

A photograph of a person and a dog sitting on a wooden bench by a waterfront. The person is on the left, and the dog is on the right. They are both looking towards the water. In the background, there is a large ship with cranes, and a city skyline is visible in the distance. The foreground is covered with fallen autumn leaves. The sky is clear and blue.

Sustainability Report 2018

Vancouver Fraser
Port Authority

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Sustainability Report 2018

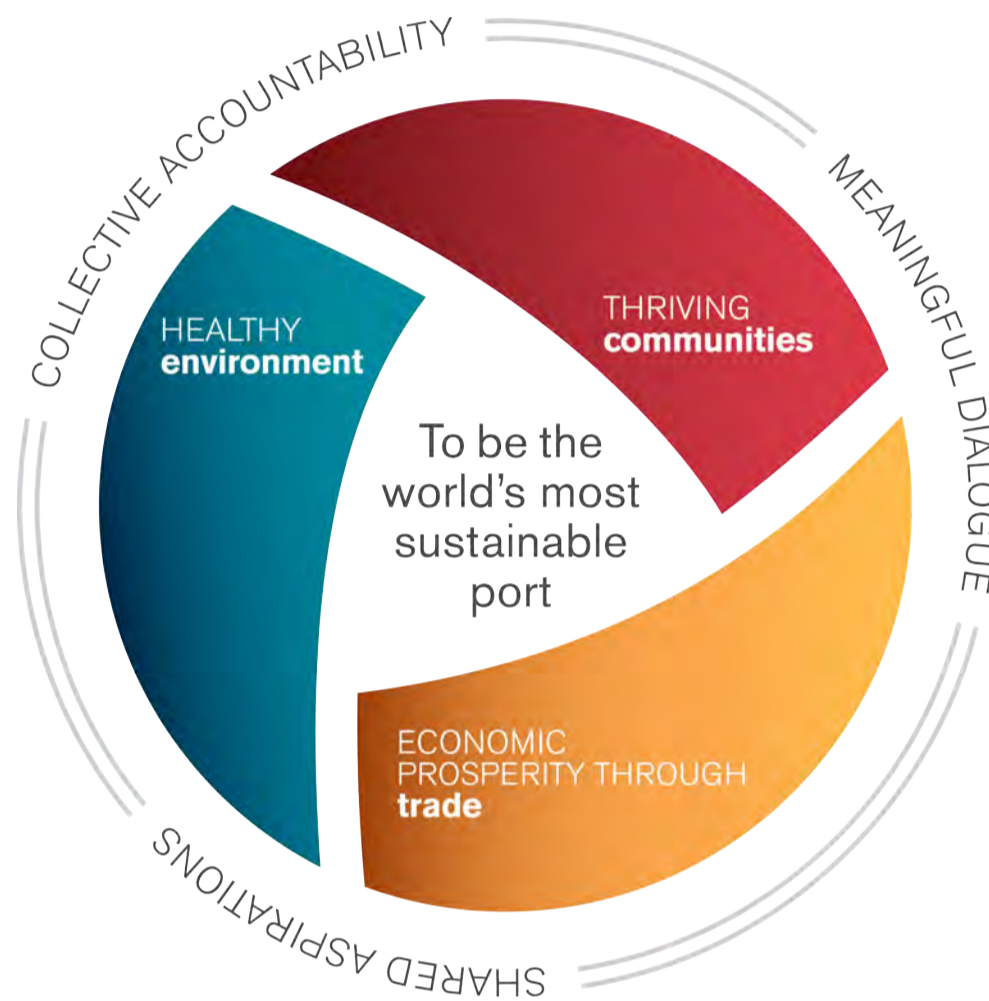
This report covers topics representing the greatest economic, environmental and social impacts of Port of Vancouver-related activities, and discusses progress of Vancouver Fraser Port Authority initiatives designed to address these impacts.

We are on a journey to meet our vision to be the world's most sustainable port. In 2010, we embarked on [Port 2050](#)—a long-range scenario planning process—with over 100 individuals and organizations with a stake in the future of the port. The process identified four plausible scenarios for the future, including the one we believe we should aspire to: The Great Transition. This scenario represents a shift to a low-carbon economy that balances economic, environmental and social sustainability.

Since then, we have continued to work with the community and stakeholders to help us define what sustainability means for the Port of Vancouver, to revisit and refresh Port 2050, and to develop our vision. We are now focusing on measuring progress towards our vision. This involves developing performance indicators based on what we believe are the most meaningful outcomes for the Port of Vancouver.

A sustainable port

A sustainable port delivers economic prosperity through trade, maintains a healthy environment, and enables thriving communities. Our definition includes 10 areas of focus and 22 statements that define success, which together describe the attributes of a sustainable port, and provide the structure for this report.



Economic prosperity through trade

A sustainable port:

Competitive business

- Continuously improves efficiency and reliability, providing exceptional customer service
- Is profitable, delivering lasting value locally and nationally
- Reinforces innovation, diversity, resilience and adaptability

Effective workforce

- Maintains a skilled and productive workforce to meet current and future needs
- Provides an attractive work environment and rewarding career choices

Strategic investment and asset management

- Optimizes the use of land and infrastructure assets
- Anticipates and delivers infrastructure to meet capacity needs in a timely way

Healthy environment

A sustainable port:

Healthy ecosystems

- Takes a holistic approach to protecting and improving air, land and water quality to promote biodiversity and human health
- Champions coordinated management programs to protect habitats and species

Climate action

- Is a leader among ports in energy conservation and alternative energy to minimize greenhouse gas emissions
- Protects its assets against potential impacts of climate change

Responsible practices

- Improves the environmental, social and economic performance of infrastructure through design, construction and operational practices
- Supports responsible practices throughout the global supply chain

Thriving communities

A sustainable port:

Good neighbour

- Proactively considers effects on communities in planning and managing operations
- Identifies and responds to community interests and issues

Community connections

- Strengthens national, regional and local prosperity, delivering regional benefits
- Engages communities and inspires pride in Canada as a trading nation

Aboriginal relationships

- Respects First Nations' traditional territories and value traditional knowledge
- Embraces and celebrates Aboriginal culture and history
- Understands and considers contemporary interests and aspirations

Safety and security

- Upholds safety and security to protect port users and neighbouring communities
- Promotes a culture of emergency preparedness that supports rapid restoration of essential community services and business activities

All uses of "we" and "our" in this report refer to the Vancouver Fraser Port Authority.

Message from the President and Chief Executive Officer

“As our country’s trade continues to grow, it is our responsibility to oversee sustainable port development...”

As a Canada Port Authority, the Vancouver Fraser Port Authority manages the federal lands and waters that make up the Port of Vancouver on behalf of Canadians and in support of Canada’s trade objectives.

In 2018, we made progress toward our vision to be the world’s most sustainable port, which we define as one that delivers economic prosperity through trade, maintains a healthy environment, and enables thriving communities through meaningful dialogue, shared aspirations and collective accountability.

Our jurisdiction borders 16 municipalities and intersects the asserted and established traditional territories and treaty lands of several Coast Salish First Nations, amounting to more than 16,000 hectares of water, 1,000 hectares of land and 350 kilometres of shoreline. As you can imagine, there are many interests to consider as we advance our mandate. The people and businesses who are our neighbours make Metro Vancouver one of the world’s most livable cities, and it is critical that all those involved in port operations are trusted by the people who live and work alongside the port.

We have increasingly focused and invested in our relationships with local communities, Indigenous peoples, terminal operators, federal and local governments, and industry stakeholders to ensure a breadth of voices are heard in the efforts to keep the gateway strong and competitive while enabling thriving communities.

Among many notable milestones, last year we were successful in securing federal funding for trade-enabling infrastructure projects throughout the region to reduce bottlenecks and alleviate the impacts of goods movement on local communities.

We also run a suite of environmental programs. In 2018 we coordinated two underwater noise reduction research initiatives to help us understand the effects of marine shipping on whales as part of our award-winning Enhancing Cetacean Habitat and Observation (ECHO) Program, which was recognized with both a Lloyd’s List Americas Award and a Governance Professionals of Canada Excellence in Governance Award. Last year we also received a gold rating under the Stewardship Centre for BC’s Green Shores for Coastal Development Program for the New Brighton Park Shoreline Habitat Restoration Project, in partnership with the Vancouver Board of Parks and Recreation and Musqueam, Squamish and Tsleil-Waututh Nations, and we joined the World Ports Climate Action Program to advance projects that address global warming.

We were the first port authority in Canada—and only the second in North America—to have a team focused solely on the environmental impacts of port activity. Today, two decades later, we are internationally recognized as a leader in environmental sustainability.

The Port of Vancouver is complex, and includes many organizations and businesses beyond the port authority. Continued annual growth at the Port of Vancouver is expected over the next five years at about four per cent, largely because of the commitment and hard work of port stakeholders, as well as the contribution of government and other partners.

As our country’s trade continues to grow, it is our collective responsibility to oversee sustainable development here at Canada’s largest port. I’d like to recognize the strong partnerships between the port authority and our port community partners, all of whom are clearly committed to collaboration in the name of becoming the world’s most sustainable port.

I would also like to extend my thanks to the Vancouver Fraser Port Authority board of directors and all of the dedicated, passionate staff at the port authority. Their ongoing commitment is providing clear direction to lead the Port of Vancouver into a sustainable future.



A handwritten signature in black ink that reads "Robin M. Silvester". The signature is written in a cursive, flowing style.

Robin Silvester
President and Chief Executive Officer

About the Vancouver Fraser Port Authority



Our mission

To enable Canada's trade objectives, ensuring safety, environmental protection and consideration for local communities

Our vision

To be the world's most sustainable port

A sustainable port delivers economic prosperity through trade, maintains a healthy environment, and enables thriving communities through meaningful dialogue, shared aspirations and collective accountability

Our values

Accountability
Continuous improvement
Collaboration
Customer responsiveness

The Vancouver Fraser Port Authority is responsible for the stewardship of the federal lands and waters of the Port of Vancouver on behalf of Canadians and in support of national trade objectives. As a non-shareholder corporation established by the Government of Canada in January 2008, pursuant to the [Canada Marine Act](#), we are accountable to the federal minister of transport. Like all Canada Port Authorities, we are financially self-sufficient, collecting rental income from terminals and other tenants as well as various commercial fees. We reinvest the profits we make in port-related infrastructure and services.

The mandate of Canada Port Authorities, as outlined in the [Canada Marine Act](#), is to:

- Contribute to the competitiveness, growth and prosperity of the Canadian economy
- Organize marine transportation services to satisfy the needs of users at a reasonable cost
- Provide a high level of safety and environmental protection
- Be responsive to local needs and priorities
- Encourage and take into account input from users and local communities

We ensure operations are secure, reliable and sustainable, with consideration for the quality of life of our neighbours. This includes advancing environmental initiatives, and conducting project and environmental reviews of works and projects proposed for port lands and waters.

2018 Highlights

The Vancouver Fraser Port Authority works to fulfill its federal mandate and its mission to facilitate Canada's trade while striving to be the world's most sustainable port. To that end, the following is a list of achievements in 2018.

Economic prosperity through trade

Federal funding for infrastructure: In response to our funding applications, [the government of Canada announced more than \\$220 million in funding for](#) infrastructure projects throughout the region that will facilitate growing trade and alleviate the impacts of goods movement on local communities.

25 million cruise passengers: We welcomed the [25 millionth cruise passenger](#) to our award-winning Canada Place cruise terminal.

Increasing container capacity: We finalized work to secure all permits, construction contracts and commercial arrangements necessary to proceed with the [expansion of the Centerm container terminal](#).

Preparing for growing container trade: In order to continue to move the proposed [Roberts Bank Terminal 2 Project](#) through the federal environmental assessment process, our project team responded to 385 requests for information from the independent review panel.

Advising government: We completed 15 submissions to the federal government, providing insights and advice for port- and trade-related issues, including [an extensive submission](#) to the Ports Modernization Review.

A new container examination facility: We completed construction of the Tsawwassen Container Examination Facility at Roberts Bank, in partnership with Tsawwassen First Nation and Canada Border Services Agency.

Healthy environment

World Ports Climate Action Program: We joined the [World Ports Climate Action Program](#), a new initiative bringing together port authorities from around the world to work together on projects that address the issue of global warming.

Recognition for sustainability: The port authority was awarded a [2018 Governance Professionals of Canada Excellence in Governance Award](#) in recognition of our sustainability governance practices.

Understanding the effects of marine shipping on whales: The port authority-led Enhancing Cetacean Habitat and Observation ([ECHO](#)) Program coordinated two underwater noise reduction research initiatives with the support of many participants. Large commercial ship operators were asked to slow down or shift away from known whale feeding areas during the summer months when whales return to B.C. waters. The program also [received a Lloyd's List environmental award](#).

Successful fish habitat: The [New Brighton Park Shoreline Habitat Restoration Project](#) received a gold rating under the [Stewardship Centre for BC's Green Shores® for Coastal Development program](#). The project, completed in 2017 in partnership with the Vancouver Board of Parks and Recreation and in collaboration with Musqueam, Squamish and Tsleil-Waututh Nations, provides high-value habitat for fish and wildlife at a site that had been infilled in the 1960s.

Rewarding environmental efforts: We recognized 19 marine carriers and terminal operators with a [Blue Circle Award](#) for their voluntary efforts to conserve energy and reduce air emissions and noise in and beyond the Port of Vancouver.

Consulting to improve marine habitat: We [invited the public](#) to provide feedback on our [proposed Maplewood Marine Restoration Project](#). The project will enhance approximately five hectares of lower-value marine habitat into higher-value intertidal, eelgrass and subtidal rock reef habitat.

Thriving communities

Safe boating on Burrard Inlet: We [extended a voluntary 15-knot speed restriction](#) that was introduced earlier in the year in an effort to ensure the safety of all boaters around the busy entry to the Vancouver harbour. Deep-sea ships already follow a speed restriction of 10 knots in the area.

Seeking traditional knowledge: At the request of the Tsleil-Waututh Nation, we hosted a workshop with Aboriginal groups and eelgrass experts to inform the selection of donor eelgrass sites present within Burrard Inlet for the [proposed Maplewood Marine Restoration Project](#).

A safer Fraser River: We made amendments to the navigational procedures outlined in our [Port Information Guide, formalizing existing best practices](#) for traffic control and safety on the Fraser River.

\$1 million for our communities: We invested nearly \$1 million in surrounding communities through our community investment program and, with port partners, our annual port gala fundraiser.

Community events: We successfully hosted large-scale community events such as [Canada Day at Canada Place](#) and Christmas at Canada Place, and represented the port and the port authority at community events throughout the year.

Increasing awareness: Our [Community Awareness Campaign](#) told stories on TV, online and outdoors to raise understanding about how the port connects our world, and how the port authority works to protect the environment.

Governance

The board of directors of the Vancouver Fraser Port Authority provides governance, oversight and approval of strategic direction. The [Canada Marine Act](#) and our Letters Patent set out the appointment and responsibilities of our 11-member board. Four members are appointed by the federal, provincial and local governments. The remaining seven members are recommended by the federal minister of transport in consultation with port users and appointed by the federal governor-in-council.

Although all board committees are responsible for sustainability, the governance and stakeholder relations committee annually reviews the main policies related to sustainability. These include an environment policy, a corporate social responsibility policy, and a project and environmental review policy.

In 2018, as part of [Transport Canada's Port Modernization Review](#), we completed a [submission](#) with eight core and 58 detailed recommendations. These recommendations were designed to increase a Canada Port Authority's ability to promote sustainable and inclusive economic growth through effective governance and innovative operations. Our core recommendations fell into the following topics:

- Governance structure
- Government oversight and a differentiated port structure
- Indigenous perspectives on boards of directors
- Borrowing limits
- Land management and transactions
- Industrial land
- Environmental review
- Enforcement of *Canada Marine Act* responsibilities



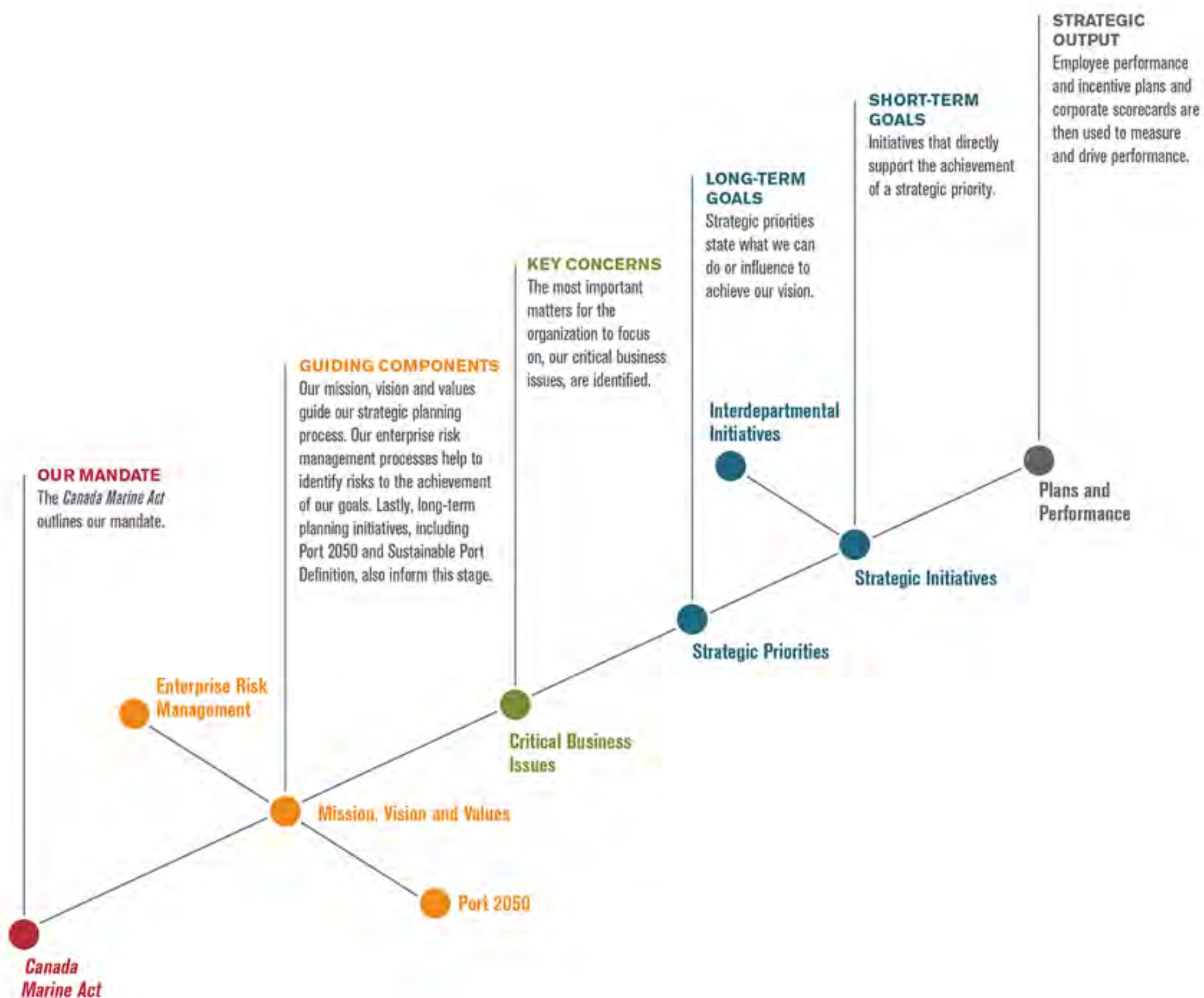
The 2018 Vancouver Fraser Port Authority board of directors and executive leadership team: (top row, left to right) Mike Corrigan, Tom Corsie, Victor Pang, Joanne McLeod, Philip Hochstein, Lisa Ethans, Cliff Stewart, Robin Silvester, Carmen Loberg, Craig Munroe; (bottom row, left to right) Duncan Wilson, Penny Priddy, Catherine McLay, Judy Rogers, Sandra Case, and Peter Xotta. Missing: Eugene Kwan.

