



# Carbon Neutral Action Report | 2016

# Executive Summary

BC Transit is the provincial Crown agency charged with coordinating the delivery of public transportation across British Columbia, with the exception of those areas serviced by TransLink (Metro Vancouver). More than 1.75 million British Columbians in over 130 communities across the province have access to BC Transit's local and regional transit services.

This transit service fabric supports community livability, and contributes to provincial and regional environmental sustainability objectives, helping to reduce greenhouse gas emissions and other pollutants.

In support of overall emission reduction targets, BC Transit has reduced its defined emissions regulated for offset by 21 per cent from 2010, when offset payments were first required. Looking ahead, BC Transit will continue to invest in fuel-efficient technology in pursuit of the BC Climate Leadership Plan target of 80 per cent reduction below 2007 levels by 2050.

To meet this target, BC Transit will continue its fleet replacement program, build on the successful deployment of Compressed Natural Gas (CNG) buses in Nanaimo and Kamloops, and identify opportunities to deploy CNG buses in other communities.

"Rightsizing" of buses will also occur, meeting service needs through the use of a medium duty bus instead of a larger 12-metre conventional bus. Rightsizing with medium duty buses can decrease the production of greenhouse gases (GHG) by up to 30 per cent.

BC Transit is also focusing efforts on reducing its facility GHG emissions on a year-over-year basis. Greenhouse gas emissions from BC Transit facilities continued to decline in 2016. They have decreased more than 20 per cent from 2010, despite a greater than 30 per cent increase in facility floor space to accommodate service growth.

BC Transit will continue to grow its service across the province, as outlined in the BC On the Move Transit Plan. With the support of the federal and provincial governments through the Public Transit Infrastructure Fund, BC Transit is building four new transit facilities in Prince George, Campbell River, Central Fraser Valley and Cowichan Valley. Though these locations will be built to accommodate fleet expansion, the energy consumption per area is expected to be reduced via new technology and modern building practices.

While BC Transit remains committed to exploring new technologies to lower its GHG footprint, it is important to recognize that the greatest returns in reducing overall transportation GHGs remain in a fundamental shift from personal vehicles to public transit.



*Brian Anderson*  
Vice President,  
Operations & Chief Operating Officer  
BC Transit

## DECLARATION STATEMENT

This is the 2016 Carbon Neutral Action Report for BC Transit. This report contains BC Transit's 2016 emissions profile, offsets purchased, the actions BC Transit has taken in 2016 to reduce GHG emissions, and BC Transit's plans to continue reducing emissions in 2017 and beyond.

## EMISSIONS AND OFFSETS SUMMARY

Most greenhouse gases (GHG) produced from BC Transit's operations come from the combustion of fossil fuels in the provincial vehicle fleet and from the energy used to heat and cool the buildings BC Transit owns or leases.

### BC Transit GHG Emissions and Offsets for 2016 (TCO2E)

<b>GHG Emissions created in Calendar Year 2016 (from SMARTTool Homepage)</b>	
Total Emissions (TCO2E)	64,520
Total Offsets (TCO2E)	1,124
<b>Adjustments to GHG Emissions Reported in Prior Years (from SMARTTool Homepage)</b>	
Total Emissions (TCO2E)	0
Total Offsets (TCO2E)	0
<b>Total Emissions for Offset for the 2015 Reporting Year (from SMARTTool Homepage)</b>	
Total Offsets (TCO2E)	1,124



*Brian Anderson*

Vice President,  
Operations & Chief Operating Officer  
BC Transit  
May 24, 2017

