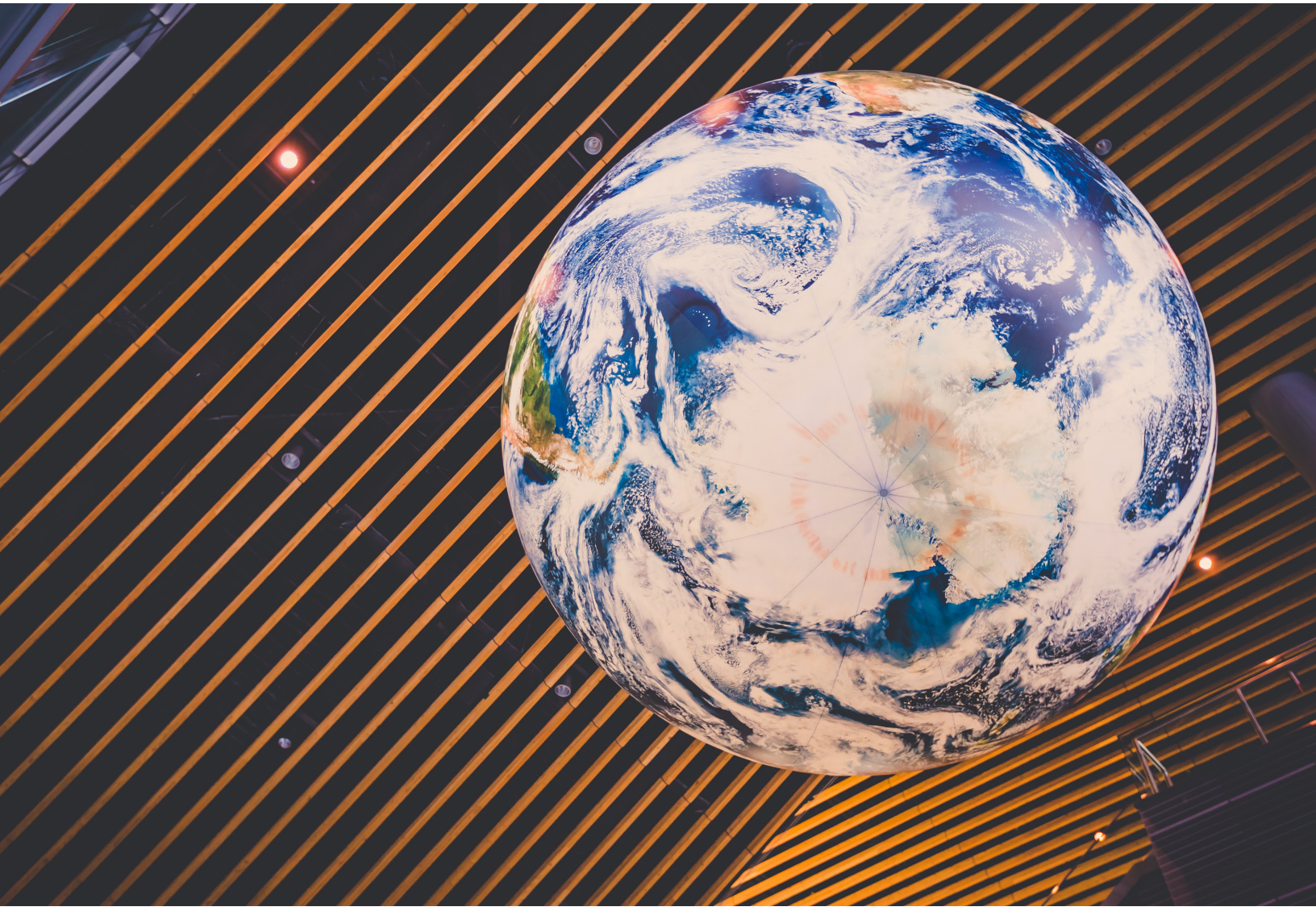
2018

Carbon Neutral Action Report



PAVCO

BC PAVILION CORPORATION

DECLARATION STATEMENT:

This Carbon Neutral Action Report for the period January 1, 2018 to December 31, 2018 summarizes BC Pavilion Corporation's (PavCo) emissions profile, the total offsets to reach net-zero emissions, the actions taken in 2018 to reduce its greenhouse gas emissions and plans to continue reducing emissions in 2019 and beyond.