In 2018, we received a **Governance Professionals of Canada Excellence in Governance award** in the category of [Best Practices in Sustainability and Environmental, Social, Governance \(ESG\)](#) in recognition of our sustainability governance practices.

Learn more at portvancouver.com/governance

Strategic planning

The Vancouver Fraser Port Authority's annual strategic planning process identifies the critical business issues and priorities that need our attention, efforts and resources. This process is guided by our mandate as established by the *Canada Marine Act* and by other inputs that we call our guiding components. These components include our long-term planning initiatives and our definition of a sustainable port, along with our mission, vision, values, enterprise risk management and value mapping work. In accordance with the guiding components, we identify our key concerns and our long- and short-term goals. Last, we align our people and financial resources, and measure our performance through scorecards and our employee performance and incentive plans. This process allows us to set the strategic direction of our initiatives while considering sustainability across all activities.



Further information on our strategic planning process is available in [The Vancouver Fraser Port Authority's Financial Report 2018](#).

Specific information on key risks is available on page 11 of the [The Vancouver Fraser Port Authority's 2017 Financial Report](#).

Collaboration

The Vancouver Fraser Port Authority engages and collaborates with a wide variety of groups with an interest in the port. We take an inclusive approach to identifying stakeholders and interested groups, and focus our efforts on understanding and responding to their material interests.

Groups that we regularly engage and collaborate with include:

Group	Description	Collaboration
Terminal operators	Terminal operators manage the day-to-day operations of the 27 marine terminals at the Port of Vancouver, offering berths for ocean-going ships that handle cargo across five sectors.	We work with terminal operators to develop trade opportunities, promote continuous environmental improvement and minimize impacts on communities, through regular outreach, working groups and consultation activities.
Tenants	Our tenants lease land from the port authority, and operate a variety of commercial interests ranging from construction and fishing to recreational marinas and container transload facilities.	We work with tenants to manage issues in relation to their lease agreements and their operations on federal port lands.
Marine carriers	Marine carriers operate ocean-going ships that carry cargo to and from the Port of Vancouver.	We work with marine carriers to optimize ship arrivals and to ensure regulations are followed, in order that the port is safe, reliable and efficient. Collaboration includes meetings and working groups.
Major shippers	Major shippers are the importers and exporters who ship goods through the port.	We work with major importers and exporters to understand their business and supply chain needs, and to plan future gateway capacity development.
Service providers	Service providers provide a vast array of services that facilitate the handling of goods, including transloading, rail, trucking, warehousing, distribution and marine services.	We collaborate with service providers to develop short- and long-term strategies to enable fluid cargo movement, promote efficient and reliable service, and address supply chain challenges.
Labour	Labour is the thousands of workers who keep the port and supply chain moving. In general, the British Columbia Maritime Employers Association (BCMEA) oversees the training and recruitment of workers belonging to the International Longshore and Warehouse Union (ILWU), and the daily dispatch of longshore labour to port terminals.	We engage with the unions and associations that represent the thousands of workers at the port on issues of mutual concern.
Industry associations	Industry associations are the associations that represent port users and related or impacted industries, for example, shipping, tourism and agriculture.	We work with industry associations on matters of mutual interest and advocacy.
Aboriginal peoples	The elected chiefs and councils, hereditary chiefs, staff and community members of Indigenous groups with asserted and established traditional territories and treaty lands within port authority jurisdiction, as well as other Indigenous groups across British Columbia and Canada.	We regularly engage with Aboriginal peoples to develop a better understanding of their diverse interests and concerns. We are working to improve communication and increase opportunities for collaboration, and believe the success of the port requires Indigenous support and participation.
Federal and provincial governments	The elected and non-elected officials and staff of the governments of Canada, British Columbia and other provinces across the country.	We work with provincial and federal governments and agencies to ensure port activities are conducted in a safe and environmentally responsible manner, to pursue funding opportunities to increase gateway efficiency, capacity and sustainability, and to develop policy and regulations.
Local and regional governments	The elected and non-elected officials and staff of the 16 local municipal governments that border the Port of Vancouver, the regional Metro Vancouver government, and other local governments across Canada.	We work with local and regional governments to facilitate open communication, share ideas, resolve issues and build productive, long-term relationships, through ongoing executive outreach, meetings, briefings and roundtables.
Communities	Communities include the general public and community organizations and groups in our 16 neighbouring municipalities.	We engage with port communities to better understand their concerns and aspirations, and build strong relationships through regular meetings with community liaison committees, community relations activities, our community feedback process, a variety of events and our community investment program.
Non-governmental organizations and academic partners	Non-governmental organizations and academic partners are organizations and academic institutions and individuals that focus on issues of mutual interest.	We engage with non-governmental organizations and academic partners through meetings, sponsorships and consultation activities to share knowledge and collaborate on issues of shared interest.

People



Employee information

	2016						2017						2018					
	Total	Male	Female	Under 30	30-50	50+	Total	Male	Female	Under 30	30-50	50+	Total	Male	Female	Under 30	30-50	50+
Number of employees	337	164	173	26	207	104	321	156	165	19	198	104	350	169	181	23	223	104
Permanent employees	302	150	152	15	186	101	299	149	150	13	185	101	313	155	158	11	202	100
Term employees	35	14	21	11	21	3	22	7	15	6	13	3	37	14	23	12	21	4
Full time	325	162	163	26	195	104	310	155	155	19	188	103	334	168	166	23	209	102
Part time	12	2	10	0	12	0	11	1	10	0	10	1	16	1	15	0	14	2
New hires	44	16	28	13	28	3	22	11	11	8	13	1	61	26	35	14	40	7
Permanent employees	23	9	14	5	16	2	12	6	6	4	7	1	32	15	17	6	22	4
Term employees	21	7	14	8	12	1	10	5	5	4	6	0	29	11	18	8	18	3
New employee hire rate	13%	10%	16%	50%	14%	3%	7%	7%	7%	42%	7%	1%	17%	15%	19%	61%	18%	7%
Turnover (voluntary, involuntary, retirees)	30	17	13	4	21	5	42	20	22	6	26	10	34	17	17	5	15	14
Permanent employees	15	10	5	1	9	5	31	15	16	2	19	10	29	14	15	1	14	14
Term employees	15	7	8	3	12	0	11	5	6	4	7	0	5	3	2	4	1	0
Turnover rate	9%	10%	8%	15%	10%	5%	13%	13%	13%	32%	13%	10%	10%	10%	9%	22%	7%	13%
Voluntary turnover	9	7	2	1	6	2	20	7	13	1	14	5	13	7	6	0	12	1
Voluntary turnover rate	3%	5%	1%	7%	3%	2%	7%	5%	9%	8%	8%	5%	4%	5%	4%	0%	6%	1%
Employees covered by collective bargaining agreements	73%	-	-	-	-	-	73%	-	-	-	-	-	73%	-	-	-	-	-
Training spend per employee	\$1,738	-	-	-	-	-	\$2,078	-	-	-	-	-	\$2,137	-	-	-	-	-

Employee safety incidents

Every port authority employee is required to exercise personal responsibility and a commitment to healthy working conditions and safe working practices. Our Occupational Health and Safety program is designed to: comply with all applicable laws and regulations; prevent accidents, incidents, injuries and occupational health hazards with an aim of zero injuries; demonstrate commitment from top management; motivate employees to work responsibly; and provide employees with the means and the training to enable them to perform their jobs in a healthy and safe manner. We conduct regular audits and investigations following incidents in order to implement corrective actions, with a focus on continuously improving and updating our procedures.

	2013	2014	2015	2016	2017	2018
Incidents by type						
Number of fatalities	0	0	0	0	0	0
Number of high-consequence work-related injuries (excluding fatalities)	0	0	0	0	0	0
Number of disabling injuries	1	0	0	1	7	2
Number of minor injuries	2	0	1	0	4	1
Number of other hazardous occurrences	0	0	0	0	0	0
Number of minor incidents	5	9	9	9	3	7
Number of near misses	-	-	-	-	-	40
Port Authority performance (additional indicators)	0.4	0.0	0.0	0.4	2.6	0.7
Recordable work-related injury rate (disabling + minor injuries)	1.3	0.0	0.4	0.4	4.1	1.1
Total number of hours worked	477,365	514,639	555,239	536,239	536,083	540,060
Incidents by location						
Office (includes reports by office staff off-site)	2	8	4	7	7	7
Maintenance	1	0	2	0	2	0
Marine operations	0	0	0	0	2	0
CPC work locations	5	1	4	3	3	3

All injuries and incidents are self-reported to a first aid attendant or manager and shared with our workplace safety committees. The data is reported annually to Employment and Social Development Canada and the Vancouver Fraser Port Authority Board of Directors (Human Resources Compensation Committee).

A disabling injury is an employment injury or occupational disease that involves loss of work on the subsequent day after the injury.

A high-consequence work-related injury is work-related injury that results in a fatality or in an injury from which the worker cannot, does not, or is not expected to recover fully to pre-injury health status within 6 months.

A minor injury is an employment injury or occupational disease for which medical treatment is provided; excludes a disabling injury.

Other hazardous occurrences are incidents that involve events such as explosion, fire, revival emergency procedures, loss of consciousness and malfunctioning of an elevating device.

Minor incidents include first aid, ergonomic assessment or short disruption of work but no loss of work time.

VFPA disabling injury rate is calculated as follows: disabling injury * 200,000 / total # of hours worked.

Work related injury rate is calculated as follows: (disabling injury + minor injury) * 200,000 / total # of hours worked.

Contractor safety incidents

The port authority does not manage or regulate health and safety beyond the port authority's own operations. We do, however, take steps to improve the safety performance of port authority-led infrastructure projects by: including safety information as a requirement of our procurement processes; hiring independent safety auditors; and monitoring incident reports to find opportunities to increase safety in and around port-led infrastructure projects.

	2013	2014	2015	2016	2017	2018
Incidents by type						
Number of fatalities	0	0	0	0	0	0
Number of high-consequence work-related injuries (excluding fatalities)	0	0	0	0	0	0
Number of disabling injuries	6	9	1	1	1	2
Number of minor injuries	8	8	0	0	0	1
Number of other hazardous occurrences	5	8	0	3	0	2
Number of minor incidents	37	36	0	9	3	0
Number of near misses	-	-	-	5	30	9
Total number of exposure hours	311,411	373,779	77,083	38,532	146,197	84,227
Recordable work-related injury rate (disabling + minor injuries)	8.99	9.10	2.59	5.19	1.37	7.12

Contractors are defined as individuals working on port authority-led major construction projects (over \$100,000 contract value).

All injuries and incidents are reported to the port authority by project contractors. Data is reported annually to the Vancouver Fraser Port Authority Board of Directors (Human Resources Compensation Committee).

A disabling injury is an employment injury or occupational disease that involves loss of work on the subsequent day after the injury.

A minor injury is an employment injury or occupational disease for which medical treatment is provided; excludes a disabling injury.

Other hazardous occurrences are incidents that involve events such as explosion, fire, revival emergency procedures, loss of consciousness and malfunctioning of an elevating device.

Minor incidents include first aid, ergonomic assessment or short disruption of work but no loss of work time.

Recordable work related injury rate is calculated as follows: (disabling injury + minor injury) * 200,000 / total # of hours worked.

Environment

Energy use

We have a number of initiatives designed to reduce greenhouse gas (GHG) emissions associated with the energy consumption of our corporate operations. These include our Sort Smart waste management system, employee sustainable commuting initiatives, and lighting and temperature controls. Port authority operations have been carbon neutral since 2010 through the purchase of carbon offsets.

	2013	2014	2015	2016	2017	2018	
Direct energy use (GJ)	Diesel	3,929.06	4,499.00	4,304.00	3,846.43	3,685.18	3,579.83
	Gasoline	805.15	842.00	725.00	723.99	623.40	662.64
	Natural Gas	2,074.61	1,709.00	1,432.00	898.32	1,122.43	6,559.76
	Propane	1475.4	82.00	3700	9761	176.07	73.65
	Total	6,956.37	7,132.00	6,498.00	5,566.35	5,607.08	10,875.88
Indirect energy use (GJ)	Electricity	9,967.02	11,493.00	11,518.00	11,278.88	12,408.35	10,940.93
	Natural Gas	6,782.65	5,435.00	4,184.00	4,627.00	5,270.30	0.00
	Total	16,749.67	16,928.00	15,702.00	15,905.88	17,678.65	10,940.93

Energy use includes both renewable and non-renewable sources. Direct energy use includes diesel, gasoline, propane, and natural gas used to heat buildings. Indirect energy use is electricity and heat (from natural gas) procured by the port authority. In 2018, our direct energy use shows a large increase over previous years offset by a large decrease in indirect energy use. This is as a result of a change in management relationship with Canada Place Corporation ("CPC") and we have accordingly reassessed our organizational boundary and determined CPC is now within our operational control. Consequently, in line with the GRI Standards, we have reclassified our consumption of natural gas used for heat that is provided by CPC-operated boilers from Scope 2 to Scope 1 GHG emissions. (Note: Although included within our organizational boundary, our verified and reported emissions exclude the GHG emissions associated solely with Canada Place Corporation ("CPC") on the basis that they manage and report their emissions separately through Climate Smart. CPC's own Scope 1 GHG emissions are estimated to be 7,401 tCO₂e, based on consumption of natural gas in the boilers, which supply heat to all tenants.)

Annual activity has been captured through the use of direct invoice data, internal data tracking, human resources information and employee surveys for commuting. Emission factors were referenced from: 2016/17 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions, BC Ministry of Environment, Environment Canada's National Inventory Report 1990-2016: Greenhouse Gas Sources and Sinks in Canada; UN Framework Convention on Climate Change, Paris 1, 2, and 3

Greenhouse gas emissions are expressed in carbon dioxide equivalent (CO₂e), with carbon dioxide, methane, and nitrous oxide included in the calculation. To account for BC's Renewable and Low Carbon Fuel Requirements Regulation, a biogenic emission component (BioCO₂) is included in gasoline and diesel consumed, which represents about 2% of total emissions. The port authority maintains its corporate operations, excluding CPC, as carbon neutral through the purchase of carbon offsets. 2018 corporate GHG emissions were offset through the purchase of carbon offsets from Taking Root.

Greenhouse gas emissions

	2014	2015	2016	2017	2018	
Scope 1 - direct (tCO₂e)	Buildings	89.4	73.5	50.8	66.0	330.9
	Marine vessels	337.9	325.6	290.2	279.3	275.0
	Fleet vehicles	67.7	57.1	60.1	51.5	50.1
	Scope 1 - direct total	495.0	456.2	401.1	396.8	656.0
Scope 2 - indirect (tCO₂e)	Buildings	296.7	233.9	257.3	292.3	26.7
	Services	5.7	6.3	6.6	6.4	5.7
	Scope 2 - indirect total	302.4	240.3	263.9	298.7	32.4
Scope 3 - other indirect (tCO₂e)	Employee commuting	421.0	496.2	431.2	492.4	534.9
	Business travel	174.3	181.6	177.2	157.0	198.0
	Paper usage	17.9	14.3	14.4	11.0	10.2
	Waste	8.3	7.4	6.1	9.0	6.3
	Scope 3 - other indirect total	621.5	699.5	628.9	669.4	749.4
Grand total		1,418.9	1,396.0	1,293.9	1,364.8	1,437.8
Greenhouse gas emissions offset (%)		100%	100%	100%	100%	100%

Our greenhouse gas emissions were calculated in accordance with GRI 305-1, 305-2 and 305-3, which is based on the GHG Protocol developed by the World Resource Institute and the World Business Council on Sustainable Development, the port authority applies the operational control approach for establishing organizational boundaries and reports on Scope 1, Scope 2 and Scope 3 emissions related to business travel, employee commuting, paper usage, and waste. In 2018, our Scope 1 emissions show a large increase over previous years offset by a large decrease in Scope 2 emissions. This is as a result of a change in management relationship with Canada Place Corporation ("CPC") and we have accordingly reassessed our organizational boundary and determined CPC is now within our operational control. Consequently, in line with the GRI Standards, we have reclassified our consumption of natural gas used for heat that is provided by CPC-operated boilers from Scope 2 to Scope 1 GHG emissions. (Note: Although included within our organizational boundary, our verified and reported emissions exclude the GHG emissions associated solely with Canada Place Corporation ("CPC") on the basis that they manage and report their emissions separately through Climate Smart. CPC's own Scope 1 GHG emissions are estimated to be 7,401 tCO₂e, based on consumption of natural gas in the boilers, which supply heat to all tenants.)

Annual activity has been captured through the use of direct invoice data, internal data tracking, human resources information and employee surveys for commuting. Emission factors were referenced from: 2016/17 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions, BC Ministry of Environment, Environment Canada's National Inventory Report 1990-2016: Greenhouse Gas Sources and Sinks in Canada; UN Framework Convention on Climate Change, Paris 1, 2, and 3

Greenhouse gas emissions are expressed in carbon dioxide equivalent (CO₂e), with carbon dioxide, methane, and nitrous oxide included in the calculation. To account for BC's Renewable and Low Carbon Fuel Requirements Regulation, a biogenic emission component (BioCO₂) is included in gasoline and diesel consumed, which represents about 2% of total emissions. The port authority maintains its corporate operations, excluding CPC, as carbon neutral through the purchase of carbon offsets. 2018 corporate GHG emissions were offset through the purchase of carbon offsets from Taking Root.