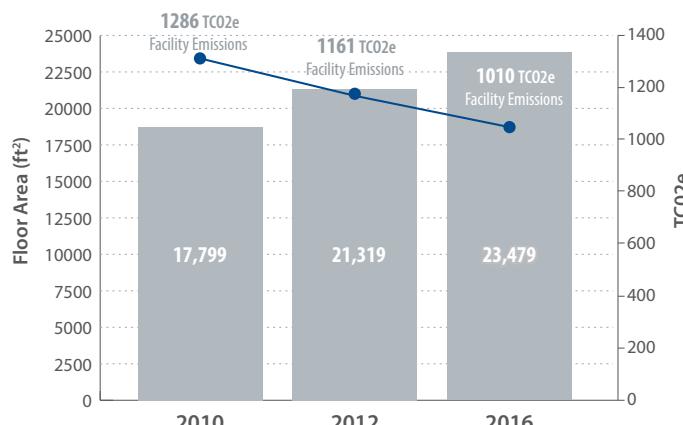
# 2016 Greenhouse Gas Emissions

## FROM THE GHG EMISSIONS SOURCE DETAIL REPORT

Emission Source		Greenhouse Gases in Tonnes
<b>Mobile Fuel Combustion (Fleet and other mobile equipment)</b>		
Offset Required	Fuel Combustion	101.91
	<b>Offset Required Sub Total</b>	<b>101.91</b>
Offset Exempt	Public Transit	61,265.18
	CO2 from Biogenic Fuel Combustion	2,131.06
	<b>Offset Exempt Sub Total</b>	<b>63,396.24</b>
	<b>TOTAL MOBILE EMISSIONS</b>	<b>63,498</b>
<b>Stationary Fuel Combustion (Building Heating and Generators) and Electricity</b>		
Offset Required	Fuel Combustion **	944.18
	Purchased Energy	65.80
	<b>Offset Required Sub Total</b>	<b>1,009.98</b>
Offset Exempt	CO2 from Biogenic Fuel Combustion	0.29
	<b>Offset Exempt Sub Total</b>	<b>0.29</b>
	<b>TOTAL STATIONARY EMISSIONS</b>	<b>1,010</b>
<b>Supplies (Paper)</b>		
Offset Required	Non-recycled Content Paper	0.14
	Recycled Content Copy Paper	11.80
	<b>Offset Required Sub Total</b>	<b>11.94</b>
	<b>TOTAL SUPPLIES EMISSIONS</b>	<b>12</b>
<b>TOTALS</b>		
	<b>Total Offset Exempt</b>	<b>63,397</b>
	<b>Total Offset Required</b>	<b>1,124</b>
	<b>TOTAL EMISSIONS</b>	<b>64,520</b>

Fugitive emissions from vehicle fleet air conditioning are estimated to comprise less than one per cent of BC Transit's total emissions. An ongoing effort to collect or estimate emissions from this source would not be materially effective. For this reason, emissions from this source have been deemed out of scope and have not been included in BC Transit's total greenhouse gas emissions profile.

### Facility emissions reductions from 2010 Carbon Intensity vs. Building Areas



# Offsets Applied to Become Carbon Neutral in 2017

BC Transit measures and is accountable for its environmental results. BC Transit measures and reports its greenhouse gas (GHG) emissions under carbon accounting protocols consistent with the Carbon Neutral Government Regulation using the web-based application known as SMARTTool.

BC Transit offsets those regulated GHG emissions that it cannot avoid through payments to the Minister of Finance. In 2016, BC Transit offset 1,124 tonnes of regulated emissions.

As required by section 5 of the Carbon Neutral Government Regulation, BC Transit reported 63,397 tonnes of CO<sub>2</sub>e emissions resulting from the operation of transit buses as part of their GHG emissions profile in 2016. These reported emissions were not offset, as they are out of scope under section 4 (2) (c) of the Carbon Neutral Government Regulation.



CNG Fueling station with CNG buses in Nanaimo

# Emission Reduction Activities

## A. MOBILE FUEL COMBUSTION

Greenhouse gas (GHG) emissions per service hour (a Key Performance Indicator) were 28.8kg CO<sub>2</sub>e per service hour in the 2015/16 fiscal year. Service hour emissions have shown modest declines since 2010, even with significant service hour increases.

In 2016, BC Transit, with support from FortisBC's Natural Gas for Transportation Incentive Program and from the City of Kamloops, introduced an additional 19 Compressed Natural Gas (CNG) buses into regular service at Kamloops Regional Transit. The Kamloops fleet is now 100 per cent comprised of CNG buses. Compared to diesel, the primary benefit of CNG buses is lower, more stable fuel prices. Additional benefits include quieter engines and simplified emission systems.

