

2019 Carbon Neutral Action Report

BC Pavilion Corporation

DECLARATION STATEMENT:

This Carbon Neutral Action Report for the period January 1, 2019 to December 31, 2019 summarizes BC Pavilion Corporation's (PavCo) emissions profile, the total offsets to reach net-zero emissions, the actions taken in 2019 to reduce its greenhouse gas (GHG) emissions and plans to continue reducing emissions in 2020 and beyond.

By June 30, 2020, 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 2019, 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 continually in an environmentally sustainable manner.

Together, BC Place and the Vancouver Convention Centre generate in excess of \$450 million in economic benefit for the province annually. These important venues attract thousands of local and international guests 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

- Trust and Respect
- Accountability
- Innovation
- Teamwork
- Diversity and Inclusivity
- Service Excellence

OVERVIEW

PavCo has implemented a Strategic Energy Management Plan (SEMP), which outlines principals for energy conservation and investment in energy-related projects. The primary objective of this plan is to reposition energy management and the associated GHG emissions, as a broader strategic improvement to the organization, beyond solely reducing operating expenses. The plan has identified

the primary sources of GHG emissions associated with PavCo's operations and proposes strategies and projects to reduce these emissions.

Throughout 2019, the Vancouver Convention Centre continued its transition to energy efficient LED lighting systems. Substantial lighting retrofits were performed in both buildings, reducing energy consumption and the mercury content associated with existing fluorescent fixtures. Variable speed drives were installed on Air Handling Units that were previously operating at fixed speeds to enable demand control ventilation and energy savings during periods of low or intermittent occupancy. Commencing in April 2019, Renewable Natural Gas (RNG) was purchased from FortisBC to offset the emissions associated with the Convention Centre kitchen operations and lighting of the Olympic cauldron. To offset the domestic water consumption at the West building, the existing black water treatment plant was expanded to increase its overall capacity. The recycled water is used for toilet flushing and roof irrigation.

BC Place has also continued in switching several lighting systems to LED fixtures and advanced lighting control technology, building on the success of its new LED field of play lighting system, originally completed in February 2019. Several refrigeration units throughout the stadium were also upgraded with more efficient systems utilizing safer refrigerants. In order to reduce the level of steam consumption associated with DHW systems, the facility is undergoing an upgrade of its DHW steam heat exchangers with condensate heat recovery. The project is due for completion in 2020. As well, to reduce overall domestic water consumption at the facility, a pilot rain water harvesting project is underway and will be commissioned in 2020.


In 2019, Low Carbon Energy (LCE) feasibility studies were completed at each facility to identify opportunities to reduce carbon emissions. These studies have identified heat recovery projects that would recycle waste heat for space heating and DHW preheat. These projects will be implemented in the coming years as part of a larger plan to meet the organization's carbon reduction targets.

BC Pavilion Corporation GHG Emissions and Offsets for 2019	
As per the Directive issued March 31, 2020, each PSO will use their 2018 GHG Emissions as a placeholder for the purposes of their 2019 CNAR.	
Total Emissions (tCO ₂ e)	3,752
Total BioCO ₂	1
Total Offsets (tCO ₂ e)	3,752
Offset Investment (\$25 per tCO ₂ e)	\$93,800

RETIREMENT OF OFFSETS:

In accordance with the requirements of the *Climate Change Accountability Act* and Carbon Neutral Government Regulation, BC Pavilion Corporation (**the Organization**) is responsible for arranging for the retirement of the offsets obligation reported above for the 2019 calendar year, together with any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy (**the Ministry**) 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:

	Rehana Din	May 28, 2020
Signature		Date
		CFO
Name (please print)		Title

Confirmation number: 00BCCC27

Submitted date: 2020-06-24 15:23:20 Pacific Daylight Time

Carbon Neutral Action Report Survey - 2019

Public sector organizations (PSOs) are required to complete this survey, in addition to a Carbon Neutral Action Report (CNAR) as mandated by BC's [Climate Change Accountability Act](#) and the [Carbon Neutral Government Regulation](#).

Due to the COVID-19 pandemic, the following [Directive](#) was issued on March 31, 2020. Certain deadlines were also extended for the 2019 reporting year (see below).

March 31, 2020 Directive:

Under my authority as the Director for the purposes of the Act, and under the authority delegated to me in Section 6 of the Carbon Neutral Government Regulation, I hereby direct that all ministries and Public Sector Organizations covered by the Carbon Neutral Government requirement shall use their 2018 GHG emissions as a temporary estimate for their actual 2019 GHG emissions, for the purposes of the 2019 Carbon Neutral Action Reports and 2019 Carbon Neutral Government reporting required under the Climate Change Accountability Act.