By June 30, 2019, PavCo's final *Carbon Neutral Action Report* will be posted to its website at www.bcpavco.com.

BC Pavilion Corporation is a Provincial Crown Corporation with a mandate to generate economic and community benefit for the people of British Columbia through the prudent management of public facilities. PavCo owns and operates two world-class public facilities located in downtown Vancouver: BC Place and the Vancouver Convention Centre. During the calendar year 2018, PavCo reported to the Ministry of Tourism, Arts and Culture.

PAVCO'S MANDATE

To generate economic and community benefit for the people of British Columbia through prudent management of public facilities.

PAVCO'S FACILITIES

BC Place is one of the most technologically advanced stadiums in the world. It boasts a cutting-edge spectrum of customizable features, such as high definition video displays, interior temperature control, incredible acoustics, retractable seating, and a FIFA 2-Star rated playing surface.

The Vancouver Convention Centre consists of two uniquely designed buildings, the iconic East building and stunning West building, the world's first double LEED® Platinum certified convention facility. The Convention Centre is designed with the latest environmentally sustainable features and technology, including a six-acre "living roof", a marine habitat and an on-site Blackwater Treatment Plant, and is committed to operating in an environmentally sustainable manner.

Together, BC Place and the Vancouver Convention Centre generates in excess of $450 million in economic benefit for the province annually. These important venues attract thousands of people every year to the province, economically supporting the tourism and hospitality industries, as well as trade development.

PAVCO'S VISION

To be the global leader in outstanding venues and events.

PAVCO'S VALUES

- Quality and Service
- Respect, Fairness and Honest Communication
- Financial Responsibility
- Creativity and Innovation
- Enthusiasm
- Environmental Responsibility, Integrity

OVERVIEW

Over the past year, BC Place has continued to switch several lighting systems to more efficient LED fixtures and advanced lighting control technology. The sports lighting for the Field of Play was the largest single electrical load at the facility. This lighting system has be upgraded to an energy efficient LED system with several additional non-energy benefits such as light quality for high definition broadcasting. In HVAC, several heating and cooling systems were re-commissioned which resulted in

substantial energy savings. As part of a Low Carbon Energy (LCE) initiative, heat pump loops were re-commissioned to optimize heat recovery between heating and cooling zones.

Upcoming projects for 2019 will include: Domestic hot water system upgrades for the team locker rooms incorporating condensate heat recovery, stadium-wide sub-meter installation to manage electrical loads, additional LED upgrades. Within 2019, BC Place is also exploring options to upgrade the stadium heating system and mobile equipment fleet, which make up a large contribution to the corporation GHG emissions. This will include an economic analysis of Low Carbon alternatives.

The Convention Centre continues to upgrade its lighting systems to LED fittings, and has installed variable speed drives on the 5 remaining Air Handling Units that were previously operating at fixed speeds. Data centre cooling systems were also upgraded to operate on a refrigerant backup system so that our Central Plant and Seawater Pumps can be shutdown overnight. Over the coming years the Convention Centre will continue upgrading its lighting systems to LED, transition a portion of its gas supply to renewable natural gas, install photovoltaic solar panels on its roof, and use heat pump technology to preheat cold water and reduce GHG emissions from steam in order to provide domestic hot water.