In partnership with the Regional District of Nanaimo (RDN), and with further support from FortisBC under their Natural Gas for Transportation Incentive Program, the fleet operator in the RDN now operates a fleet fully comprised of CNG buses.

Fleet expansion and replacement continues at BC Transit. In 2016, BC Transit purchased 12 new heavy duty diesel buses to replace 1995 and 1996 vehicle models. In 2017, BC Transit placed an order for 41 medium-sized Vicinity buses to replace older buses.



Vicinity Bus

### ***Non-revenue fleet***

Building from Plug-in BC, BC Transit is investigating hybrid and electric options for procurement within the Non-Revenue Vehicle Replacement Project. This includes Transit Supervisor vehicles and administration pool cars.

BC Transit's Victoria Regional Transit System offers the BC Scrap-it Program, a monthly pass incentive for vehicle owners to scrap their older, more polluting vehicles and adopt transit. In 2016, 16 of these eco-passes were issued. Implementation of this program in 2016 removed 208.97 metric tonnes of GHGs that would have otherwise been emitted.

BC Transit's non-revenue fleet, a Nissan Leaf-battery electric car travelled more than 3,700 kms in 2015 avoiding more than 592 kg GHG compared to an incumbent hybrid vehicle.

**Nissan Leaf** – BC Transit's all-battery electric pool car



The newest vehicle in BC Transit's non-revenue fleet, a Nissan Leaf battery-electric car, travelled more than 3,800km in 2016. Usage of this pool car avoided more than 608kg of GHGs, compared to the incumbent hybrid vehicle.

## B. STATIONARY FUEL COMBUSTION - FACILITIES

Facilities GHG emissions declined by 2.2 per cent in 2016. This reduction was primarily a result of continued efficiency improvements at the Victoria Regional Transit facilities (notably, lighting upgrades at Langford Transit Centre and the Victoria Transit Centre). Energy efficiencies also occurred in other Regional Transit Systems, including lighting upgrades at both the Kelowna Transit Centre and the Campbell River Transit Centre.



Langford Transit Centre Facility

# Actions Planned for 2017

- In early 2018, BC Transit will implement an expanded CNG bus fleet and increased fueling infrastructure at Whistler Transit. The Resort Municipality of Whistler will become the third regional district to operate a bus fleet fully comprised of CNG buses.
- BC Transit will continue to seek opportunities to deploy additional CNG buses in communities throughout the province, as they work to replace half of BC Transit's provincial fleet (about 400 buses) over the next several years.
- More than 60 heavy duty and light duty buses, all compliant with recent emissions and efficiency requirements, will be delivered in 2017. A procurement strategy for medium duty buses will also be implemented, providing further opportunities to right-size vehicles by service application and to increase the cost-effectiveness and efficiency of transit.
- With funding support from the Public Transit Infrastructure Fund (PTIF), BC Transit will build four new transit facilities in Prince George, Campbell River, Central Fraser Valley and Cowichan Valley. Though these locations will be built to accommodate fleet expansion, it is expected that the energy consumption per area will be reduced via new technology and modern building practices.
- Also supported by PTIF, BC Transit will seismically upgrade the eastern portion of the Victoria Transit Centre garage and will relocate maintenance duties to the Langford Transit Centre. This redesign is expected to increase energy and water efficiency at both locations.
- BC Transit will work with local governments to extend the Douglas Street Transit Priority Lanes in Victoria. The priority lanes are designed to shorten travel times for transit customers, increase the reliability of public transit, and ultimately reduce harmful greenhouse gas emissions by limiting idling and reducing the number of vehicles on the road.
- In 2017, replacement of the wastewater treatment system at the Victoria Transit Centre will allow for better water treatment and may lead to options to further conserve water use, reducing associated energy demands.
- BC Transit is upgrading its office printers to support reduced paper usage and carbon print production. More energy efficient printers will accept recycled content paper and allow for tracking of print jobs by employee.
- The BC Transit Green Team will focus on participating in regional green initiatives, including Bike to Work Week, Help Fill a Dream Garden Planting Day and Shoreline Clean-up.
- Based on consultation with the Climate Action Secretariat, BC Transit will continue to develop the framework for a Climate Resiliency and Adaptation Action Plan.
- BC Transit will retrofit 42 diesel buses with electric cooling packages in 2017 (115 total in the next three years). Overall fuel consumption is expected to be reduced by decreasing parasitic engine load.
- BC Transit will work to align with Provincial initiatives in the Climate Leadership Plan, BC on the Move and the Pan-Canadian Framework on Clean Growth and Climate Change.