Sustainable commuting

	2014	2015	2016	2017	2018
Employees commuting sustainably (%)	52%	43%	35%	31%	31%

Waste

Year	Composted waste	Recycled plastics, glass and metals	Recycled paper confidential	Recycled paper other	Landfill	Total	Waste diversion rate
2015	6,940.00	711.69	12,020.76	5,410.93	5,640.00	30,723.38	81.64%
2016	8,590.00	1,437.71	12,284.39	5,923.42	4,760.00	32,995.52	85.57%
2017	7,840.00	2,663.49	12,333.35	4,636.74	5,370.00	32,843.58	83.65%
2018	7,864.00	4,057.06	12,383.09	5,659.83	4,880.00	34,843.98	85.99%

Data includes only waste generated in port authority and maintenance offices.

Business

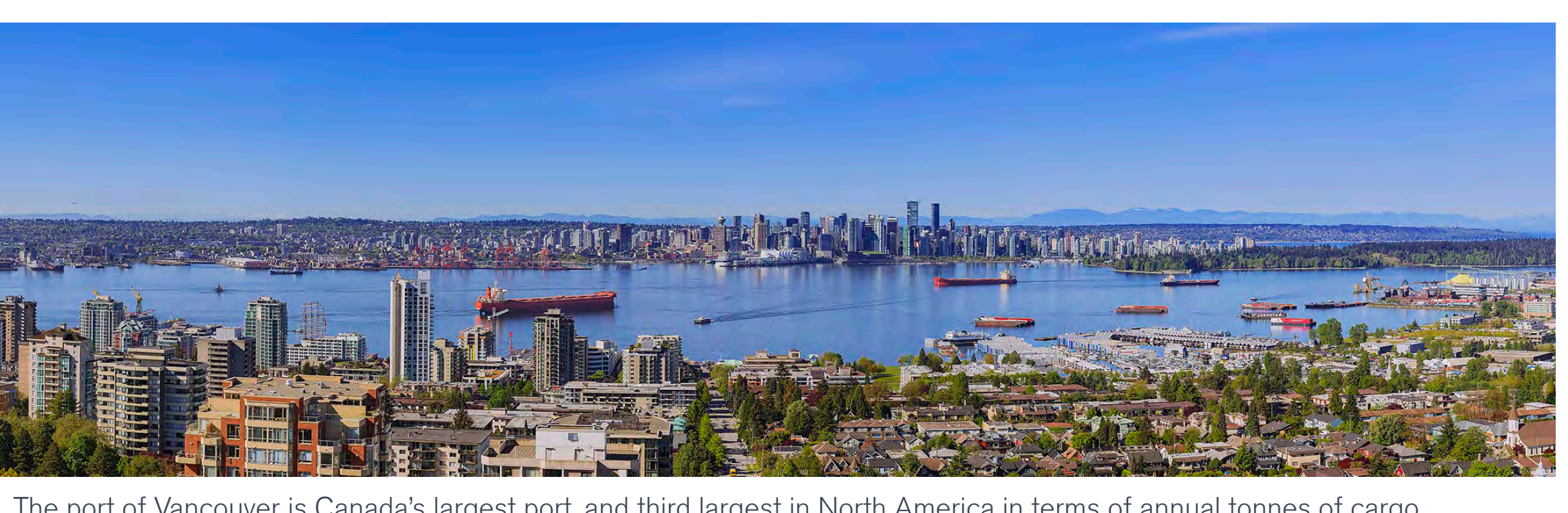
Economic value generated and distributed

	2014	2015	2016	2017	2018
Value generated (thousands)	222,539	239,188	235,163	253,478	274,453
Value distributed (thousands)	125,970	130,391	133,921	104,226	149,348
Operating costs	71,371	73,722	74,935	80,526	85,254
Employee wages and benefits	35,255	37,503	38,690	43,364	44,375
Payments to government – stipend	6,453	6,786	6,711	6,931	7,477
Payments to providers of capital	5,240	5,198	5,225	5,281	5,194
Payments to government – payments in lieu of taxes	6,774	6,579	6,516	5,871	5,944
Community investments	977	663	1,138	762	878
Other expenses (income)	-100	-60	706	-38,509	226
Value retained (thousands)	96,569	108,797	101,242	149,252	125,105

External initiatives

We follow the select sustainability best practice standards and participate in port-related sustainability initiatives.

Canada's largest port



The port of Vancouver is Canada's largest port, and third largest in North America in terms of annual tonnes of cargo. Positioned on the southwest coast of British Columbia, the port is home to 27 major marine cargo terminals and [three Class 1 railroads](#), and offers a full range of facilities and services to the Canadian and international shipping community.

The [port authority's jurisdiction](#) includes 16,000 hectares of water, more than 1,000 hectares of land and approximately 350 kilometres of shoreline. It borders 16 municipalities and intersects the asserted and established territories and treaty lands of several Coast Salish First Nations.



Moving goods at the Port of Vancouver



Many different enterprises operate in the port. Goods arrive and depart by sea on ships owned and operated by global shipping companies, and supported by tugboats, shipyards, shipping agents and freight forwarders. Terminals are operated and managed by independent third-party operators.

Railways and trucking companies move goods to and from terminals by land. Goods are sorted, stored and transferred by companies at facilities and warehouses, and inspected by the Canada Border Services Agency on terminal or at facilities across the region.

Business sectors



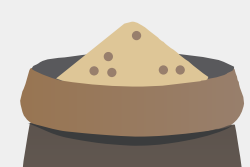
Container



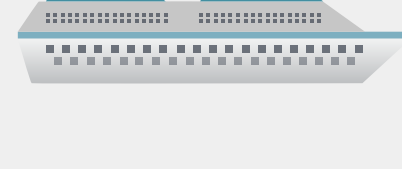
Automobiles



Breakbulk

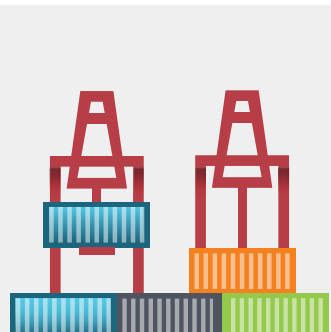


Bulk



Cruise

2018 Key facts



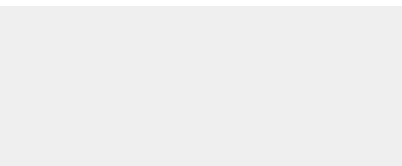
147 million

tonnes of cargo valued at \$240 billion were traded with nearly 170 world economies



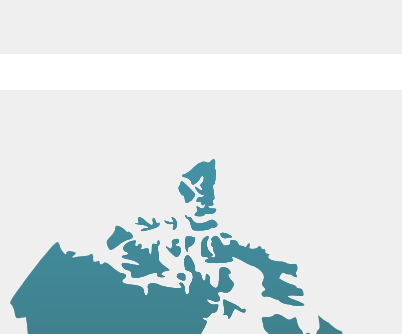
\$660 million

of export and import cargo moved through the port each day



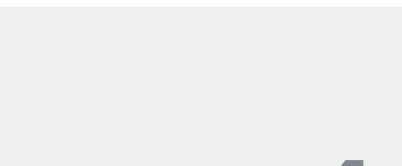
3,145

ship calls visited the port



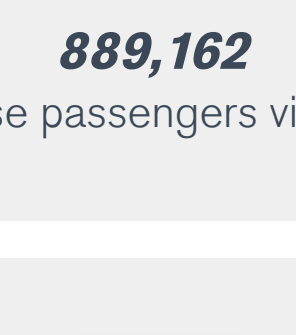
90%

of the port's total volume served Canadian markets



889,162

cruise passengers visited



Port of Vancouver-related activity generated

\$11.9 billion*

in GDP across Canada



More than

3.4 million

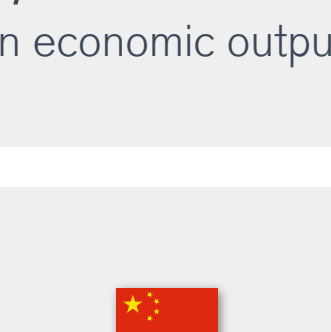
containers (twenty-foot equivalent units) moved through the port



Port of Vancouver-related activity generated

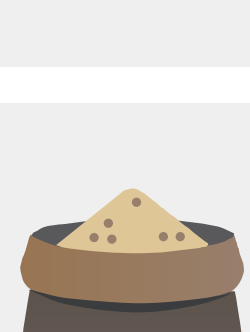
\$24.2 billion*

in economic output



The top 5

trading partners were China, Japan, South Korea, India and United States



The bulk sector

produced the largest cargo volume

*Figures from the [2016 Port of Vancouver Economic Impact Study](#).

Learn more port facts and statistics at portvancouver.com/factsandstats

About this report

Our 2018 Sustainability Report provides information on topics representing the greatest impacts of the Port of Vancouver, and reports on the progress of Vancouver Fraser Port Authority initiatives designed to address these impacts.

All uses of “we” and “our” in this report refer to the Vancouver Fraser Port Authority.

 Click this icon throughout this report to adjust how data is presented and to see further data.

Report topics

This report covers topics that may affect the long-term success of our business, including the Port of Vancouver's most significant economic, environmental and community impacts, and topics of particular importance to our stakeholders. Our sustainable port definition encompasses 10 focus areas that represent our material topics and the most significant sustainability challenges and opportunities facing the port community. These focus areas form the foundation for this report. Through report-specific and ongoing stakeholder engagement as well as project-specific consultation, we identified additional topics within each focus area that are important to stakeholders. Our approach to managing these topics is discussed within the focus area. Our process to define report content is informed by the Global Reporting Initiative (GRI) Standards' Principles for Defining Report Content.

Economic prosperity through trade

Focus area	Subtopics	Interested stakeholder groups	What we're hearing from stakeholders
Competitive business	Supply chain efficiency and reliability	<ul style="list-style-type: none"> Governments Major shippers Service providers Terminal operators and tenants 	<ul style="list-style-type: none"> Ensure cargo moves efficiently and reliably Enhance the transparency of supply chain performance to increase efficiency Maintain competitive port commercial fees and cost structures Increase transparency of, and consultation on, decisions affecting customers Increase port capacity to manage congestion due to growth in trade Improve speed of the permit process
Effective workforce	Worker health and safety Labour force availability and stability	<ul style="list-style-type: none"> Port authority employees Major shippers Service providers Terminal operators and tenants 	<ul style="list-style-type: none"> Monitor stability of labour relationships to avoid supply chain disruption Support availability of labour to maintain supply chain efficiency and reliability Adopt supply chain innovation while minimizing impacts on existing workforce Provide training and education for skills upgrading Uphold safe working conditions for port labour
Strategic investment and asset management	Land use Infrastructure delivery	<ul style="list-style-type: none"> Aboriginal groups Communities Governments Non-governmental organizations Service providers Terminal operators and tenants 	<ul style="list-style-type: none"> Increase transparency of, and consultation on, infrastructure and land management decisions Secure land and develop infrastructure to meet long-term demand for trade Optimize use of existing land before acquiring new land Ensure port development does not infringe upon agricultural lands Balance economic, environmental and social objectives in a transparent way

Healthy environment

Focus area	Subtopics	Interested stakeholder groups	What we're hearing from stakeholders
Healthy ecosystems	Water quality Aquatic species Terrestrial species	<ul style="list-style-type: none"> Aboriginal groups Communities Governments Non-governmental organizations 	<ul style="list-style-type: none"> Minimize and mitigate impacts of port operations and development on aquatic and terrestrial species Provide greater transparency on port-related environmental impacts Address cumulative environmental and socio-economic impacts of port growth; consider cumulative impact analysis for new projects Minimize underwater noise Improve transparency and speed of project permitting and environmental review process Consider the potential impacts of increased trade on water quality and marine mammals
Climate action	GHG emissions Air quality Infrastructure resilience	<ul style="list-style-type: none"> Aboriginal groups Communities Governments Marine carriers Non-governmental organizations Service providers Terminal operators and tenants 	<ul style="list-style-type: none"> Reduce port-related air emissions affecting air quality and contributing to climate change Integrate climate change adaptation and infrastructure resilience in port development and operational planning Accelerate the adoption of clean technology and alternative energy in port development and operations Promote new clean technology and energy source Incentivize green shipping and harmonize initiatives Set transparent emissions reduction goals and targets
Responsible practices	Green infrastructure Supply chain responsibility	<ul style="list-style-type: none"> Aboriginal groups Communities Governments Non-governmental organizations Terminal operators and tenants 	<ul style="list-style-type: none"> Minimize the impacts of port infrastructure on the environment and local communities Consider the environmental lifecycle impacts of products shipped through the port Don't ship coal and oil, which could harm the environment and local communities Contribute to initiatives to enhance safety and environmental performance

Thriving communities

Focus area	Subtopics	Interested stakeholder groups	What we're hearing from stakeholders
Good neighbour	Engagement and consultation Noise and nuisance	<ul style="list-style-type: none"> Aboriginal groups Communities Governments Service providers Non-governmental organizations Terminal operators and tenants 	<ul style="list-style-type: none"> Minimize and mitigate negative impacts (noise, air emissions, dust, light, traffic congestion and loss of enjoyment) from port operations and development Consult on major developments, and consider community and municipal values and priorities in decision-making processes Provide more information about port impacts on communities Address cumulative environmental and socio-economic impacts of port growth Limit deep-sea freighter anchoring in the Gulf Islands Improve transparency of project permitting and environmental review process, and create opportunities for meaningful consultation Create opportunities for joint planning with communities and local governments in areas of mutual interest and concern (transportation, land use, emergency planning, community health, etc.) Expand the range of issues considered in project permitting and environmental review process
Community connections	Local and national economic activity Community investment	<ul style="list-style-type: none"> Communities Governments 	<ul style="list-style-type: none"> Increase investment in communities most affected by port operations and development Continue to create and maintain jobs
Aboriginal relationships	Aboriginal rights Opportunities for Aboriginal people Aboriginal culture	<ul style="list-style-type: none"> Aboriginal groups Governments Service providers Terminal operators and tenants 	<ul style="list-style-type: none"> Understand and address the social and environmental impacts, and cumulative impacts, of port activities on Aboriginal rights Understand and address cumulative environmental and socio-economic impacts of port growth and development Provide training and employment opportunities, and support business opportunities for Aboriginal peoples
Safety and security	Infrastructure safety and security Public safety Vessel safety	<ul style="list-style-type: none"> Aboriginal groups Communities Governments Labour Non-governmental organizations Service providers Terminal operators and tenants 	<ul style="list-style-type: none"> Ensure cargo ships, especially tankers carrying crude oil, travel safely through the port Ensure collaboration, coordination, training and information sharing among responsible parties to ensure an effective response to spills and emergencies Ensure port activities don't impact the safety and security of neighbouring communities Manage hazardous materials moving through the port

Report details

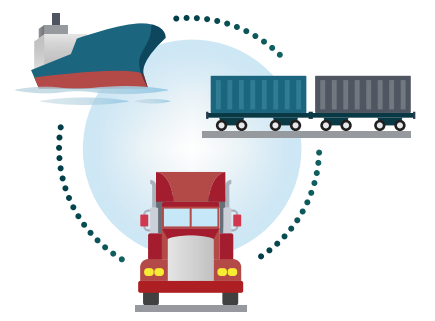
Reporting period	January 1 to December 31, 2018
Reporting cycle	Biennial
Year of last report	2016
Reporting framework	<p>This report has been prepared in accordance with the Global Reporting Initiative (GRI) Standards: Core option. All disclosures align with the 2016 GRI Standards, with the exception of safety, which is reported in accordance with GRI 403: Occupational Health and Safety 2018.</p> <p>The GRI content index can be found here.</p>
Report scope and boundary	<p>This report covers the Port of Vancouver's greatest impacts, and reports progress on the Vancouver Fraser Port Authority's initiatives designed to address these impacts. When possible, initiatives and progress of port tenants and terminals are also discussed. When relevant, information about Canada Place Corporation, a subsidiary of the Vancouver Fraser Port Authority, is included. The port authority's four other subsidiaries are not included due to their limited social and environmental impacts, with the exception of corporate financial data, which is based on consolidated financial statements. Unless otherwise specified, the boundary for the topics reported is port-wide, encompassing port authority-managed federal lands and navigational jurisdiction.</p>
Materiality process	<p>Our process to identify and report on material topics is informed by the GRI Standards' Principles for Defining Report Content. Our material topics can be found here.</p> <p>Identification of material topics</p> <p>To identify material topics we:</p> <ul style="list-style-type: none">• Engage stakeholders in envisioning the future of the port through strategic initiatives including:<ul style="list-style-type: none">◦ Port 2050◦ Sustainable port definition• Engage stakeholders to help us understand their interests through:<ul style="list-style-type: none">◦ Community liaison committees◦ Delta Community Office◦ Community feedback line◦ Online consultation tool (PortTalk)◦ Municipal engagement program◦ Annual customer satisfaction survey◦ Project and Environmental Review process public consultation• Identify additional issues and trends through:<ul style="list-style-type: none">◦ Our business planning process◦ Supplemental research◦ Media scans◦ Industry reports <p>Analysis and prioritization</p> <p>In 2018, we convened two stakeholder sustainability reporting review panels, one internal and one external, to help us improve our reporting and prioritize the topics to be covered in this report. The recommendations from these panels inform this report. The panel report and our response can be found at: portvancouver.com/reporting</p> <p>Validation</p> <p>Our sustainability reporting team and report steering committee, consisting of senior management, validate and refine the priority topics.</p>
Changes in reporting	<p>There are no significant changes in material topics or topic boundaries from the 2016 report, with the exception of Effective workforce, which now focuses more broadly on the Port of Vancouver workforce.</p>
Restatements of information	<p>Any restatements of information from previous reports is noted as a footnote in relation to specific data sets.</p>
Data	<p>Data contained in this report relating to port-wide performance is outside of the direct operational control of the Vancouver Fraser Port Authority. We do not currently collect data from port tenants, except to report on port-wide energy and emissions every five years. Data relating to topics within the port authority's direct operational control is located in the port authority data section.</p> <p>Data is reported in metric system units and Canadian dollars.</p>
Assurance	<p>The Vancouver Fraser Port Authority engaged KPMG LLP to provide independent, external assurance on select performance indicators and assertions contained within this report. Port authority senior management approved the assurance engagement.</p> <p>KPMG's assurance statement can be found here.</p>
Contact	<p>We welcome your feedback on this report. Please send your comments or questions to info@portvancouver.com.</p>

Economic prosperity through trade

A sustainable port delivers economic prosperity through trade, focusing on competitive business, an effective workforce, and strategic investment and asset management.