Neil Dobson, Executive Director, Clean BC Implementation
Climate Action Secretariat

Although 2018 emissions data will be used as a placeholder for 2019, **all other (qualitative) components of the CNAR and CNAR Survey are to be completed with information from 2019 (e.g., actions taken or planned to reduce emissions)**. The only change to the survey is that the deadline was extended by one month to June 30, 2020.

This survey is divided into two parts:

Part 1 - Will be made public on the Climate Action Secretariat (CAS) [website](#) after June 30, 2020; however, it will not be appended directly to each individual PSO CNAR as was done in previous years. This section collects details about actions taken or planned to reduce emissions and is intended to supplement the legislative requirements in your CNAR.

Part 2 - Will NOT be made public. Information you provide in this section is important and will be used internally to help CAS staff with planning for emissions reduction and climate change adaptation initiatives. Although not required, PSOs are highly encouraged to complete Part 2.

Note: Survey progress can be saved at any time by clicking the "Save and continue later" button at the bottom of each page. A new window will open and you will be asked to provide your name and email. An email will be sent to you from Carbon.Neutral@gov.bc.ca with the subject line: "Questionnaire Link", which will include a hyperlink for the "Project: Carbon Neutral Action Report Survey – Broader Public Sector 2019". You can then continue responding at another time or email the hyperlink to a colleague to complete remaining section(s).

May 29, 2020	<ul style="list-style-type: none">The final, signed version of the CNAR (or Small Emitters Form) must be submitted by email to: Carbon.Neutral@gov.bc.ca
June 30, 2020*	<ul style="list-style-type: none">Ministry of Environment and Climate Change Strategy must post a final CNAR for each organization on the BC Government's CNG website and each PSO is encouraged to post the report on their website.The CNAR Survey (optional for Small Emitters) must be completed and submitted online. *Deadline extended from May 29, 2020.<u>All offset invoice payments must be submitted to CAS.</u>
Sept 30, 2020*	<ul style="list-style-type: none">Clean Government Reporting Tool (CGRT) Data Entry must be completed for the 2019 reporting year.

	*Deadline extended from April 30, 2020.
Oct 15, 2020*	<ul style="list-style-type: none"> • Self-Certification checklist must be completed, signed and submitted by email to: Carbon.Neutral@gov.bc.ca. *Deadline extended from May 15, 2020.

*See the [Carbon Neutral Government – Program Requirements website](#) for more information on program requirements, timelines and templates.

PART 1 - Included as part of your public CNAR report.

Reminder that Part 1 will be made public on the CAS [website](#).

Contact Name:
<i>Jamie Moore</i>
Contact Email:
<i>jmoore@bcpavco.com</i>
Organization Name:
<i>BC Pavilion Corporation</i>
Role – Please select the best category for your current role with your organization. If more than one individual completed the survey, multiple categories may be selected:
Energy Manager Sustainability Coordinator
Please select your sector:
Crown (CR)

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

Actions taken by your organization in 2019 to support emissions reductions from buildings

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

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

Over the medium-term term (1-5 years)
<i>The largest sources of emissions have been identified throughout our portfolio. Over the medium term, priority is given to improving system level efficiency to reduce emissions and in some cases offsetting emissions with the purchase of RNG from Fortis.</i>
Over the long term (6-10 years)
<i>As assets associated with high emitting systems approach end-of-life, they are considered for major or deep retrofitting projects where the lifetime emissions are considered. We continue to monitor the latest technology associated with heat pumps and have determined pilot projects to switch over some of our systems in a long term strategy. Our long term targets align to with all Provincial GHG reduction targets.</i>

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

One key part of our energy management plan is measurement and auditing. If we can't measure energy consumption, we can't manage it. Internally we conduct regular facility and event energy audits to get a better understanding of overall energy and emissions.

As part of our actions to cope with Covid-19, we have performed even more audits to find opportunities to save energy and reduce emissions while our facilities are closed.

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

30

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

We have corporate objectives to both be a venue of choice in global events and to be a local leader in environmental stewardship. To meet both of these objectives, retrofits are required. Our capital asset framework plan is a tool to monitor the life expectancy and capital requirements of our assets. This tool produces short, medium and long term retrofit requirements. All projects related to Engineering are considered in terms of their effect on emissions and overall effect on sustainability beyond the scope of the CNAR.

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

*Capital budget of \$10m
probably 2%*

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

We have and continue to perform substantial LED lighting retrofits across all our facilities. These provide good energy savings but also have several other non-energy related benefits.