# Links to Other BC Transit Information Relevant to Sustainability

## **Government Mandate Letter – 2016 / 2017**

<https://bctransit.com/servlet/documents/1403645653304>

## **BC Transit Service Plan 2016 – 2019**

<https://bctransit.com/servlet/documents/1403645617848>

## **BC Transit 2015 – 16 Annual Report**

<https://bctransit.com/servlet/documents/1403646162553>

## **BC Transit Sustainability**

[http://bctransit.com/\\*/about/sustainability](http://bctransit.com/*/about/sustainability)

## **BC Transit Future Plans**

[http://bctransit.com/\\*/corporate-reports/strategic-plan-2030](http://bctransit.com/*/corporate-reports/strategic-plan-2030)

## **BC Transit is a member of the Community Energy Association**

<http://communityenergy.bc.ca/>

## **BC Transit Victoria Regional Transit System is member of BC Scrap It Program**

<http://www.scrapit.ca/incentivechoices.htm>

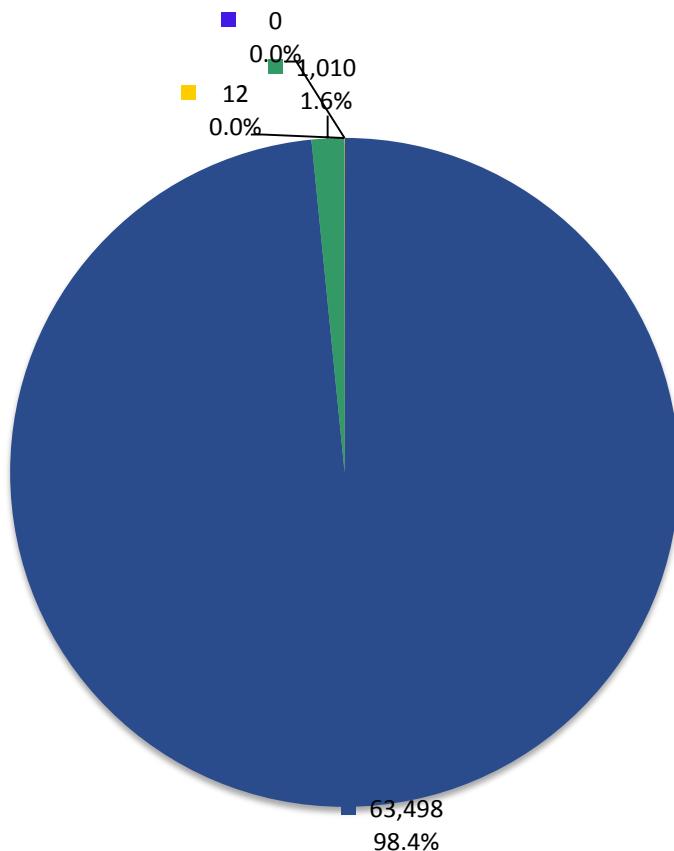
## **BC Transit is a member of the Canadian Urban Transit Research & Innovation Consortium (CUTRIC)**

<http://cutric-crituc.org/>



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[www.bctransit.com](http://www.bctransit.com)

**BC Transit**  
**Greenhouse Gas Emissions by Source**  
**for the 2016 Calendar Year (tCO<sub>2</sub>e\*)**



**Total Emissions: 64,520**

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

**Offsets Applied to Become Carbon Neutral in 2016 (Generated May 16, 2017 9:53 AM)**

Total offsets required: **1,124**. Total offset investment: **\$28,100**. Emissions which do not require offsets: **63,397 \*\***

\*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.