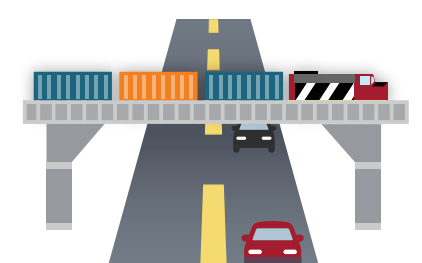
94 hrs average gateway cycle time for grain railcars



78% of container truck turns occurred in 60 minutes or less



\$104 million of capital investment towards moving infrastructure projects forward in 2018



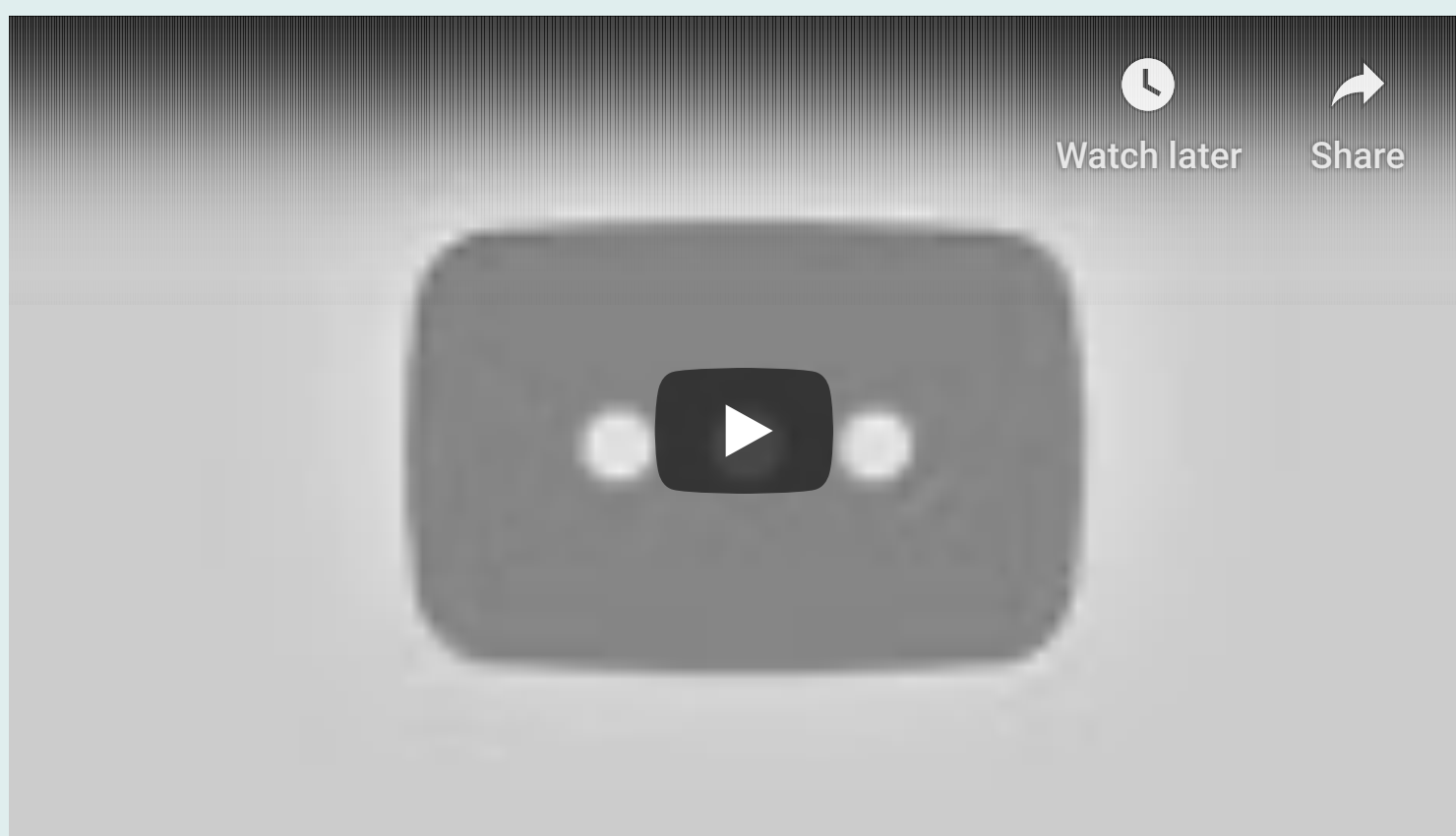
Bringing partners together to build needed infrastructure

As Canada grows, and the global trade landscape continues to evolve, trade through the Port of Vancouver is expected to increase. More goods moving through the region can place significant pressure on existing road and rail infrastructure. This can lead to congestion, which can affect local communities by increasing emissions and noise, and by slowing travel time. Insufficient infrastructure and congestion can also contribute to higher prices for goods as shipping is moved to other locations, resulting in delays or in goods travelling longer distances to reach their final destination.

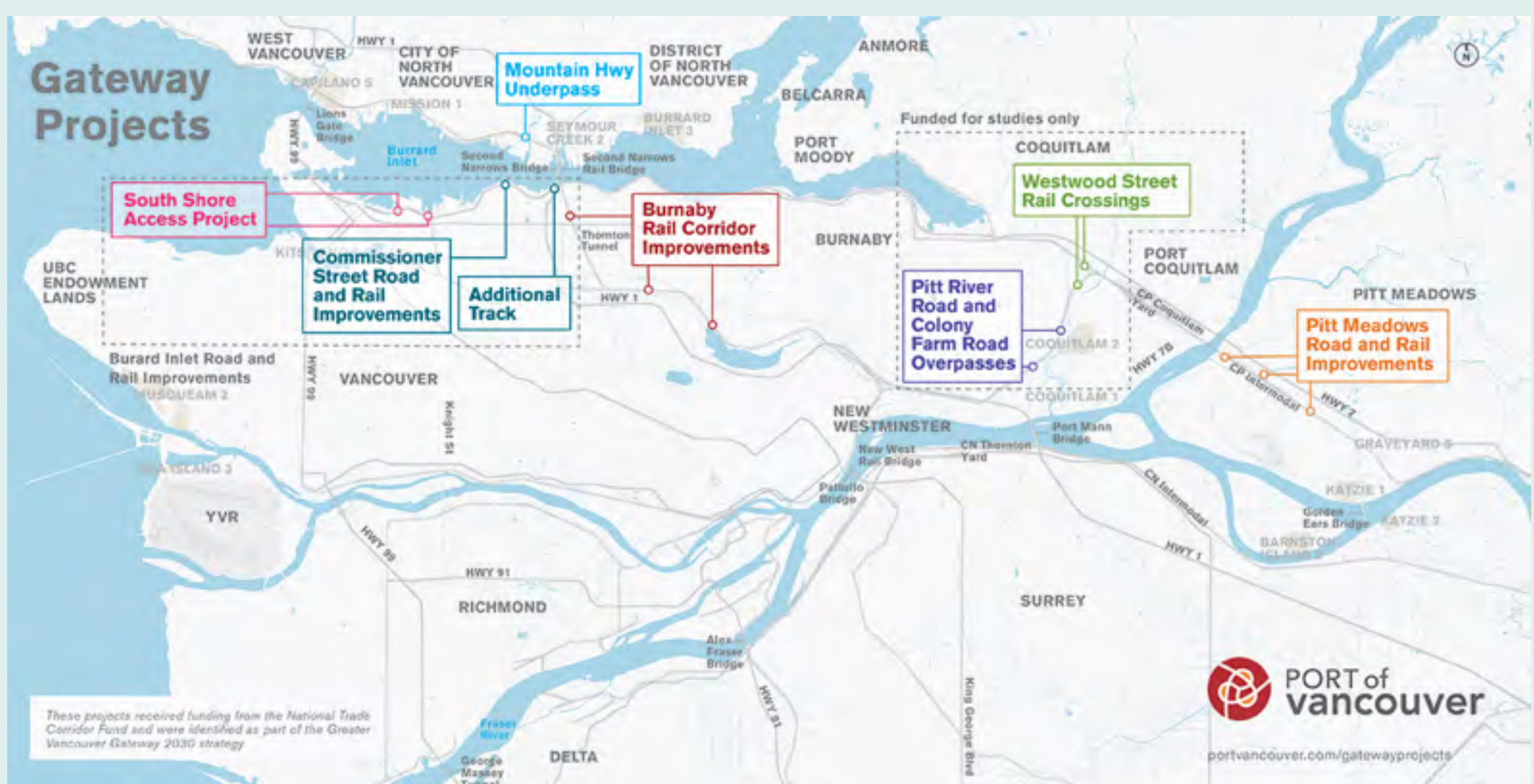
Many projects to improve infrastructure and the supply chain have already been completed in the Lower Mainland, many of them over the last decade through the federal government's Asia-Pacific Gateway and Corridor Initiative. Since 2009, we have invested almost 90 per cent of our cash flows from operating activities back into the gateway to increase capacity, improve the flow of cargo, acquire industrial land and protect the environment. However, given new trade agreements with Asia-Pacific countries and forecasted growth, more needs to be done to ensure the Vancouver gateway is ready for more trade.

To prepare the region, we brought stakeholders together to develop solutions to accommodate increased trade. Beginning in 2014, we led the creation of the [Gateway Transportation Collaboration Forum](#) (GTCF), which brought together the [B.C. Ministry of Transportation and Infrastructure](#), [TransLink](#), [Transport Canada](#) and the [Greater Vancouver Gateway Council](#) to identify infrastructure needs in major trade corridors. The GTCF conducted studies of the port's major trade areas (the north and south shores of Burrard Inlet, the Fraser River and Roberts Bank) to learn more about goods movement.

The result of that work was the [Greater Vancouver Gateway 2030 strategy](#) for smart infrastructure investment. The GTCF participants identified nearly 40 potential projects in the region that could increase capacity for trade while easing congestion and lowering the potential negative impacts on the environment and communities. We submitted proposals for federal funding for a first phase of projects as part of the federal government's [National Trade Corridors Fund](#).



As a result, in 2018 the Government of Canada announced more than \$220 million for infrastructure projects in Vancouver, North Vancouver, Burnaby, Coquitlam, Port Coquitlam and Pitt Meadows. The projects are focused on alleviating the impacts of growing trade by enhancing safety, improving travel time, reducing congestion and reducing impacts on air quality. Additionally, the projects will deliver Canadian goods more efficiently while creating well-paying jobs.



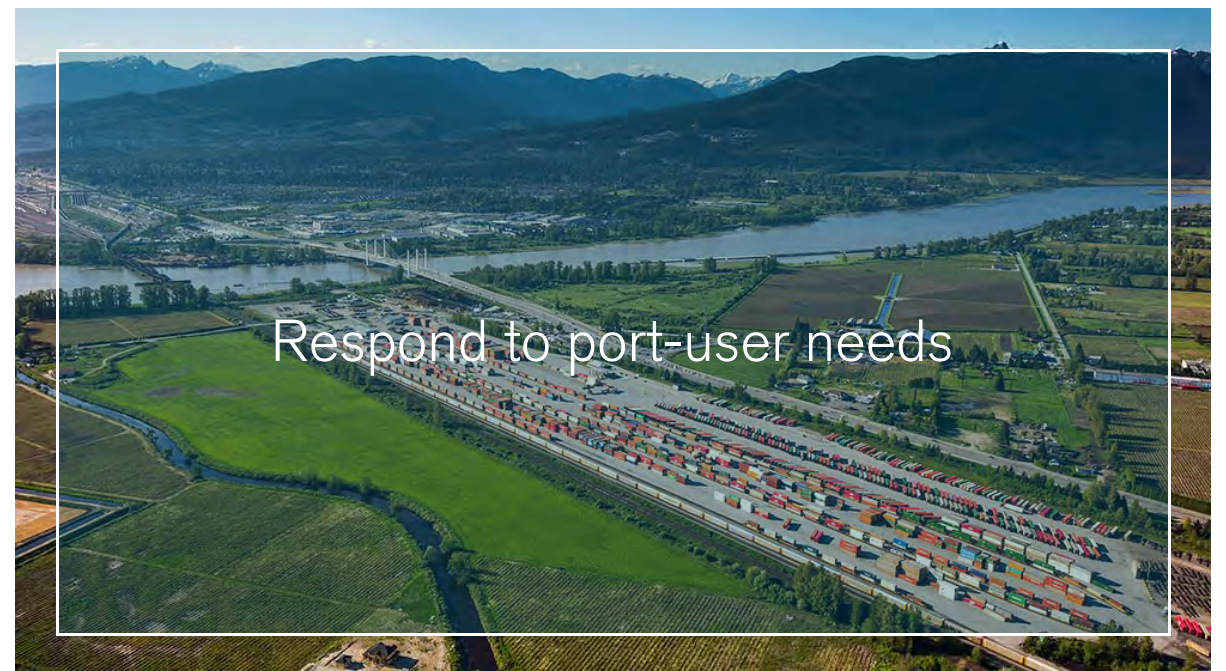
We are now focusing on delivering those projects, including working with municipalities on technical studies, community engagement and other tasks to advance the design and construction of the projects. We continue to work with local government, First Nations and industry partners to finalize agreements regarding the balance of the \$540 million needed to complete the projects. We are also submitting applications to the National Trade Corridors Fund for the funding of other projects.

Competitive business



The Port of Vancouver handles more than one-third of Canada's trade in goods outside of North America by value, and competes with major North American ports on the west coast in particular for international trade. An efficient, reliable and financially stable port is essential to retaining and attracting business, and to promote continued investment in operational and infrastructure improvements.

The movement of goods is complex. It requires supply chain partners—including truck, rail and terminal operators, marine carriers, distribution, warehouse and transshipment operators, and labour—to actively coordinate their operations and investments. This coordination is essential for the efficient and reliable flow of goods through the port.

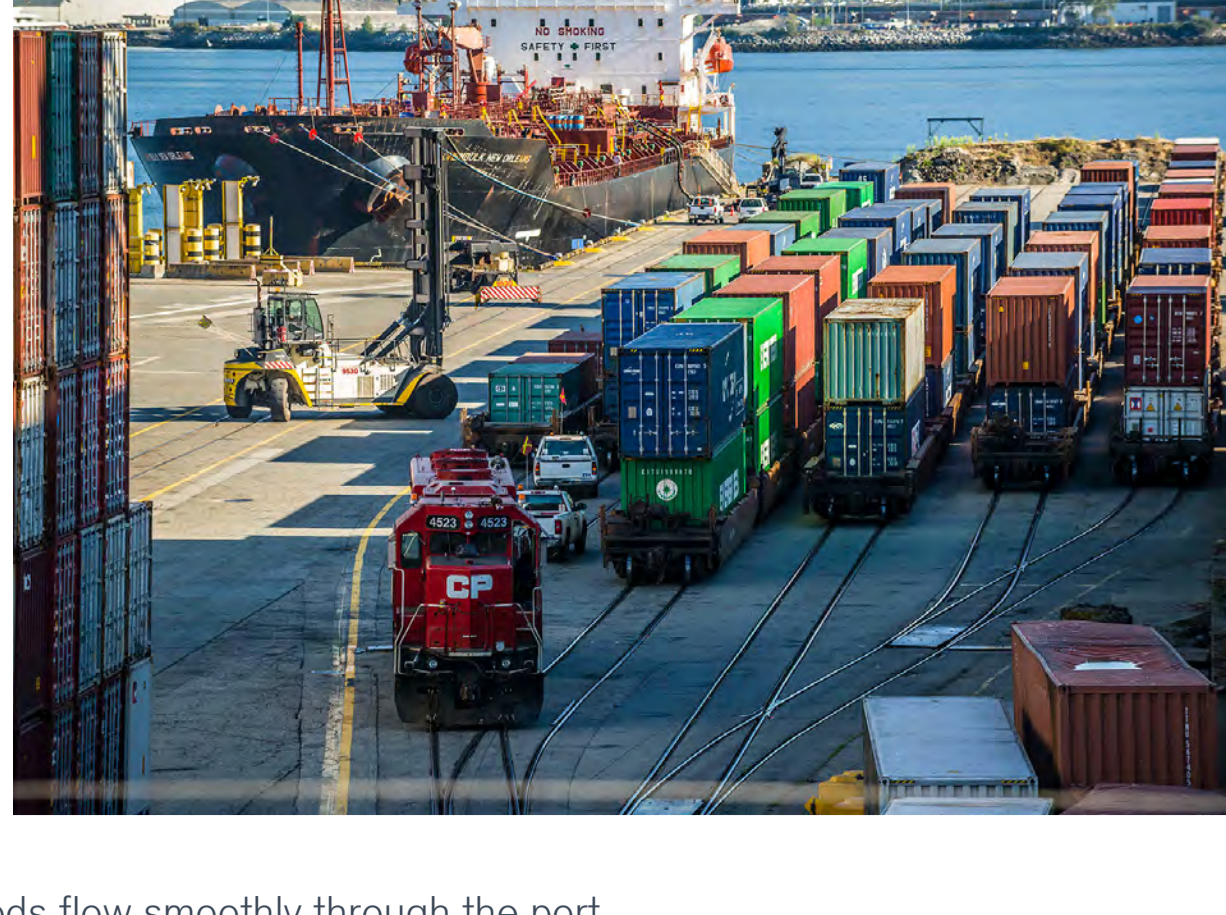


Terminals, rail and ocean-going ships

As a port authority, we are not responsible for the actual movement of goods, and we do not have commercial arrangements with shipping lines, shippers or rail lines. We do not oversee day-to-day terminal operations or coordinate the movement of goods along the supply chain by rail, truck or ship. However, we do carefully consider the longer-term development of Canada's trade needs to plan and deliver on- and off-port infrastructure. Where possible, we influence operations to facilitate Canada's growing trade.

Among other activities, we focus on improving supply chain transparency. This supports port users in making more informed decisions and planning their operations, and improves general port efficiency and reliability. To accomplish this, we:

- Bring together port users, supply chain participants and stakeholders to share information
- Identify opportunities for data-based solutions that help goods flow smoothly through the port
- Work with partners to improve supply chain visibility and performance data, such as information about rail performance and truck wait times
- Provide access to real-time monitoring and supply chain metrics on our website and mobile app, through the use of webcams, GPS technology and supply chain data
- Provide discounted wharfage fees to recognize container vessels that arrive on time, through our [Container Vessel On-Time Incentive Program](#)



In 2018, in partnership with Transport Canada, we led the first phase of a program to provide transparency in much of the supply chain terminating in Vancouver. The program involved collecting information about travel times and congestion points for cargo—specifically fertilizers, coal and grain—moving from points across Canada to the port. We collaborated with industry partners to develop and share 33 key metrics. We also created a dashboard, tracking real-time performance across the supply chain, allowing for more informed strategic decisions.