BC Pavilion Corporation GHG Emissions and Offset for 2018 (tCO_2e)	
GHG Emissions created in Calendar Year 2018:	
Total Emissions (tCO_2e)	*3,752*
Total $BioCO_2$	*1.04*
Total Offsets (tCO_2e)	*3751*
Adjustments to GHG Emissions Reported in Prior Years:	
Total Emissions (tCO_2e)	*11*
Total Offsets (tCO_2e)	*11*
Grand Total Offsets for the 2018 Reporting Year:	
Grand Total Offsets Required (tCO_2e)	3,762
Total Offset Investment	*$94,050*

RETIREMENT OF OFFSETS:

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, PavCo (**the Organization)** is responsible for arranging for the retirement of the offsets obligation reported above for the 2018 calendar year, together with any adjustments reported for past calendar years. The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy ensuring that these offsets are retired on the Organization's behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to $25 per tonne of offsets retired on its behalf plus GST.

EXECUTIVE SIGN-OFF:

Signature	Date: May 29, 2019
Name (please print): Rehana Din	Title: CFO

Part 1: CNAR Survey

1. General Information

Name: Mandy Gale

Contact Email: mgale@vancouverconventioncentre.com

Organization Name: BC Pavilion Corporation

Sector: Crown

Role - Please select your role(s) below.
If more than one individual completed the survey, multiple categories may be selected:

Energy Manager: Yes

Sustainability Coordinator: Yes

Administrative Assistant: No

Facilities/Operations Manager/Coordinator: Yes

CEO/President/Exec Director: No

Treasurer/Accounting: No

Superintendent: No

A. Stationary Sources (e.g. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

1. Actions taken by your organization in 2018 to support emissions reductions from buildings.

a) Do you have a strategy to reduce emissions from stationary sources?

Yes

If yes above, what are the main goals?: Reduction in GHG emissions in 2019 by 5% compared to 2018 emissions

b) Whether you have a strategy or not (1.a), briefly describe your organization's plans to continue reducing emissions from stationary sources:

I. Over the medium-term term (1-5 years)

Through electrification and fuel switching, reduce emissions from carbon intensive energy loads. Continue to upgrade existing light fixtures to LEDs. Installation of solar panels. Purchasing of Renewable Natural Gas rather than standard natural gas from Fortis BC.

II. Over the long term (6-10 years)

Integrate low carbon technology and renewable infrastructure in our facilities such as solar panels and heat pumps.

c) Please describe your strategy's goals (if any) related to energy audits.

Through performance monitoring verify energy reduction targets and update future targets.

I. What % on average of your building portfolio has an energy audit completed each year (if any)?: 100

d) Please describe your strategy's goals (if any) related to building retrofits.

Our strategy includes an energy policy as well as a sustainability policy which address requirements for building retrofits to improve building efficiency and reduce environmental impact.

I. What % on average of your building portfolio is retrofitted each year in the following categories (if any) - click here for further information:

Minor retrofits (e.g., low cost, easy to implement measures including caulking, lighting, adding roof insulation, etc.) (%): 100

Major retrofits (e.g., replacing windows and doors, equipment replacement such as boilers, etc.) (%): 0

Deep retrofits (e.g., replacing roof, replacing the heating, ventilation and air-conditioning system with a renewable technology like a ground-source heat pump, etc.) (%): 0

e) Please describe your strategy's re/retro-commissioning goals (if any)?

Continually optimizing facilities through re-commissioning.

I. What % on average of your building portfolio do you recommission each year?: 50

f) Do you keep records of Refrigerant gases category and refilling volumes?

Yes

I. If yes, have you included the associated emissions in your reporting?

Yes

II. What, if any, mitigation approaches have been considered? Please describe.

Regular maintenance by specialist contractors. Reduced run time of refrigeration equipment in order to reduce wear and tear and lower energy usage

g) How many newly constructed buildings received at least LEED Gold certification in 2018: 0

I. How many newly constructed buildings did not receive LEED Gold certification?: 0

B. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

3. Actions taken by your organization in 2018 to support emissions reductions from mobile sources.

a) Do you have a strategy to reduce emissions from mobile sources?

Yes

I. If yes, what are its goals?

All new mobile equipment to be electric where possible.

b) Whether you have a strategy or not (3.a), briefly describe your organization's plans to continue reducing emissions from mobile sources:

I. Over the medium-term term (1-5 years)

New forklifts and boom lifts to be electric rather than propane.