We have made several upgrades to building automation systems to enhance control and reduce energy at both facilities. This includes variable speed drives and basic expansion of the automation systems where there previously was no controls.

Other measures such as insulation are required on every project.

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

Currently upgrading stand-fed DHW heat ex changers at BC Place. This project includes a waste heat recovery portion to offset the energy required and associated emissions.

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.)

At the vancouver convention centre we are in the planning stages of an upgrade to the DHW system to preheat with heat pump infrastructure. This is to decarbonize the last major source of emissions at the facility.

At BC Place, a deep retrofit to the main heating and ventilation system are in the planning stage. These assets are approaching end-of-life and several options are being considered to reduce emissions.

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

Retro-commissioning is considered in all retrofit projects, especially those which impact the building automation systems. A good example of the this is adding variable speed drives and demand control ventilation. The control philosophy for such equipment is modified within the projects.

Beyond retrofit projects, sub-systems are monitored for energy performance and retro-commissioning as necessary.

What % on average of your building portfolio do you recommission each year?

10-20

Do you keep records of Refrigerant gases¹ category and refilling volumes?

[1] Fugitive emissions from stationary cooling equipment are attributed to the leakage and loss of HFC and PFC based coolants from air conditioning and commercial type refrigeration systems. Coolant loss can occur during the manufacturing, operation, and disposal of such equipment. Gases that may be reported via CGRT include HFC R-134, HFC R-134a, HFC R-404a, HFC R-407c, HFC R-410a.

No

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

We continue to assess the condition of all refrigerant equipment. Where the asset is considered to be in poor condition, it is retrofitted to mitigate against further leakage.

How many newly constructed buildings received at least LEED Gold certification in 2019?

zero.

How many newly constructed buildings did not receive LEED Gold certification?

zero.

Please explain why LEED Gold certification was not obtained for those new buildings.

n/a

Other actions? Please describe briefly:

n/a

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

Actions taken by your organization in 2019 to support emissions reductions from mobile sources?

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

Yes

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

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

Our mobile emissions sources are largely made up of event related equipment (e.g. propane forklifts and other gasoline vehicles such as turf maintenance equipment) We are currently procuring some electric forklifts to replace propane alternatives at end-of-life.

Over the long term (6-10 years)

Build on the medium term strategy and replace all propane forklifts with electric alternatives. Due to the nature of the events industry, this will require investment in good (fast & reliable) charging infrastructure and improvement in battery technology.

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

If you purchased new gas/diesel vehicles, can you briefly explain why vehicles from the other categories were not chosen?

We don't believe at this point the battery capacity for certain equipment such as forklifts have the is sufficient to meet our operational requirements. This will require a long term strategy to upgrade.

Equipment for turf maintenance have limited if any electric alternatives.

Actions taken by your organization in 2019 to support emissions reductions from mobile sources? (Continued)

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?

As defined as Level 2 stations only your organization's fleet vehicles may use

0

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

As defined as Level 3 stations only your organization's fleet vehicles may use

0

How many EV charging station(s) did you install in 2019 in each category:

Level 2?

0

Level 3?

0

How many level 2 stations (if any) were installed specifically for your fleet vehicles?
As defined in the previous section

0

How many level 3 stations (if any) were installed specifically for your fleet vehicles?
As defined in the previous section

0

Please briefly describe any other related actions, (e.g. charging station feasibility studies, electrical panel upgrades, etc.)

We are currently assessing the feasibility of installing EV charging systems. Most of the parking capacity at our facilities are leased to 3rd parties which adds complexity to moving forward with this project. We plan to apply for funding incentives in 2020. We hope to install EV charging at both sites in 2020. But note, this will have negligible effect on fleet emissions.

Please indicate the total number of the vehicles in the following vehicle classes that are in your current fleet

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)

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

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

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

Actions taken by your organization in 2019 to support emissions reductions from paper supplies.

Briefly describe your organization's plans to continue reducing emissions from paper use:

Over the medium-term (1-5 years)

Purchase of recycled paper. Begun the transition to provide laptops rather than PC's to reduce the need for staff to print operational documents for meetings.

Over the long term (6-10 years)

Transition to laptops for all necessary staff and provide training for programs such as Onenote to encourage digital note taking.

Do you have an awareness campaign focused on reducing office paper use?

Yes

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

No

Other 2019 actions, please specify

The IT department has the ability to monitor the accounts which print the most. This provides data to understand what departments are the most paper-intensive and determine digital solutions.