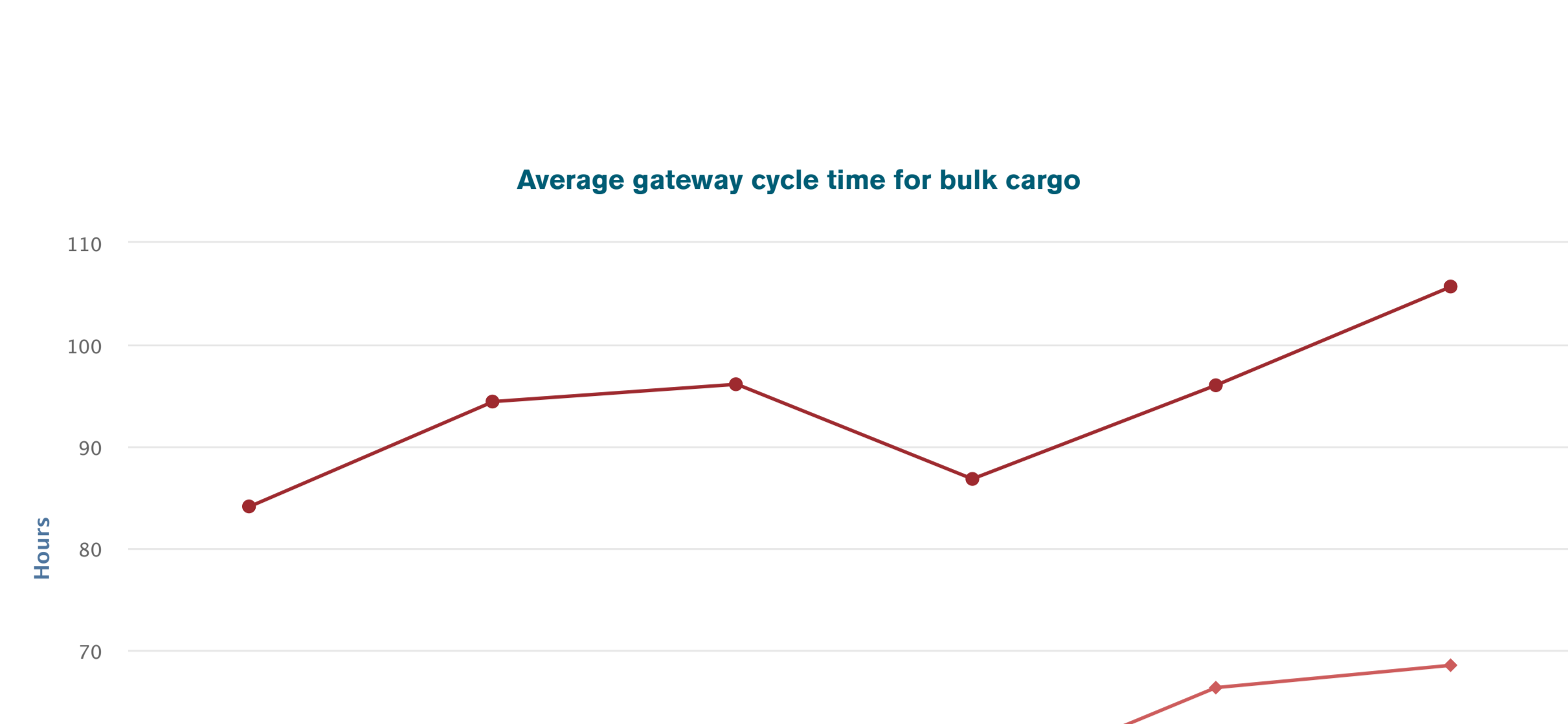
As part of [Transport Canada's Port Modernization Review](#), we also [recommended](#) that government develop policy, legislation or regulations to ensure timely sharing of data among participants to optimize supply chain performance.

In 2019, we will continue to:

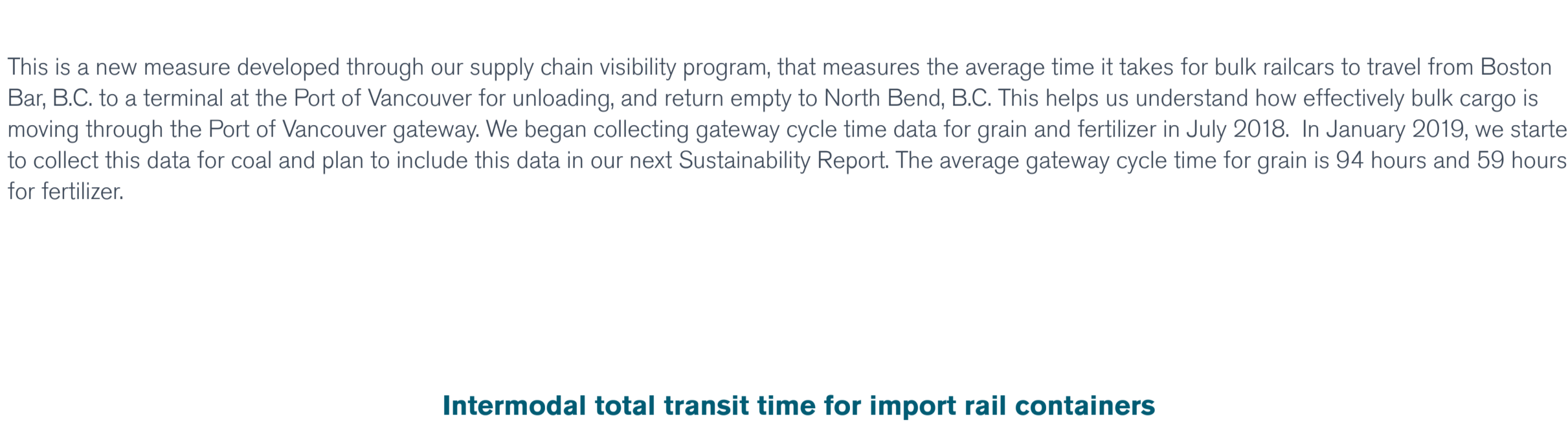
- Explore the use of emerging technologies—such as artificial intelligence and predictive analytics—to inform supply chain decisions
- Focus on the efficient use of existing assets and land to maximize cargo capacity and supply chain performance

Supply chain performance metrics

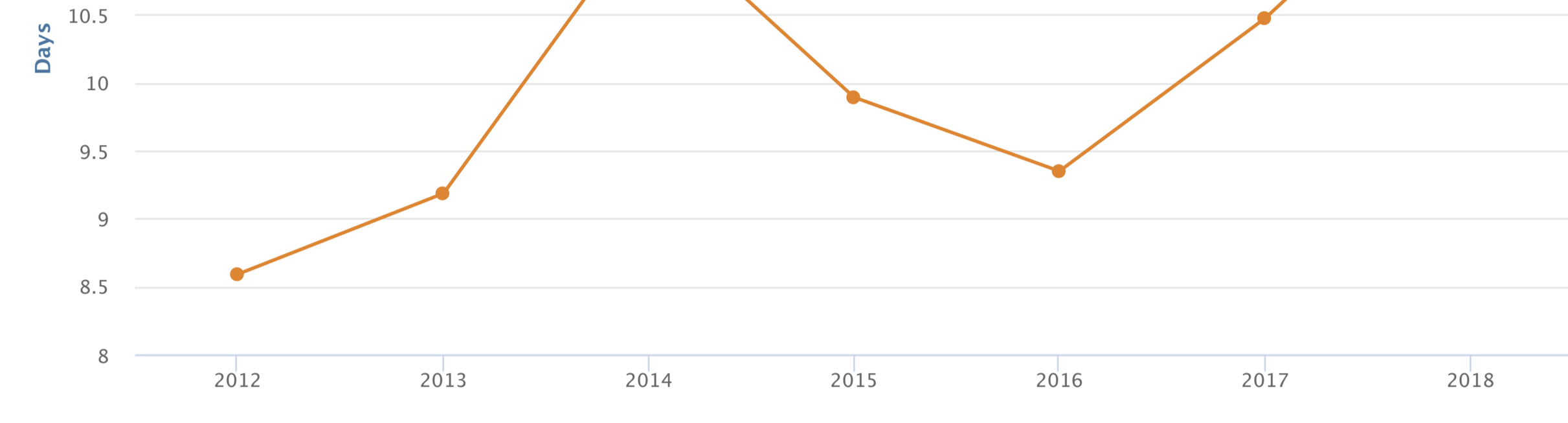
Collecting, analyzing and reporting data allows us to assess how well the supply chain is performing.



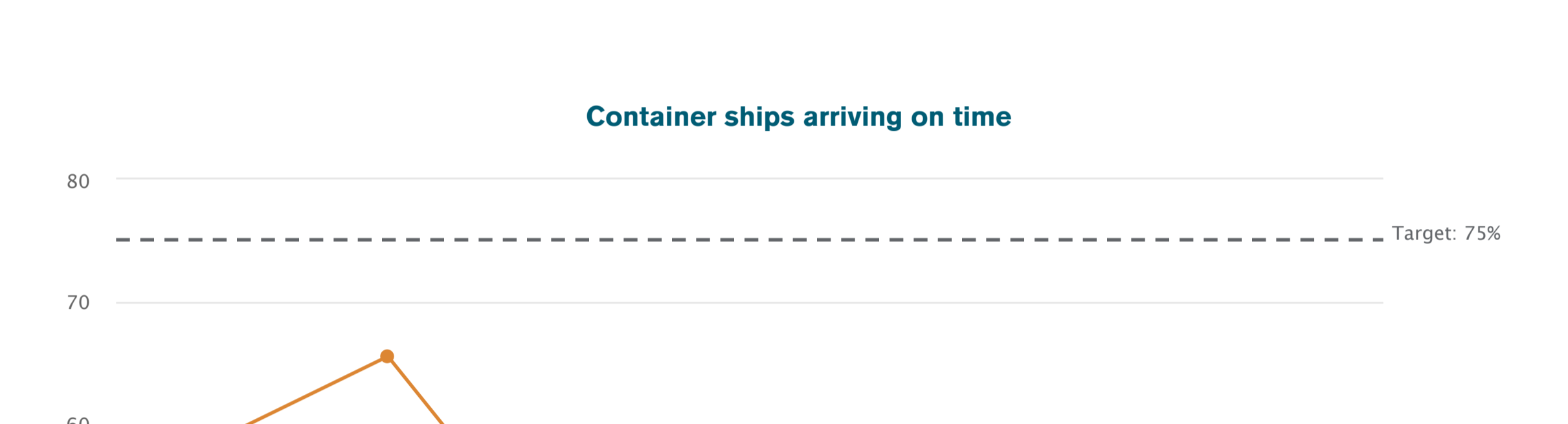
This is a new measure developed through our supply chain visibility program, that measures the average time it takes for bulk railcars to travel from Boston Bar, B.C. to a terminal at the Port of Vancouver for unloading, and return empty to North Bend, B.C. This helps us understand how effectively bulk cargo is moving through the Port of Vancouver gateway. We began collecting gateway cycle time data for grain and fertilizer in July 2018. In January 2019, we started to collect this data for coal and plan to include this data in our next Sustainability Report. The average gateway cycle time for grain is 94 hours and 59 hours for fertilizer.



Measures the average time it takes an import rail container, after being unloaded from a ship in Vancouver, to reach its destination of a rail yard in Toronto, Montreal or Chicago. Intermodal transit times have increased due to longer container terminal dwell times, caused by increasing container volumes, fewer ships arriving on-time, and capacity constraints at terminals. There are several infrastructure projects underway to increase container capacity, highlighted in the [Anticipate and deliver infrastructure section](#).



Measures the percentage of container ships arriving within eight hours of their scheduled berth window. Our target is for 75 per cent of ships to arrive on time. Knowing when container cargo will arrive enables terminal operators, railways and trucking companies to better plan their operations and handle goods efficiently and cost-effectively. Our Container Vessel On-Time Incentive Program provides discounted wharfage fees to recognize container ships that arrive on time. On-time arrival has decreased since 2016 for a number of reasons including larger vessels, industry consolidation, extreme weather events at origin and capacity issues due to increased container volumes through the port. The drop in performance in late 2014 and early 2015 was due to labour issues at U.S. west coast ports, coupled with increased container volumes through the port.



Measures the percentage of import containers departing the terminal via rail within three days of being unloaded from a vessel. Our target is 70 per cent. Increased container volumes through the port are resulting in longer terminal dwell time, due to capacity constraints. There are several infrastructure projects underway to increase container capacity, highlighted in the [Anticipate and deliver infrastructure section](#).

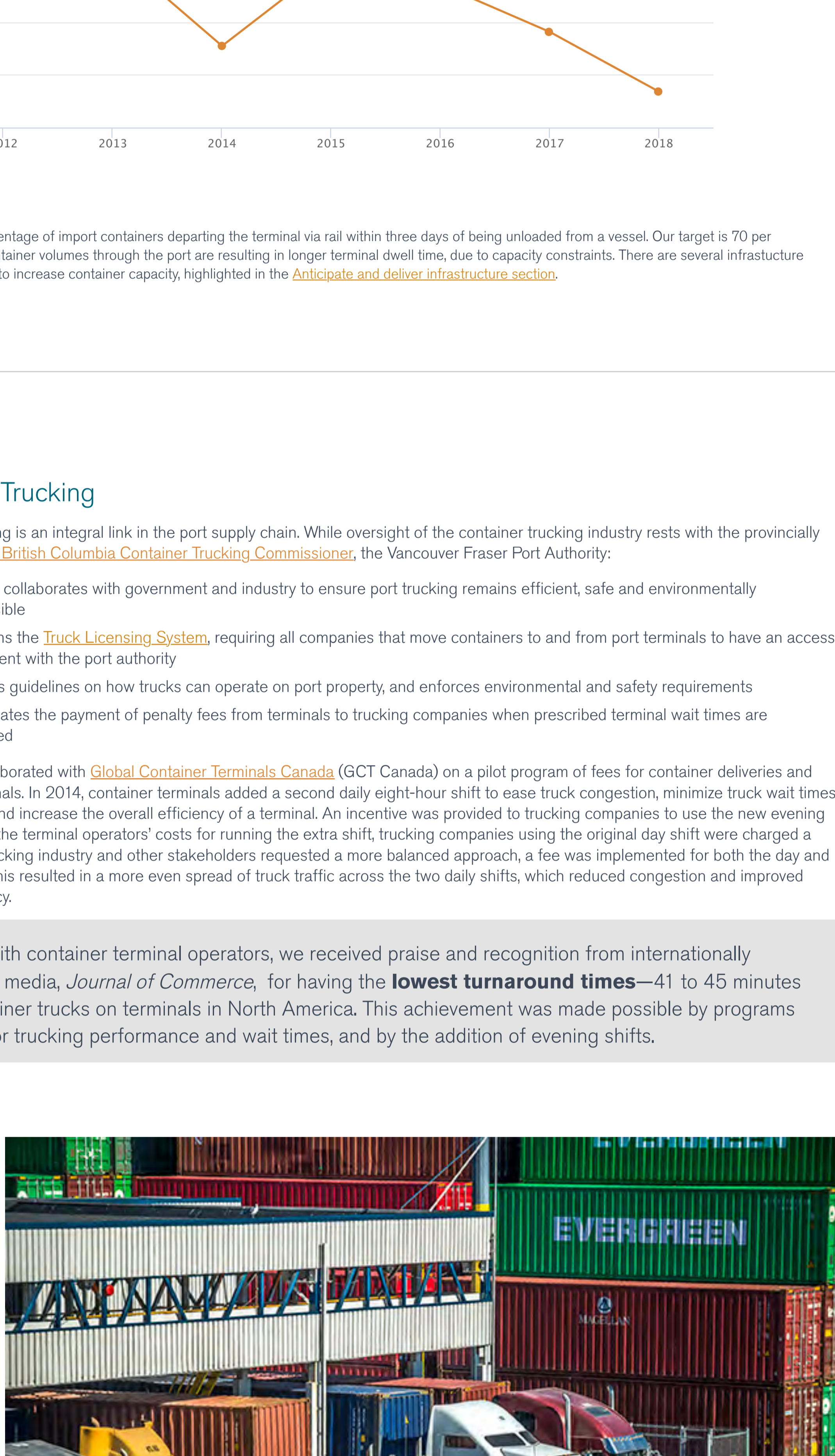
Container Trucking

Container trucking is an integral link in the port supply chain. While oversight of the container trucking industry rests with the provincially run [Office of the British Columbia Container Trucking Commissioner](#), the Vancouver Fraser Port Authority:

- Actively collaborates with government and industry to ensure port trucking remains efficient, safe and environmentally responsible
- Maintains the [Truck Licensing System](#), requiring all companies that move containers to and from port terminals to have an access agreement with the port authority
- Provides guidelines on how trucks can operate on port property, and enforces environmental and safety requirements
- Coordinates the payment of penalty fees from terminals to trucking companies when prescribed terminal wait times are exceeded

In 2018, we collaborated with [Global Container Terminals Canada](#) (GCT Canada) on a pilot program of fees for container deliveries and pickups at terminals. In 2014, container terminals added a second daily eight-hour shift to ease truck congestion, minimize truck wait times and emissions, and increase the overall efficiency of a terminal. An incentive was provided to trucking companies to use the new evening shift. To recover the terminal operators' costs for running the extra shift, trucking companies using the original day shift were charged a fee. After the trucking industry and other stakeholders requested a more balanced approach, a fee was implemented for both the day and evening shifts. This resulted in a more even spread of truck traffic across the two daily shifts, which reduced congestion and improved terminal efficiency.

Together with container terminal operators, we received praise and recognition from internationally recognized media, *Journal of Commerce*, for having the **lowest turnaround times**—41 to 45 minutes—for container trucks on terminals in North America. This achievement was made possible by programs that monitor trucking performance and wait times, and by the addition of evening shifts.



Measures the percentage of container truck trips completed within 60 minutes or less. A truck trip is defined as the time spent within a designated terminal area in order to pick up or drop off a container. This data is available from 2014 onwards.

Cruise

The Port of Vancouver is the home port for cruise lines that operate the Vancouver-Alaska itinerary, including through the Inside Passage along the coast of B.C. The port's cruise terminal at Canada Place serves 22 cruise lines and, in 2018, almost 900,000 passengers. While the cruise industry brings substantial economic benefit to the region, it can also bring challenges, such as congestion created by a large number of visitors arriving and departing at the same time.

