

Greenhouse Gas Emissions Inventory Summary

This report provides a summary of the greenhouse gas (GHG) emissions inventory completed by the Port of Vancouver (Port) for calendar year 2019. The results are compared against previous inventories compiled by the Port for the years 2005 (baseline year) and 2008. The Port's inventory follows international best practice for GHG emissions accounting; specifically, the GHG Protocol Corporate Accounting and Reporting Standard (GHG Protocol) that was jointly developed by the World Research Institute (WRI) and World Business Council on Sustainable Development (WBCSD), and the latest mobile emission models from the U.S. Environmental Protection Agency.

The operational boundary of the 2019 inventory includes Port-owned and controlled activities – namely, all Scope 1 and Scope 2 emissions sources as defined by the GHG Protocol.¹ Accordingly, the inventory includes direct emissions associated with fuel combustion from the Port's on-road vehicle fleet, off-road equipment fleet, and stationary engines on site (Scope 1) as well as indirect emissions from the production of purchased electricity for Port-controlled operations and buildings from a utility provider (Scope 2).

The Port's 2021 Climate Action Plan (CAP) makes a commitment to reduce indirect emissions associated with activities occurring in and around the Port from sources not owned or directly controlled by the Port (Scope 3) but notes that these emissions are not included in the inventory or in the CAP's reduction targets.

GHG Emissions Scopes

Scope 1 emissions are direct emissions from sources owned or controlled by the Port, including the Port's vehicle fleet, mobile equipment fuel consumption, and stationary engines emitting on site.

Scope 2 emissions are indirect GHG emissions that result from the production of purchased energy (electricity, natural gas, etc.) for Port-controlled operations and buildings from a utility provider.

Scope 3 emissions refer to other activities occurring in and around the Port, from sources not owned or directly controlled by the Port. Examples of these activities include transportation of goods (trains, vessels, cargo handling equipment, trucks, and harbor craft), energy use by Port tenants (heating and cooling, lighting, etc.), and employee travel and commuting.

¹ The Port uses the GHG Protocol's *control* approach to determine the operational boundary, where the reporting organization accounts for 100 percent of the GHG emissions from operations over which it has control.

The Port’s GHG inventory includes emissions of carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), expressed as metric tons of carbon dioxide equivalents (MTCO₂e). **Table 1** summarizes the 2005, 2008, and 2019 GHG inventories by scope and by source category, showing each annual emissions total with and without inclusion of renewable energy certificate (REC) purchases, which have been used to reduce the Port’s scope 2 emissions from electricity since 2007. The Port has ensured methodological alignment between 2005, 2008 and 2019 inventories by using consistent sources and comparable emission factors. The Port’s total emissions for 2019, excluding RECs, are estimated to be 1,631 MTCO₂e, representing a 28 percent decrease from 2008 emissions, and a 0.3% increase from the 2005 baseline of 1,627 MTCO₂e.²

**Table 1
Port of Vancouver GHG Emissions by Source and Scope (MTCO₂e)**

Scope	Emission Category	Emission Source	2005	2008	2019
Scope 1	Direct – Mobile Combustion	On-Road Vehicles	164	182	273
		Off-Road Equipment	95	109	378
	Direct – Stationary Combustion	Natural Gas & Diesel Equipment	28	64	412
Scope 2	Indirect- Purchased Electricity	Electricity Generation	1,339	1,902	568
Subtotal Scope 1			288	355	1,063
Subtotal Scope 2			1,339	1,902	568
REC Purchase Reduction			0	-1,134	-568
Total Excluding RECs			1,627	2,257	1,631
Total Including RECs			1,627	1,123	1,063

When REC purchases are taken into consideration, 2019 emissions are estimated to be 1,063 MTCO₂e, a reduction of nearly 35 percent compared to the Port’s 2005

² The Port’s 2005 and 2008 inventories were developed by Weston Solutions in 2009. The 2019 inventory was developed by Ramboll in 2021.

baseline. Because electricity emissions were significantly higher in 2008 than in 2019 (by approximately 70 percent), the purchase of RECs had the greatest impact on the Port's 2008 emissions, reducing them from 2,257 MTCO_{2e} to 1,123 MTCO_{2e}. A comparison of **Figure 1** and **Figure 2** shows the impact of the 2008 and 2019 REC purchases on the Port's GHG emissions trends.