# **2016 Carbon Neutral Action Report Survey**

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## Page 2

Part One (external)

Contact Name(s):

*Geoff Huber*

Organization Name:

*BC Transit*

Please select your sector:

- Crown Corporation

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

During 2016, did your organization take any of the following actions to support emissions reductions from buildings?

Select all that apply

- Conducted an energy audit/study of building(s) in the organization's portfolio
- Performed energy retrofits of the organization's buildings.: 4
- Other actions? Please describe briefly.: Constructing and improving old maintenance facilities at Prince George, Abbotsford, Campbell River, Cowichan Valley to modern standard facilities. Making smarter lightning choices by upgrading to energy efficient lighting at Langford, Victoria, Kelowna and Campbell River. BC Transit also planned and designed to seismically upgrade the Victoria Transit Centre Paint and Body shop and has reallocated some maintenance duties to the Langford Transit Centre. Through this re-design, efforts will be made to increase energy efficiency at both the Victoria and Langford Transit Centres.

Briefly describe your organization's plans to continue reducing emissions from its stationary sources in future years.

*Incorporating efficient heating, ventilation and air conditioning systems across the provincial maintenance and administration buildings as systems are renewed or new locations built. BC Transit will be investigating the option of working with Fortis BC to utilize the Energy Manager Program.*

During 2016, did your organization participate in utility-sponsored energy demand management program(s) (e.g. BC Hydro's Energy Management (Manager))?

*No*

If yes, please describe briefly:

(No response)

## 2) Mobile Sources (Vehicles, Off-road/Portable Equipment): Fuel Combustion.

During 2016, did your organization take any of the following actions to support emission reductions from its mobile sources?

Select all that apply

- 
- Replaced existing vehicles with more fuel efficient vehicles (gas/diesel).: 31
- 

Briefly describe your organization's plans to continue reducing emissions from its mobile sources in future years.

*All BC Transit employees have bus passes. Pool cars (hybrids and Battery Electric) are available for trips where logistics prevents transit use. The BC Transit non-revenue fleet vehicle – a Nissan Leaf – battery electric car has traveled more than 3,800 kms in 2016 avoiding more than 608 kg GHG compared to an incumbent hybrid vehicle.*

3) Supplies (Paper):

During 2016, did your organization take any of the following actions to support emissions reductions from paper supplies?

Select all that apply

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- Awareness campaign focused on reducing office paper use.

Briefly describe your organization's plans to continue reducing emissions associated with its office paper use in future years.

*Over 99% of all paper purchased under reporting guidelines is between 30 to 40% recycled content. We continued to review opportunities to further increase our post-consumer content in purchased paper.  
Double sided printing is encouraged whenever possible.*

4) Other Sustainability Actions:

Business Travel:

During 2016, did your organization take any of the following actions to support emissions reductions from business travel?

Select all that apply

- Encouraged alternative travel for business (e.g. bicycles, public transit, walking)
- Encouraged or allowed teleworking or working from home

Education Awareness:

During 2016, did your organization have any of the following programs or initiatives to support sustainability education and awareness?

Select all that apply

- Green, Sustainability or Climate Action Team
- Support for professional development on sustainability (e.g. workshops, conferences, training)
- Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials

Other Sustainability Actions:

During 2016, did your organization have any of the following programs or initiatives to support sustainability?

Select all that apply

- A water conservation strategy which may include a plan or policy for replacing water fixtures with efficient models
- An operations policy or program to facilitate the reduction and diversion of building occupant waste (e.g., composting, collection of plastics, batteries) from landfills or incineration facilities
- Green procurement standards for goods (e.g., office furniture, etc.)
- Other, please describe briefly: BC Transit is a member of the U-Pass and BC Bus Pass programs, which annually help to provide discounted transit passes for over 46,000 students attending the public post-secondary institutions and over 25,000 low income seniors and people with disabilities across the province. Fully accessible handyDART provides service to over 2 million passengers each year.