To provide a positive experience to travellers, improve efficiency and support the regional benefits provided by the cruise industry, we:

- Engage a third-party provider to operate the Canada Place cruise terminal during cruise season, including managing operations and access to the terminal
- Collaborate with the cruise services provider and key stakeholders—including the Vancouver Airport Authority, the City of Vancouver, Canada Border Services Agency, U.S. Customs and Border Protection, transportation providers, cruise lines and the tourism industry—to continue to improve terminal efficiency and passenger experience, and to minimize any negative effects on surrounding communities
- Work to remain competitive with other regional cruise hubs by evaluating fee structures and promoting unique itinerary opportunities through Vancouver, in order to retain and increase business for the region

In 2018, we focused on increasing efficiencies and improving access to the Canada Place cruise terminal. We:

- Reconfigured access to the terminal for ground transportation, resulting in a 30 per cent reduction in the time that passengers spend waiting for a taxi
- Enhanced the terminal by removing and moving internal walls to remove bottlenecks and increase the flow of passengers
- Moved and redesigned border service checkpoints to expedite the movement of passengers and crew
- Improved signage to guide passengers through the terminal

There is a trend towards larger cruise ships, and while the height of Vancouver's Lions Gate Bridge at the entrance to our inner harbour can restrict larger ships, the port has been able to accommodate almost all ships to date.

In 2019, passenger volumes are forecast to increase by 21 per cent over 2018. We will continue to focus on improving the Canada Place cruise terminal to allow for maximum capacity and efficiency of passenger flow. We will also work with partners to prepare for occasionally receiving more than one ship at a given berth during a 24-hour period, and to anticipate and plan for future demand by the various sizes of cruise ships that will visit Vancouver.

Each cruise ship call contributes \$3 million to the local economy

The cruise industry generates \$1.6 billion in total economic impact

In 2018, we celebrated the arrival of the 25 millionth cruise passenger through the Port of Vancouver

Respond to port-user needs

Users and operators of the Port of Vancouver—including terminals, tenants, shipping lines and shippers—move goods through the port. The port authority's role is to understand their needs, gather input, and provide information on port authority and supply chain initiatives. This work increases our understanding of what is required to keep the Port of Vancouver competitive and to keep goods moving with minimal constraints. To accomplish this, we:

- Maintain a collaborative program with terminal operators, including working groups and a steering committee, to address matters of common interest
- Conduct ongoing customer engagement, maintaining connections, providing gateway and initiative updates, and answering questions at customer and industry events
- Maintain an office and a consistent presence in Shanghai, China, and conduct trade meetings with key customers, governments and trade agencies in Asia and Europe
- Conduct an annual survey to help assess engagement and service satisfaction, and to gather feedback regarding concerns, challenges and areas of importance



In 2018, we provided users and operators of the Port of Vancouver with updates on:

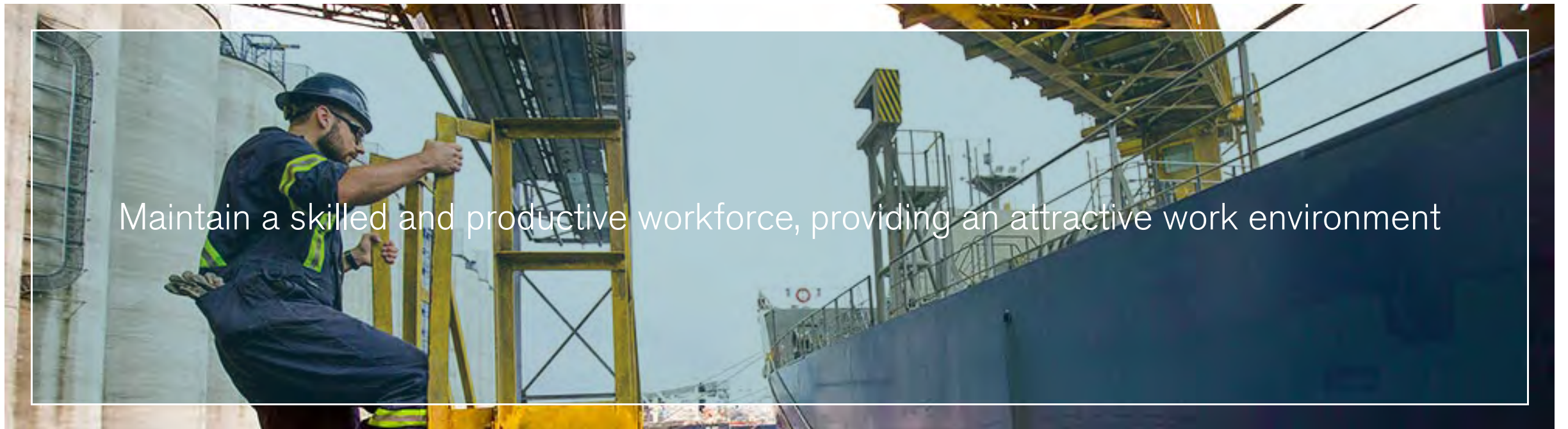
- Port infrastructure projects that will increase capacity for trade
- Our initiatives to improve supply chain visibility to port stakeholders
- Available tools, such as dashboards and reports, to increase awareness of supply chain performance and port fluidity

The ability of the port to handle growing trade is becoming an increasing challenge and concern. We are working with industry and stakeholders to identify and enhance new terminal capacity and transportation corridor efficiency throughout the gateway.

In 2019, we will continue to communicate the significant work being done to build new infrastructure and improve terminal and rail capacity, largely with the support of the federal government.

Effective workforce

Port operations and the supply chain require a diverse and productive workforce to enable the safe, efficient and sustainable movement of goods. Numerous unions and associations represent this skilled workforce, which includes tugboat, rail and truck operators, longshore workers, marine pilots, and government agencies and authorities. Port-related activity supports and contributes 115,300 direct, indirect and induced jobs across Canada.

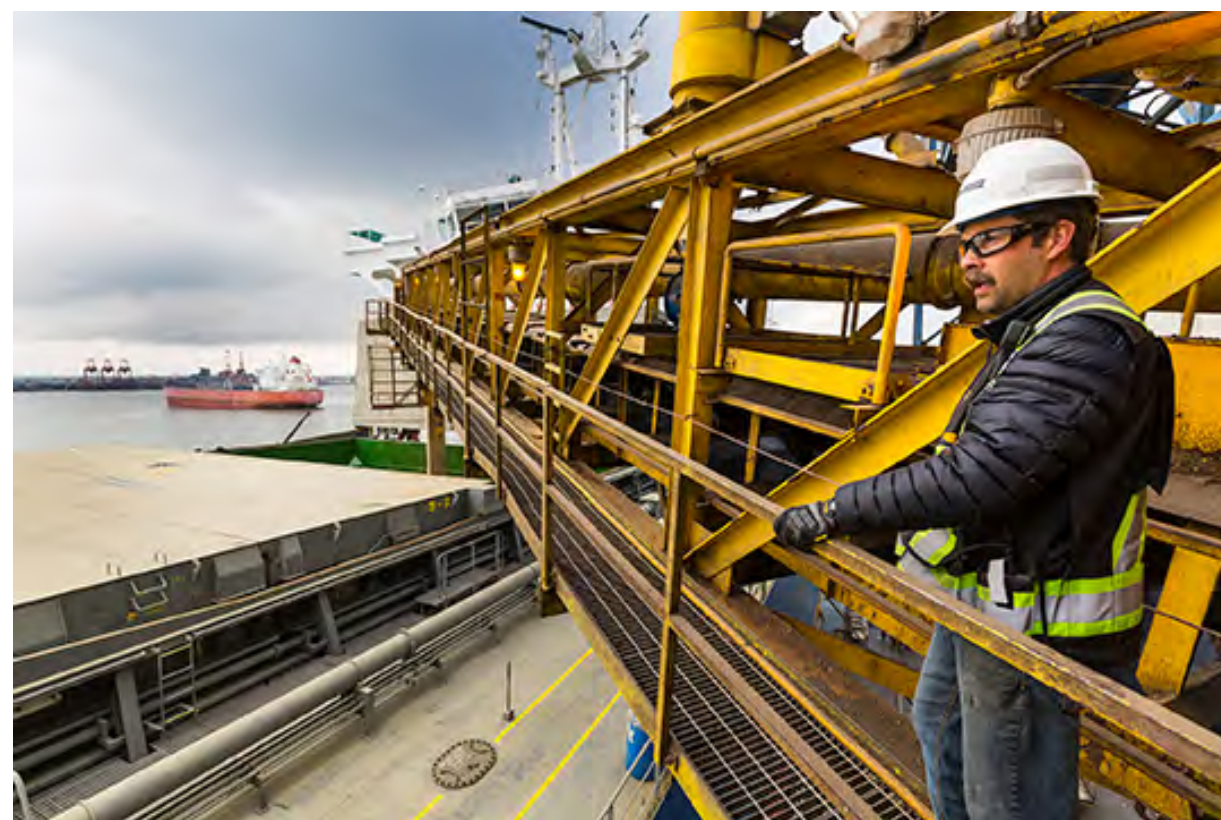


Maintain a skilled and productive workforce, providing an attractive work environment

Maintain a skilled and productive workforce, providing an attractive work environment

As a port authority, we do not control or dispatch labour at the Port of Vancouver, aside from labour related to port authority operations.

The [British Columbia Maritime Employers Association](#) (BCMEA) represents shipowners and agents, stevedores, and terminal operators on Canada's west coast, and works to promote the stability and reliability of the Port of Vancouver. The BCMEA oversees the training and recruitment of workers belonging to the [International Longshore and Warehouse Union](#) (ILWU), and the daily dispatch of longshore labour to port terminals. The association negotiates and administers two collective agreements between members and six union locals, and represents approximately 55 waterfront employers—and, by extension, the more than 6,000 men and women who work for them. They also conduct education in 36 unique waterfront job categories at their training facility.



The BCMEA's [Annual Report](#) highlights labour diversity, training investments and annual statistics.

While the port authority has little involvement in the general workforce that keeps goods moving at the Port of Vancouver, we support an effective workforce across the port by:

- Promoting and leading [infrastructure projects](#) that create high-paying jobs in the region
- Leading by example, as a port authority with strong collaboration between management and the International Longshore Workers Union

Health and safety

Port work, by its nature, has potential safety hazards. On a daily basis, port labour may be engaged in tasks including operating machinery, working with high voltage electricity, loading and unloading ships or vehicles, and working at heights or in confined spaces, as well as other complex and potentially hazardous tasks.

The port authority does not manage or regulate health and safety within the port beyond the port authority's own operations. All port tenants are required to abide by applicable legislation and regulations, including having their own effective health and safety management systems.

We take steps to minimize and eliminate foreseeable safety risks and health hazards for port authority employees. Our comprehensive health and safety program supports a safe work culture and identifies potential issues to prevent personal injury to, or illness of, port authority personnel and contractors. We also take steps to improve the safety performance of port authority-led infrastructure projects by:

- Including safety information as a requirement of our procurement processes, for relevant projects led by the port authority
- Hiring independent safety auditors for port authority-led projects throughout the region
- Monitoring incident reports to find opportunities to increase safety in and around infrastructure projects managed by the port authority

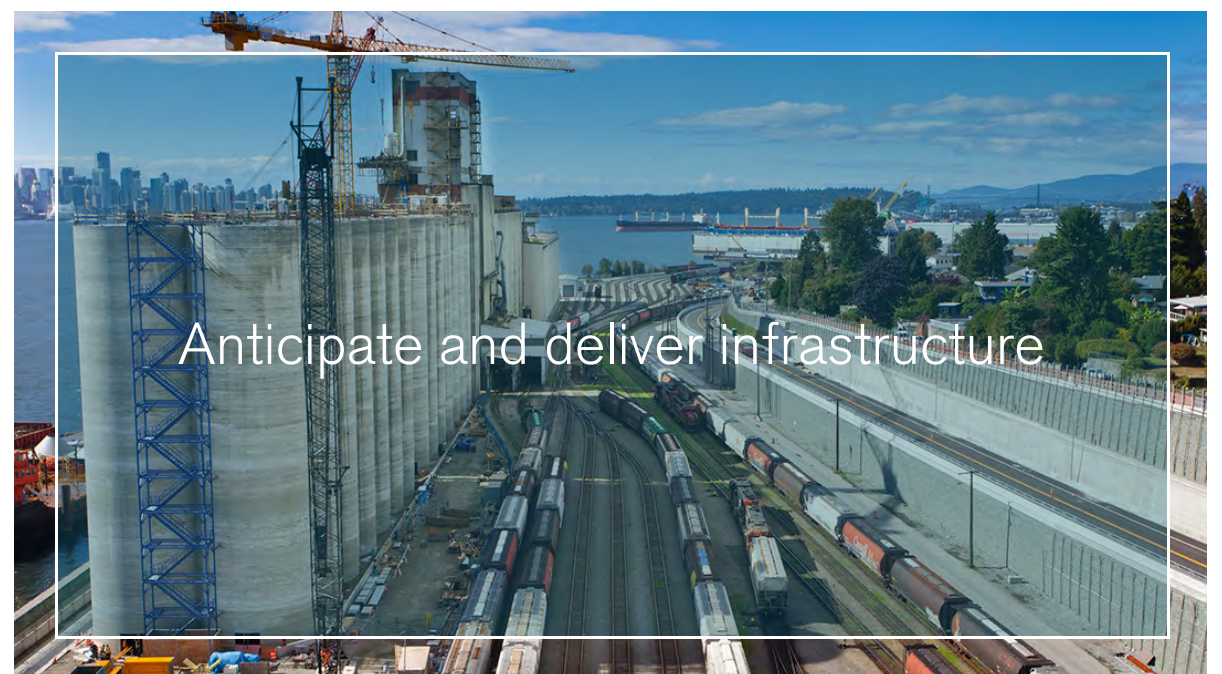
In 2018, the most common injuries for port authority employees and port-led infrastructure project contractors were the result of slips, trips and falls. Health and safety data is located in the [port authority data section](#).

Strategic investment and asset management



As world populations grow and development continues, trade will continue to increase, requiring ports and port regions around the world to react accordingly to keep goods moving. Canadian trade is forecast to grow over the long term, and throughput at the Port of Vancouver is expected to follow this trend.

Facilitating the smooth and efficient movement of trade in the region of a port requires a sufficient industrial land base to support trade-enabling activities. This includes land for warehouses, distribution centres and sorting facilities. The supply of trade-enabling industrial land in the Metro Vancouver region is expected to be exhausted in the coming decade, which poses a significant challenge. Services and infrastructure are also required, not just next door to a port but in the region, to handle growing trade and to minimize the impacts on the environment and surrounding communities.



Optimize land use

The port authority manages the development of lands and waters in our jurisdiction through our [Land Use Plan](#), which sets out allowable and possible uses of port lands and waters, and guides our decision making. To address industrial land scarcity and optimize land use, we:

- Work with terminal operators to develop strategies to intensify the use of current port lands
- Advocate for the protection of industrial land for trade-enabling use
- Advocate for a multi-party discussion on the management of lands in the region to protect the remaining stock of trade-enabling land
- Collaborate with local stakeholders to discuss the management of land in the region, for example as a sitting member of the Metro Vancouver Industrial Lands Strategy Task force and associated working groups
- Acquire land to accommodate future port-related activities, focusing on sites with ready access to shipping channels, truck routes or rail corridors



The Metro Vancouver region is one of the most competitive real estate markets in the world with the demand for industrial land outstripping supply. Our efforts to acquire industrial lands for trade-enabling use are therefore met with intense competition for scarce lands and rapidly escalating land values. We are committed to encourage the preservation of industrial lands for industrial uses and enabling development opportunities to meet our growth in trade.

In 2018, we:

- Began measuring how intensively port-related land is used for goods movement activities
- Started measuring how efficiently all port lands are currently used
- Ensured that new and amended lease agreements for warehouse facilities allowed only activities related to the import and export of containers
- Improved how we promote existing lease opportunities
- Completed the acquisition of seven properties totalling 13.09 acres of industrial land
- Hosted public consultations about proposed [amendments to our Land Use Plan](#)
- [Amended our Land Use Plan](#) to incorporate properties acquired over the previous year

In 2019, we will continue to pursue land acquisition opportunities. We are updating estimates on the amount of industrial land available in the region for trade-enabling uses and on the anticipated demand for such land. We will also update our Land Use Plan.

Anticipate and deliver infrastructure

The federal government is actively pursuing new and growing markets that offer opportunities for Canadian businesses to diversify and expand their export opportunities or to access the consumer goods and inputs needed to produce a large range of products and services. As trade agreements are expanded or new ones are created, and as Canadian consumer demand continues to grow, trade is steadily growing, resulting in increased port activity.

Shipping by containers accounts for much of this growth in port activity. Natural resources like forestry products and specialty grains are being shipped to Asia in containers, and consumer and manufacturing goods are coming back. [Independent forecasts](#) show this trade in containers will continue to grow between 2.1 per cent and 3.7 per cent per year.

Changes to existing terminals, such as the [Centerm expansion project](#), are underway to accommodate container growth. However, these changes to existing terminals, including planned expansions at Prince Rupert, are not enough to manage this anticipated growth into the future. Considering all options, our analysis shows that a new deep-water terminal at Roberts Bank is the most viable option for new terminal space, which is why we are proposing the Roberts Bank Terminal 2 Project, discussed below.

To be ready for increasing trade volumes and to deliver the necessary infrastructure to keep trade moving in the region, we:

- Collaborate with industry, government agencies, port users and operators to anticipate and identify future infrastructure needs aligned with [Canada's trade objectives](#)
- Identify, prioritize, fund and deliver gateway infrastructure projects that improve the flow of goods and ease the impacts of growing trade on local communities
- Conduct forecasts, feasibility, engineering and environmental studies, submit permit applications, work towards regulatory approvals, and build and deliver port infrastructure to increase the capacity of the port
- Collaborate with provincial and local governments, industry and supply chain stakeholders throughout the western provinces and the rest of Canada to understand their needs regarding goods movement through the Port of Vancouver
- Work with terminal operators and tenants to optimize existing facilities, build new ones, and improve rail and truck corridors
- Proactively undertake projects to enhance habitat in the region to offset effects from port infrastructure development, as part of our [Habitat Enhancement Program](#)

Port infrastructure projects can be led by the port authority, port tenants or other stakeholders, and can range from large-scale terminal developments to improving existing facilities. Investment in common-use port infrastructure, roads and railways throughout the gateway by the port authority and government has historically been a significant catalyst for private investment in infrastructure, terminals and facilities.

Securing funding for required projects

In 2014, we led the creation of the [Gateway Transportation Collaboration Forum](#), which brought together the B.C. Ministry of Transportation and Infrastructure, TransLink, Transport Canada and the Greater Vancouver Gateway Council to identify infrastructure needs in major trade corridors serving the port.

We conducted studies and submitted funding proposals. In 2018 the Government of Canada announced more than \$220 million of funding through the National Trades Corridor Fund for projects that will ease congestion, minimize the impacts of goods movement on communities and increase the trade capacity.

The Gateway Transportation Collaboration Forum continues to meet to identify priority projects for the gateway.