II. Over the long term (6-10 years)

As above until entire fleet is electric.

c) How many fleet vehicles did you purchase from the following categories:

Electric Vehicle – EV - (e.g., Nissan Leaf, Chevy Bolt): 0

"Plug In" Electric Vehicle – PHEV (e.g., plug-in Prius, Chevy Volt): 0

Hybrid vehicle – HEV – non "Plug In"- (e.g., Toyota Highlander Hybrid): 0

Hydrogen fuel cell vehicle : 0

Natural gas/propane: 0

Gas/diesel vehicle: 0

d) How many existing EV charging stations does your organization have in each category:

level 2: 0

level 3: 0

How many level 2 stations (if any) are specifically for your fleet vehicles: 0

How many level 3 stations (if any) are specifically for your fleet vehicles: 0

e) How many EV charging station(s) did you install in 2018 in each category:

level 2: 0

level 3: 0

How many level 2 stations (if any) were installed specifically for your fleet vehicles: 0

How many level 3 stations (if any) were installed specifically for your fleet vehicles: 0

4. Please indicate the number of the vehicles in the following vehicle classes that are in your current fleet (including any purchased in 2018):

Definitions:

• Light duty vehicles (LDVs) are designated primarily for transport of passengers <13 and GVWR<3900kg
• Light duty trucks (LDTs) are designated primarily for transport of light-weight cargo or that are equipped with special features such as four-wheel drive for off-road operation (include SUVs, vans, trucks with a GVWR<3,900kg)
• Heavy duty vehicles (HDV) includes vehicles with a GVWR>3,900 kg (e.g. ¾ tonne pick-up truck, transport trucks)

a) Light duty vehicles (LDVs)

Electric Vehicles – EV - (e.g., Nissan Leaf, Chevy Bolt): 0

"Plug In" Electric Vehicle – PHEV -- (e.g., plug-in Prius, Chevy Volt) : 0

Hybrid vehicles – HEV – (e.g., non "Plug In"- older Toyota Prius, Toyota Camry hybrid): 0

Hydrogen fuel cell vehicles: 0

Natural gas/propane: 0

Gas/diesel: 0

b) Light duty trucks (LDTs)

Electric Vehicles – EV : 0

"Plug In" Electric Vehicle – PHEV: 0

Hybrid vehicles – HEV – (e.g., non "Plug In"- older Ford Escape Hybrid, older Chevrolet Silverado pickup hybrid etc): 0

Hydrogen fuel cell vehicles: 0
Natural Gas/propane: 0
Gas/diesel: 1

c) Heavy duty vehicles (HDV)

Electric Vehicles – EV : 0
"Plug In" Electric Vehicle – PHEV : 0
Hybrid vehicles – HEV – (e.g., non "Plug In"): 0
Hydrogen fuel cell vehicles: 0
Natural Gas/propane: 0
Gas/diesel: 0

5. Please indicate the number of the vehicles you plan to replace in your fleet:

How much do you budget per LDV?: 0
How many LDVs do you plan to procure annually over the next 5 years?: 0
How much do you budget per LDT?: 0
How many LDTs do you plan to replace annually over the next 5 years?: 0
How much do you plan to spend per HDV?: 0
How many HDVs do you plan to replace annually over the next 5 years?: 0

C. Office Paper: Indicate which actions your PSO took in 2018:

6. Actions taken by your organization in 2018 to support emissions reductions from paper supplies.

a) Do you have an Office Paper strategy?

Yes

I. If yes, what are its goals?

To ensure all purchased paper is made from 100% post consumer product or is alternate sourced paper.

b) Whether you have a strategy or not (6.a), briefly describe your organization's plans to continue reducing emissions from paper use:

I. Over the medium-term (1-5 years)

Work with IT to create technology training that will allow staff to use computers in place of paper for meetings.

II. Over the long term (6-10 years)

Work with clients to transition events to 100% paperless by leveraging mobile technology.

c) Have an awareness campaign focused on reducing office paper use

Yes

d) Purchased alternate source paper (bamboo, hemp, wheat, etc.)

Yes