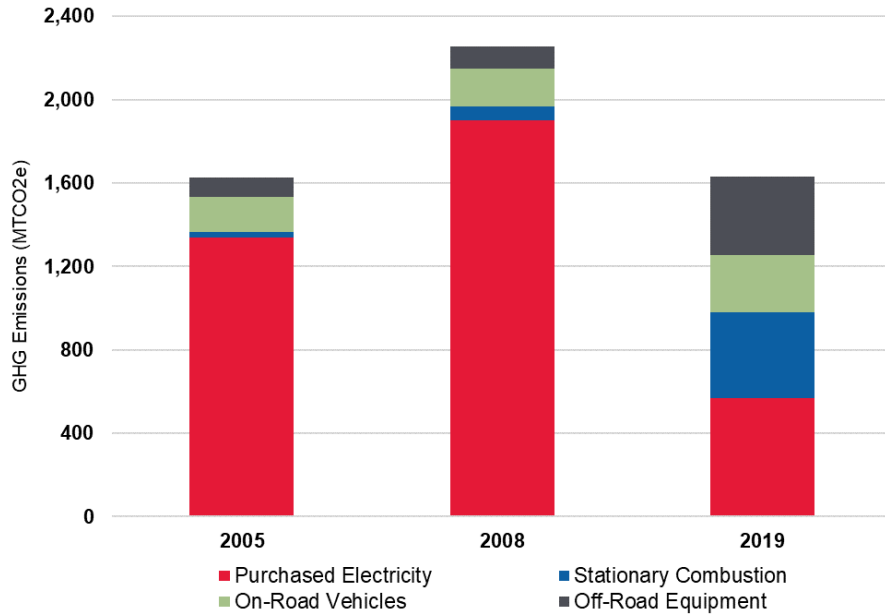


Figure 1
Port of Vancouver GHG Emissions by Source - All Years, Excluding RECs

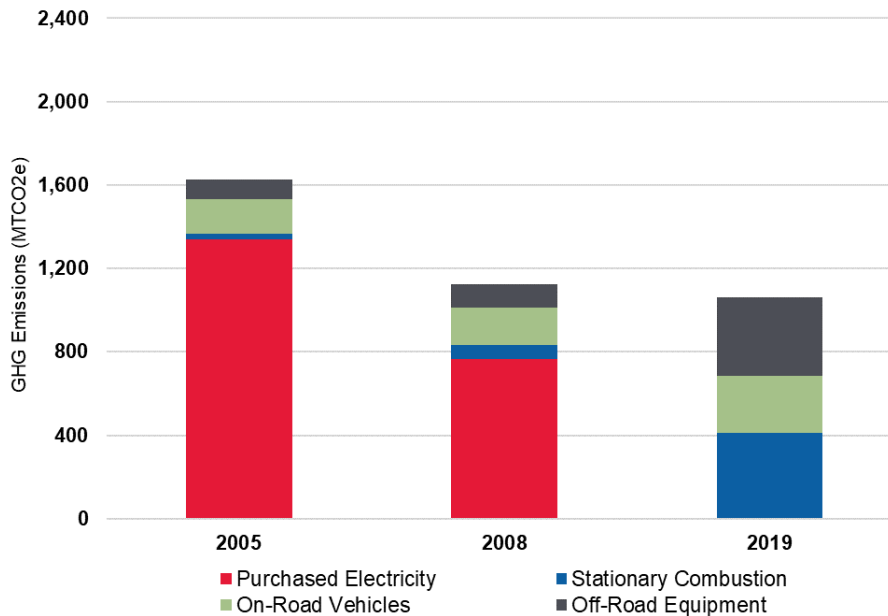


Figure 2
Port of Vancouver GHG Emissions by Source - All Years, Including RECs

In 2019, purchased electricity contributed the largest portion of total emissions (568 MTCO₂e, or 35 percent of the total excluding RECs). Stationary source combustion was the next highest contributor at 25 percent, followed by off-road equipment at 23 percent, and on-road fleet vehicles at 17 percent. Stationary source combustion becomes the greatest contributor at 39 percent, followed by off-road equipment at 35 percent and on-road fleet vehicles at 26 percent. **Figure 3** depicts the Port's 2019 GHG emissions by source category, with and without the effects of purchasing RECs.

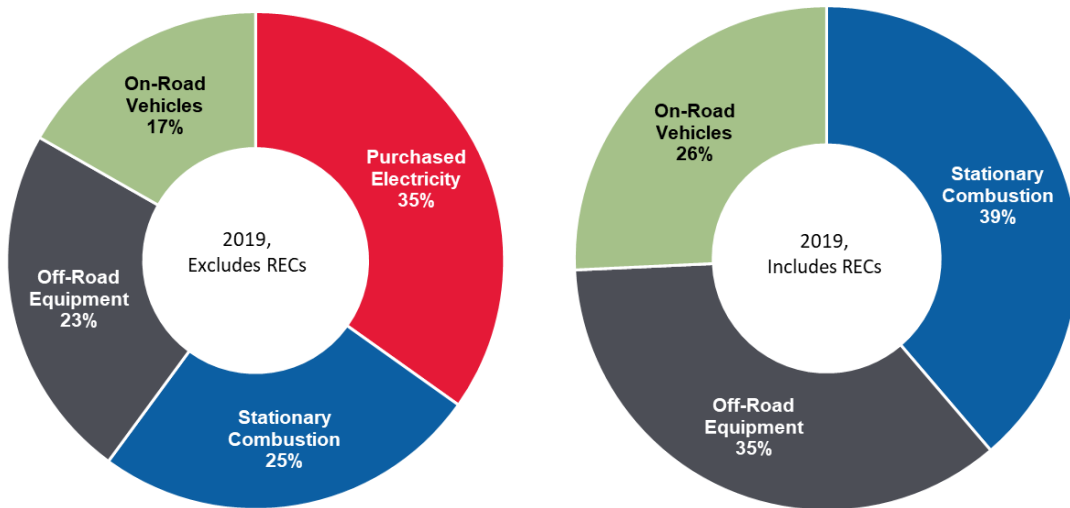


Figure 3
Port of Vancouver GHG Emissions by Source – 2019, Including versus Excluding RECs

References

GHG Protocol Initiative, 2015. *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard*, Revised Edition. Available at:
<https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>.

World Resources Institute, 2020. *GHG Protocol Scope 2 Guidance: An amendment to the GHG Protocol Corporate Standard*. Available at:
https://ghgprotocol.org/sites/default/files/standards/Scope%20%20Guidance_Final_Sept26.pdf.