Learn more in our [feature story](#).

Infrastructure projects

In 2018, \$104 million of port authority capital investment was put towards moving infrastructure projects forward, including the projects listed below. The following are development projects we led, or projects in which we are a major partner, that were completed or remained underway in 2018.

Gateway projects:

The Deltaport Truck Staging Facility

The [Deltaport Truck Staging Facility](#) project involves building a truck staging lot in Delta with the capacity to accommodate up to 140 trucks as they wait to access the Deltaport container terminal. This includes:

- A secure vehicle access gate requiring a valid Port Pass
- A Commercial Vehicle Safety and Enforcement (CVSE) area for truck safety inspections
- A new highway exit ramp to facilitate access from Highway 17
- An additional road exit to allow access onto Deltaport Way



The project is being completed in partnership with the Government of Canada (Transport Canada) and the British Columbia Ministry of Transportation and Infrastructure, as part of the [Deltaport Terminal, Road and Rail Improvement Project](#).

2018 activities	2019 focus	Major impacts at a glance (actual or anticipated)
We commenced construction of the project by completing land preparation activities.	Stage two of construction, including installation of utilities and paving, is scheduled to start in 2019. Construction is expected to be completed by the end of 2020.	<ul style="list-style-type: none"> Reduced engine idling and traffic congestion Reduced port-destined truck queues Improved road safety Re-designation of agricultural land for transportation uses

Tsawwassen Container Examination Facility

The [Tsawwassen Container Examination Facility](#) is a new facility for the inspection of shipping containers imported through the Deltaport container terminal. The facility is located on Tsawwassen First Nation industrial lands at Roberts Bank and is operated by the Canada Border Services Agency. This is an important security and efficiency initiative, delivering the infrastructure required to meet anticipated growth in trade.

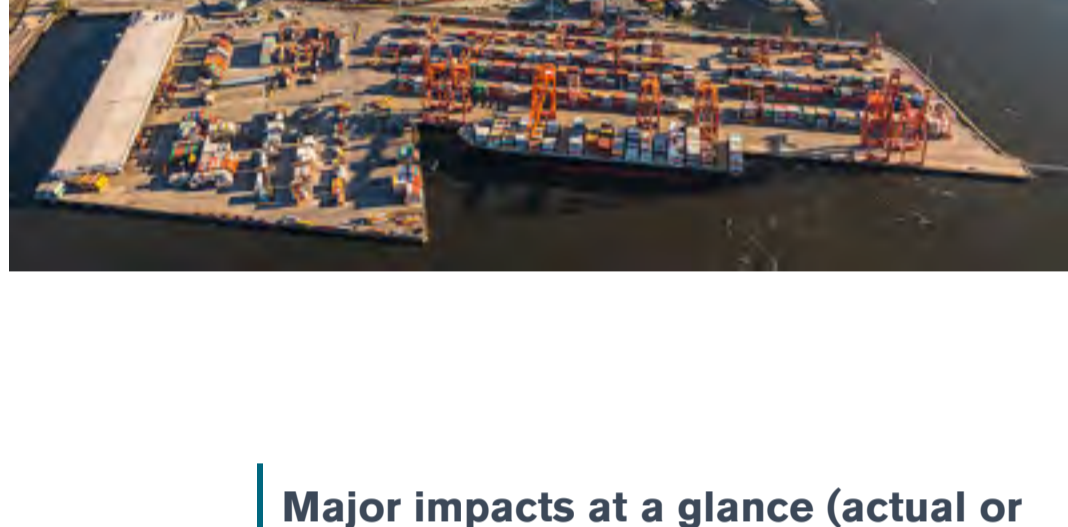


2018 activities	2019 focus	Major impacts at a glance (actual or anticipated)
We continued project construction and achieved substantial completion in 2018.	The operator, the Canada Border Services Agency, and the supplier, Tidewater, will outfit and complete further refinements to the inside of the facility.	<ul style="list-style-type: none"> Reduced traffic congestion by introducing inspection facility closer to Deltaport Reduced greenhouse gas and air emissions Improved supply chain efficiency

Terminal and facility projects:

Centerm Expansion Project and South Shore Access Project

The [Centerm Expansion and South Shore Access Projects](#) will improve the Centerm container terminal and nearby port roads. The project, which is being delivered by the port authority in partnership with terminal operator DP World, will increase the terminal footprint by approximately 15 per cent. It will also increase Centerm's maximum container handling capacity by two-thirds, from 900,000 TEUs to 1.5 million TEUs. The project includes the proposed South Shore Access Project, which would contribute to the port authority's long-term objective to improve goods movement and access to the entire south shore port area, especially by rail.



2018 activities	2019 focus	Major impacts at a glance (actual or anticipated)
We concluded the necessary real estate agreements, selected a design-build contractor, and received a port authority project permit and the necessary permissions from Environment Canada and Fisheries and Oceans Canada.	After geotechnical investigations and pre-construction work are complete, we will begin construction of the Centennial Road Overpass and modifications of the Intermodal yard and marine works.	<ul style="list-style-type: none"> Increased container capacity Improved goods movement Job creation Increase in total greenhouse gas emissions with growth in trade through the port; decrease in greenhouse gas emissions per tonne of cargo Loss of deep subtidal mudflat, to be mitigated using a habitat restoration site

Robert Bank Terminal 2 Project

The [Roberts Bank Terminal 2 Project](#) is a proposed new container terminal at Roberts Bank in Delta. If built, the terminal would provide an additional container handling capacity of 2.4 million TEUs each year, which is required to meet forecasted demand.



2018 activities	2019 focus	Major impacts at a glance (actual or anticipated)
The Canadian Environmental Assessment Agency is currently conducting a federal environmental assessment by an independent review panel appointed by the federal minister of environment and climate change, under the <i>Canadian Environmental Assessment Act, 2012</i> . The review panel will challenge the assessments of the project and assess if, after mitigation, the project is likely to have significant environmental effect. In 2018, we completed responses to 385 information requests from the review panel, providing necessary answers to proceed to public hearings in spring 2019.	Continue to participate in the environmental assessment process, including public hearings in spring 2019.	<ul style="list-style-type: none"> Increased container capacity Improved goods movement Job creation Environmental impacts and mitigation strategies are summarized on the Roberts Bank Terminal 2 Project website.

Environmental projects:

Shore power for container ships

In collaboration with the Government of Canada and terminal operators [DP World](#) and [GCT Canada](#), we are [building shore power facilities](#) at the Centerm and Deltaport container terminals. [Shore power](#) allows ships to shut down their diesel engines and connect to land-based hydroelectric power.



2018 activities	2019 focus	Major impacts at a glance (actual or anticipated)
Installation of shore power facilities was completed at the Centerm and Deltaport container terminals, and the first connection to a container ship was completed at Centerm.	Maximize opportunities for shore power connections for container ships calling on Centerm and Deltaport.	<ul style="list-style-type: none"> Reduced greenhouse gas emissions Reduced air pollutants (criteria air contaminants)

Habitat Enhancement Program

Our [Habitat Enhancement Program](#) was developed as part of a broader strategy to manage growing trade, acknowledging that new or enhanced habitat may be needed to offset effects from future port development. Enhancing fish and wildlife habitat also supports our approach to sustainability. As part of this program, we maintain a habitat bank that is formalized through an agreement with Fisheries and Oceans Canada. This allows us to accumulate credit for habitat that is created and that has been proven to function as intended. That habitat can then be used to offset the effects of port development, with approval from Fisheries and Oceans Canada. We conduct annual monitoring at all completed habitat project sites to ensure the objectives of the enhanced habitat are being met.

Highlights of 2018 include:

New Brighton Park Shoreline Habitat Restoration Project

The [New Brighton Park Shoreline Habitat Restoration Project](#) was completed in 2017 in partnership with the Vancouver Board of Parks and Recreation and in collaboration with Musqueam, Squamish and Tsleil-Waututh Nations. This project provides high-value habitat for fish and wildlife at a site that had been filled in the 1960s, causing valuable intertidal habitat to be lost for over 50 years.



2018 activities	Major impacts at a glance (actual or anticipated)
Fisheries and Oceans Canada confirmed the project conforms to the Fisheries Productivity Investment Policy as an offsetting project and that the total constructed habitat areas for all marine, tidal and riparian habitat were registered as habitat credit within the port authority's habitat bank.	High-value marine aquatic and riparian habitat that supports fish and wildlife within Burrard Inlet

Maplewood Marine Restoration Project

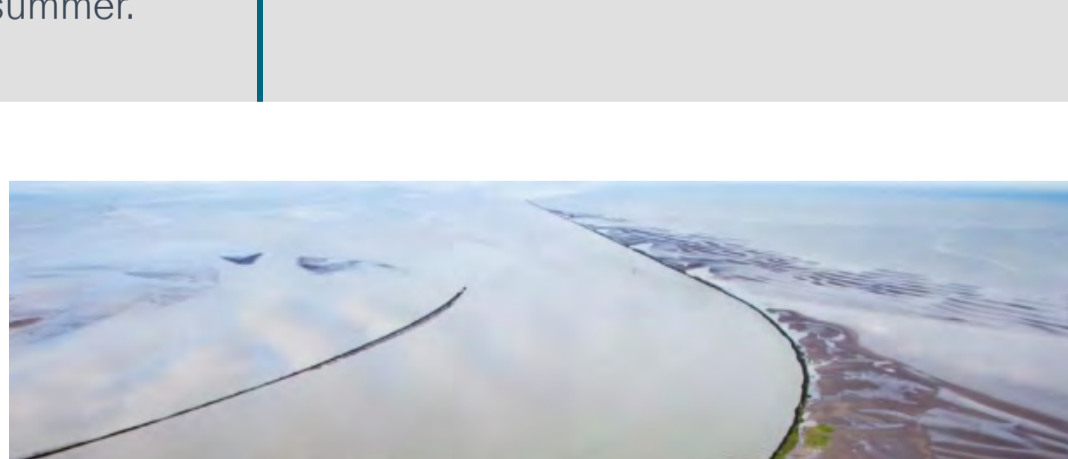
The [Maplewood Marine Restoration Project](#) is anticipated to enhance approximately five hectares of low-value marine habitat into higher value marine habitat for fish, birds and other wildlife. A portion of this project will be used as a fisheries habitat offsetting site for the Centerm Expansion Project. The site is located on the north shore of Burrard Inlet, approximately 2 kilometres east of the Ironworkers Memorial Bridge, at a marine site identified by the Tsleil-Waututh Nation as a restoration priority.



2018 activities	2019 focus	Major impacts at a glance (actual or anticipated)
We advanced the project through the design, development, and permitting and approvals phases.	We will continue to work closely with Aboriginal groups while also engaging stakeholders and regulators. Construction is anticipated to begin in late summer.	High-value marine habitat that supports fish and other aquatic species within Burrard Inlet

South Arm Jetty Tidal Marsh Project

The proposed [South Arm Jetty Tidal Marsh Project](#) would increase the size of an existing marsh located along the Steveston North Jetty at the mouth of the south arm of the Fraser River. The project would convert approximately 30 to 40 hectares of existing sand flat into highly productive marsh habitat for the benefit of juvenile salmon and other fish and wildlife.



2018 activities	2019 focus	Major impacts at a glance (actual or anticipated)
The port authority submitted a land tenure application to the Province of British Columbia.	Continued engagement with Aboriginal groups, stakeholders and regulators.	Marsh habitat that supports juvenile salmon and other fish and wildlife

Details of our major habitat enhancement projects to date are in the table below. As of December 31, 2018, there were 12 sites in the habitat bank, and the value of habitat credits was 92,227 m². This includes:

- 72,864 m² marine habitat credits
- 4,662 m² of brackish marsh habitat credits
- 14,701 m² of freshwater habitat credits

Habitat bank balance

Major habitat enhancement projects	Location	Year of completion	Habitat type	Habitat added or withdrawn (m ²)
Salt Marsh Restoration	Roberts Bank and Boundary Bay, Delta	2014	Salt marsh	+62,992
Glenrose Tidal Marsh Project	Fraser River, Delta	2014	Tidal freshwater marsh	+10,778
New Brighton Park Shoreline Habitat Restoration Project	Burrard Inlet, Vancouver	2017	Salt marsh, tidal channel, marine riparian	+9,872

The **New Brighton Park Shoreline Habitat Restoration Project** received a **gold rating** under the Stewardship Centre for BC's Green Shores® for Coastal Development program, which demonstrates the highest possible achievement of project environmental goals and leadership in shoreline stewardship. The gold rating is based on a number of factors including excellence in rehabilitation of coastal habitat, innovation and climate change adaptation.

Healthy environment

A sustainable port maintains a healthy environment, focusing on healthy ecosystems, climate action and responsible practices.



Led **two voluntary initiatives** focused on reducing underwater noise from large commercial ships



Port of Vancouver-related activities resulted in **1.1 million** tonnes of greenhouse gas emissions*

Applied **green infrastructure guidelines** in the development of port-led infrastructure projects



Researching and mitigating the effects of shipping on at-risk whales

Whales and ships share the same water, and those waters are getting busier as population growth in our region leads to increased transportation trade due to consumer and industry demands. Ship traffic can have negative impacts on whales, such as acoustic disturbance from the vessel that has the potential to disrupt a whales' ability to feed and communicate. In recognition of potential impacts, the port authority-led [Enhancing Cetacean Habitat and Observation \(ECHO\) Program](#) was developed in 2014 to better understand and manage the cumulative effects of shipping activities on at-risk whales along the southern coast of British Columbia. The strength of the ECHO Program comes from the ongoing support, advice and participation of the program's regional and international partners, including government agencies, Aboriginal peoples, marine transportation organizations, environmental and conservation organizations, and scientific experts.

Underwater noise from marine traffic is a priority focus area for the ECHO Program and, in 2018, guided by input from the shipping industry, government agencies and others, the ECHO Program undertook two voluntary initiatives focused on reducing underwater noise from large commercial ships within designated critical habitat for the endangered southern resident killer whale population.

The first initiative was a voluntary ship slowdown in Haro Strait. The ECHO Program supported an industry-led slowdown that relied on the voluntary participation of shipping lines to slow down ships in Haro Strait. This study was informed by a similar research trial in 2017 that showed that underwater noise is reduced when ships slow down. Southern resident killer whales typically return to the Salish Sea in the summer and stay until the fall to feed, which is why the voluntary slowdown was undertaken over the summer and fall months.

The second initiative was a voluntary lateral displacement trial in the Strait of Juan de Fuca. The ECHO Program and Transport Canada, supported by the U.S. Coast Guard, Fisheries and Oceans Canada, and the Canadian and U.S. marine transportation industry, asked operators to move as far south as possible in the Strait of Juan de Fuca shipping lanes. This would increase the distance between ships and whales, reducing underwater noise levels in known killer whale feeding areas. Underwater noise was measured before, during and after the trial, using Fisheries and Oceans Canada hydrophones located in the Strait of Juan de Fuca.

Both voluntary initiatives had a high rate of commercial ship participation and leadership from marine industry partners. This illustrates what can be achieved through well-designed, collaborative voluntary measures. The data and reports from the 2018 voluntary initiatives are currently being analyzed and will further help develop options to reduce threats to whales from marine traffic. The port authority-led ECHO Program and our partners will continue to work together to reduce threats to at-risk whales from marine traffic.

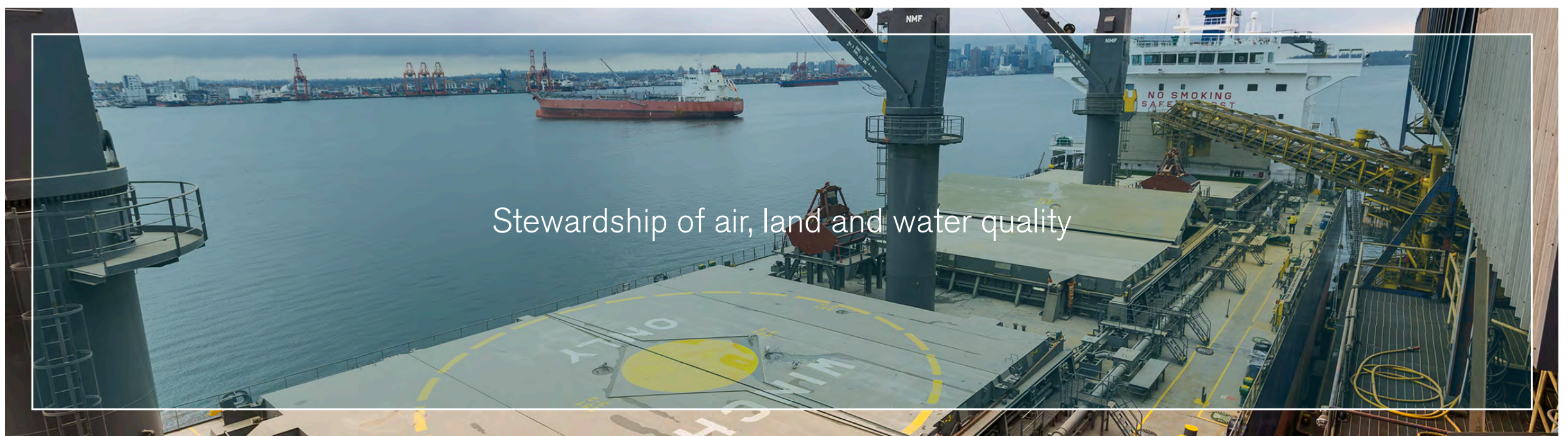


*Data is taken from the [2015 Port Emissions Inventory](#).




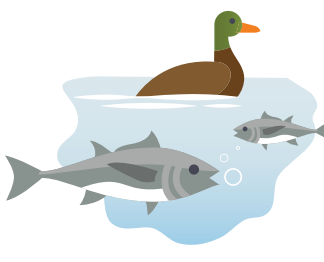
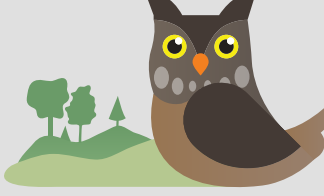
Healthy ecosystems

Healthy ecosystems provide us with clean air, land and water, and nutrients, and even recreational opportunities. Biodiversity is an important indicator of ecosystem health, as ecosystems with a wide variety of life are more resilient and able to support human health and livelihoods. The current fragmentation and degradation of ecosystems globally is resulting in deteriorating soil quality, species loss, shrinking fish stocks, and deforestation.

The Port of Vancouver operates within an ecologically rich environment that is habitat for diverse aquatic and terrestrial species. For example, during the summer months, the endangered southern resident killer whale population often concentrates in the waters off the southern end of Vancouver Island and near the outflow of the Fraser River. This area is a major spawning run for chinook salmon, the predominant food source for the whales. Port operations and infrastructure development can cause habitat loss and degradation, which affects biodiversity and ecosystem productivity.



Our approach to environmental stewardship

Environmental components	Port activities	Potential impacts	Our approach
<p>Water</p> 	<p>Terminal operations can affect water quality through pollution from spills, stormwater runoff and groundwater contamination.</p> <p>Infrastructure development can affect water quality through spills and stormwater runoff.</p> <p>Ships can affect water quality through accidental spills and planned discharges into water.</p>	<p>Spills, discharges, stormwater runoff and groundwater contamination can negatively affect water quality and impact aquatic species. Impacts on water quality from spills may be long-lasting, and cleanup efforts may be imperfect.</p>	<p>Project and Environmental Review</p> <p>Stormwater Prevention Plan Guidelines</p> <p>Our Port Information Guide provides rules about vessel discharges</p> <p>Partnerships in emergency management and response</p>
<p>Soil and groundwater</p> 	<p>Terminal operations and spills can contaminate soil and groundwater.</p>	<p>Contaminated soil or groundwater can have potential impacts on human health, and on terrestrial and aquatic species and their habitats. Remediation of contaminated sites can span years and is costly.</p>	<p>Land renewal strategy</p> <p>Contaminated sites management</p> <p>Project and Environmental Review</p>
<p>Air and energy</p> 	<p>Cargo-handling equipment, ships, trains, trucks and construction equipment all require significant amounts of energy and emit air pollutants such as particulate matter, sulphur oxides and nitrogen oxides, as well as greenhouse gases.</p>	<p>Air pollutants negatively affect air quality, and greenhouse gas emissions and black carbon emissions contribute to global climate change.</p> <p>Port operations are often powered by diesel and marine fuels. The combustion of these fossil fuels emits air pollutants and greenhouse gases. Improving energy efficiency and shifting to clean, renewable and low-carbon energy sources are necessary to significantly reduce emissions and the environmental impacts associated with energy production.</p>	<p>Northwest Ports Clean Air Strategy</p> <p>Non-Road Diesel Emissions Program</p> <p>EcoAction Program</p> <p>Shore power for cruise and container ships</p> <p>Liquefied Natural Gas (LNG) bunkering initiative</p> <p>Climate Smart initiative</p> <p>Environmental requirements for container trucks</p> <p>Energy Action</p> <p>Project and Environmental Review</p>
<p>Aquatic species (e.g., aquatic plants, fish and fish habitat, water birds, marine mammals)</p> 	<p>Infrastructure development and ongoing port operations such as dredging can cause habitat loss and degradation.</p> <p>Infrastructure development may include in-water activities, such as pile driving, that cause underwater noise and vibration.</p> <p>Shipping creates underwater noise and can introduce invasive species through ballast water discharge and hull and propeller cleaning.</p> <p>Shipping may result in inadvertent collisions with aquatic species, whales in particular.</p>	<p>Habitat loss and degradation and the introduction of invasive species can displace plants and animals and negatively affect ecosystems permanently.</p> <p>In-water construction can cause mortality of some aquatic species or negatively affect their hearing.</p> <p>Underwater noise can temporarily displace animals and interfere with their communication, feeding and breeding patterns.</p> <p>Vessel strikes can cause injury and mortality of aquatic species.</p>	<p>EcoAction Program</p> <p>ECHO Program</p> <p>Project and Environmental Review</p> <p>Habitat Enhancement Program</p> <p>Species at Risk inventories and management plans</p>
<p>Terrestrial species (e.g., vegetation, wildlife)</p> 	<p>Infrastructure development and ongoing port operations can cause habitat loss and degradation, and can introduce invasive species.</p> <p>Construction activities and terminal operations can increase light and noise emissions.</p>	<p>Habitat loss and degradation and invasive species introduction can displace plants and animals and negatively affect ecosystems permanently.</p> <p>Light and noise emissions can temporarily displace wildlife and interfere with feeding and breeding patterns.</p>	<p>Invasive species management</p> <p>Noise monitoring program</p> <p>Habitat Enhancement Program</p> <p>Species at Risk inventories and management plans</p> <p>Project and Environmental Review</p>

Stewardship of air, land and water quality

The Vancouver Fraser Port Authority has a legislated mandate to protect the environment within our jurisdiction, which we approach by leading and participating in innovative environmental programs and initiatives. We focus our stewardship efforts on responding to issues within our jurisdiction, which is where we have the most control and influence. We also work collaboratively with other organizations to monitor issues and develop solutions that minimize impacts on the areas outside our formal sphere of control.

We require proponents of projects on federal port lands and waters to apply for permits for all proposed physical works and activities. Through our [Project and Environmental Review](#) process, we review project applications and determine the potential environmental impacts. We consider the following environmental components as part of an informed decision process: air quality, lighting, noise, soils, sediments, ground water, surface water and water bodies, species and habitat with special status, terrestrial resources, wetlands,

aquatic resources, health and socioeconomic conditions, archaeological, physical and cultural heritage resources, current use of lands and resources for traditional purposes by Aboriginal peoples, and accidents and malfunctions. We also consider any residual adverse effects of a project and characterize these in terms of magnitude, geographic extent, duration, frequency, and reversibility. We will not authorize or allow a proposed project to proceed if it is likely to result in significant adverse environmental effects. If a project is approved, the permit will include conditions designed to avoid or mitigate potential impacts.

In 2018, our actions to understand and manage port-related effects on the environment included:

- Conducted surveys for western painted turtles in Coquitlam and for Pacific herring and surf smelt in Burrard Inlet, resulting in no detection of these species; we are monitoring the potential for these and other species to reside in our jurisdiction, improving our understanding of the environmental factors that are limiting their presence, and working to ensure that proposed port projects consider and mitigate potential adverse environmental effects during construction and operational activities
- Completed a desktop review of the characteristics of nesting and breeding habitat for the barn owl; this will guide our decisions on future port development and aid in developing mitigation and avoidance measures to meet federal obligations for this species at risk
- Sampled stormwater at outfalls near 12 port facilities along the shoreline of Burrard Inlet; we will use these results to inform the stormwater management and pollution prevention plans that we require from port tenants
- Led two key initiatives, through the ECHO Program, focused on reducing underwater noise from large commercial ships within designated critical habitat for the endangered southern resident killer whale population; details are provided in our [feature story](#)
- Updated monitoring and documentation of compliance with project permits, including introducing clearer and more measurable conditions, requiring permit holders undertaking more complex projects to report on adherence to conditions, and adding an environmental specialist to monitor and enforce compliance
- Contributed to the provincial Ministry of Forests, Lands, Natural Resource Operations and Rural Development's white sturgeon population monitoring and assessment work to aid in species recovery
- Completed 171 environmental reviews, including three permit amendments, through our [Project and Environmental Review](#) process, per the *Canadian Environmental Assessment Act, 2012*
- Conducted 34 preliminary project reviews, providing applicants with feedback from port authority staff to help proponents minimize potential negative impacts
- Contributed to ongoing monitoring and management of invasive *Spartina* species through the British Columbia *Spartina* Working Group
- Provided funding to help the Coastal Ocean Research Institute track and understand pollution in B.C.'s coastal waters through [PollutionTracker](#)

In 2019, we will be conducting research to refine our management approach for the white sturgeon. This at-risk species, which is in decline in the Fraser River, is highly valued by Aboriginal peoples and by recreational sport fishers. Our objective is to better understand the distribution and timing of white sturgeon in the lower Fraser River and identify locations and habitat attributes that are critical for their survival.

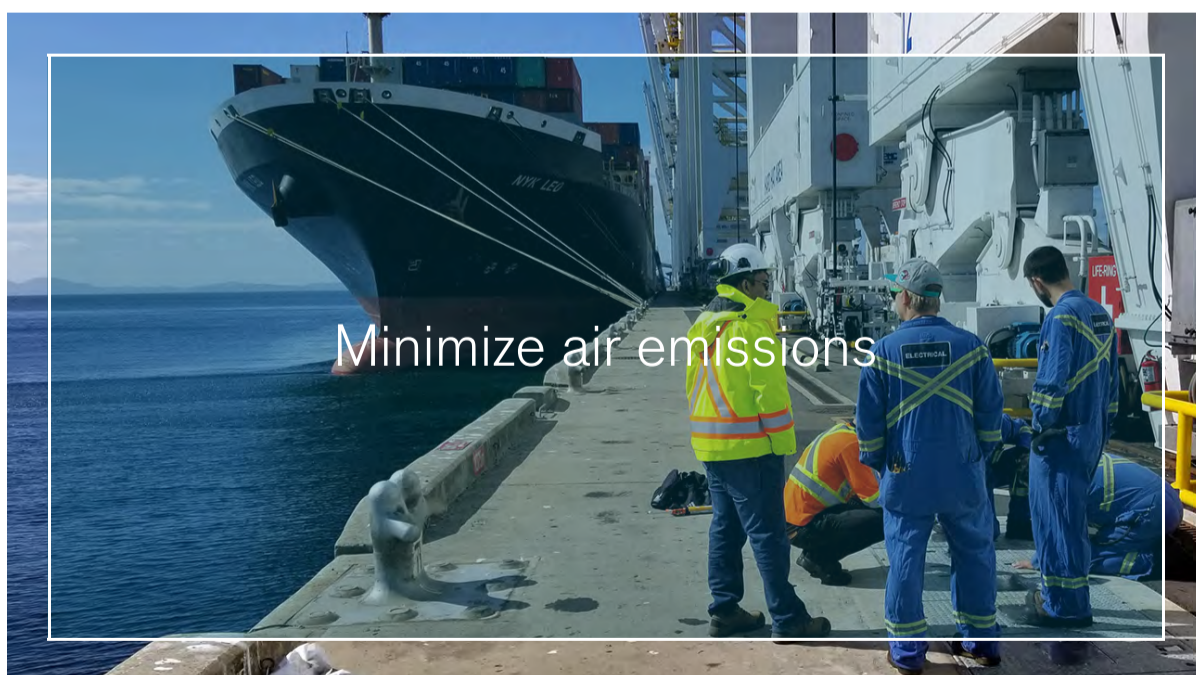


Climate action



Fossil fuels such as gasoline, diesel and marine bunker currently provide most of the energy for the commercial transportation sector, and the combustion of these fuels releases emissions that cause climate change and affect air quality. Commercial and personal transportation is the largest source of greenhouse emissions in British Columbia and second largest in Canada^[1], despite the fact that large amounts of on-terminal port equipment are electrified and therefore low emissions. Canada and British Columbia have both set greenhouse gas reduction targets, and the [International Maritime Organization](#) has set new targets for international shipping. To meet these targets, cooperation and action are required from government and industry to advance the policy and investments needed to transition to a low-carbon transportation sector.

Climate change impacts—including more frequent and severe weather events, ocean acidification and rising sea levels—pose serious risks to coastal communities and marine ecosystems. Ports are located along the waterfront in coastal areas, which makes them particularly susceptible to flooding and sea level rise. Planning for and adapting to climate change impacts can help avoid disruptions to Canadian trade, and help minimize impacts on coastal communities and marine ecosystems.



Minimize air emissions



Protect against the potential impacts of climate change

^[1] By economic sector. Data taken from: [2018 National Inventory Report 1990-2016: Greenhouse Gas Sources and Sinks in Canada](#)

Minimize air emissions

The Vancouver Fraser Port Authority collaborates with governments, industry stakeholders and other ports to support early implementation of pending environmental regulations, improve energy efficiency, and promote cleaner, renewable low-carbon technologies. Our programs and initiatives are designed to target the primary sources of air emissions at the port, which are:

- Marine: ocean-going ships and tugboats
- Rail: mainline and switcher locomotives
- On-road vehicles: container trucks and other vehicles
- Non-road equipment: cranes and stackers, loaders, terminal tractors, and other equipment at port facilities
- Administrative operations: heating and electricity for buildings, and terminal lighting

Our approach to air and energy

The following table shows the emission sources that our programs and initiatives target through research, information sharing, fees and mandatory requirements, and incentives.

Programs and initiatives	Marine carriers	Rail carriers	On-road vehicles	Non-road equipment	Administrative operations
Emissions Inventory: Our activity-based inventory helps us estimate port-related air emissions from a variety of sources and helps us identify trends and priority areas for action.					
Northwest Ports Clean Air Strategy: The strategy was developed in partnership with the ports of Seattle and Tacoma and the Northwest Seaport Alliance to reduce port-related air emissions in the Georgia Basin-Puget Sound air shed.					
EcoAction Program: Ships can receive harbour dues discounts by meeting voluntary environmental best practices.					
Shore power: Shore power at the Canada Place cruise terminal, and the Centerm and Deltaport container terminals reduces air pollutants and greenhouse gases by allowing ships to connect to the hydroelectric grid while at berth.					
LNG bunkering: We're preparing the port for liquefied natural gas (LNG) as a marine fuel, which will reduce air emissions from ships.					
Truck Licensing System: Container trucks that access the port must meet minimum environmental requirements for engine age, emission controls and idle reduction.					
Non-Road Diesel Emissions Program: We work with port tenants to accelerate changeover of older diesel equipment through a combination of fees and rebates.					
Energy Action: In partnership with BC Hydro, this program helps port tenants access financial incentives to advance energy conservation measures and to study the electrification potential of diesel-powered equipment.					
Climate Smart: We offer training for port tenants to measure and reduce greenhouse gas emissions.					
Air quality monitoring: We collaborate with Metro Vancouver and other partners to understand the concentration of pollutants in the air at select locations, from both port and non-port sources.					

Greenhouse gas emissions, including carbon dioxide, methane, and nitrous oxide measured as carbon dioxide equivalent (CO₂e), are increasing with growth in trade through the port. However, the intensity of port-related greenhouse gas emissions—measured as tonnes of CO₂e per tonne of cargo—has decreased since 2010 and is expected to further decline, due to improvements in engine and equipment efficiency. Energy usage is projected to follow these trends for greenhouse gas emissions because a large amount of the energy used at the port is provided by fossil fuels.

Sulphur oxide (SO_x) and fine particulate matter (PM_{2.5}) emissions declined sharply in 2015 as a result of the introduction of the low-sulphur fuel requirements for ships operating in the [North American Emission Control Area](#). Nitrogen oxide (NO_x) emissions will decline with the turnover of older equipment and the new standard for NO_x emissions that came into effect in 2016 for ocean-going ships. Our [2015 Port Emissions Inventory](#) provides more details about emissions and energy usage at the port.

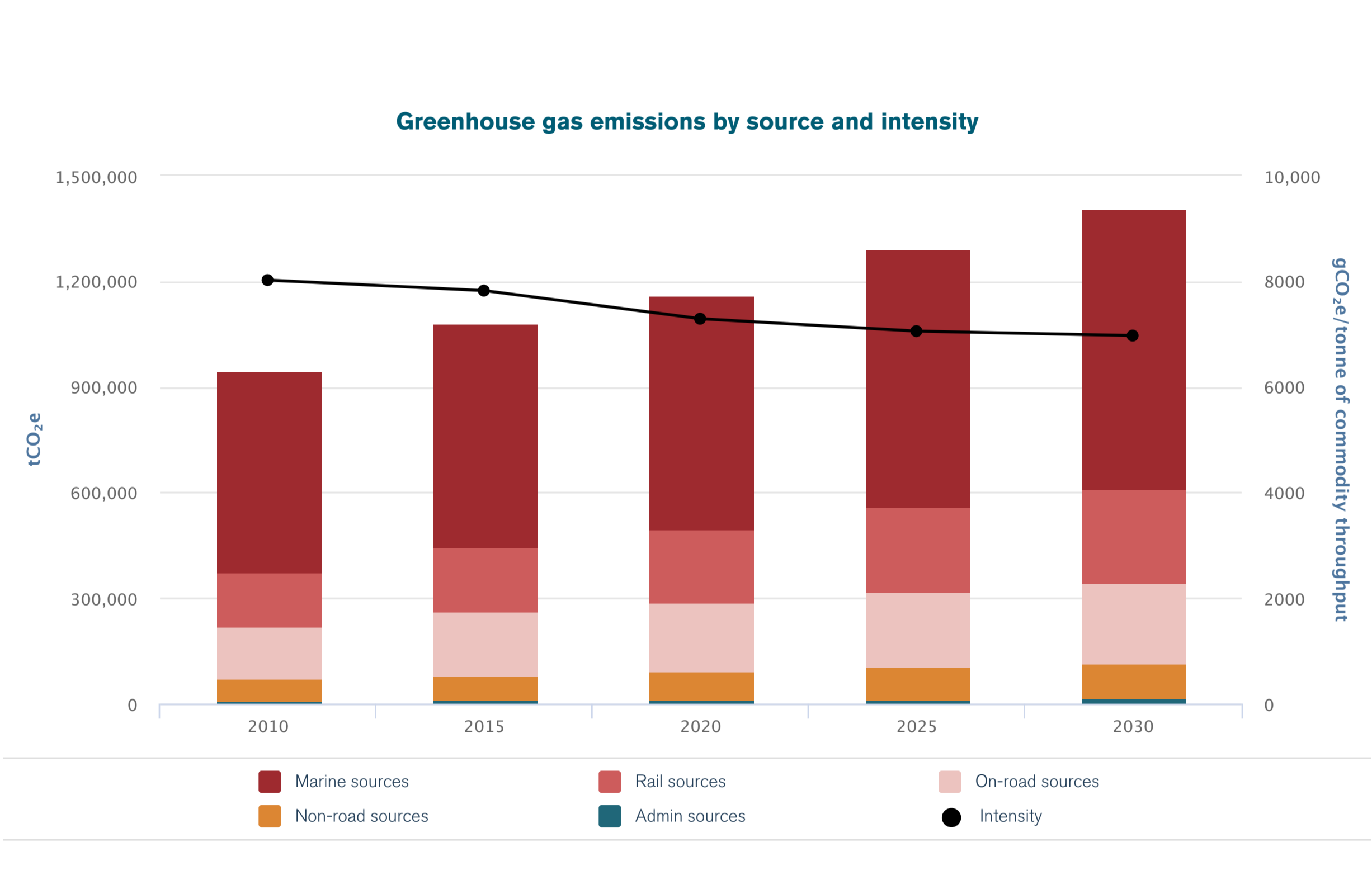
In 2018, our actions to mitigate port-related air and energy impacts included:

- Introduced new ways for ships to [participate in our EcoAction Program](#); 866 ship calls participated, representing 34 per cent of all eligible calls for the year
- Completed installation of two shore power facilities at the Centerm and Deltaport container terminals, with financial support from the Government of Canada, enabling shore power-capable container ships to shut off their diesel-powered auxiliary engines and connect to the hydroelectric grid while at berth
- Facilitated shore power connections for cruise ships at the Canada Place cruise terminal, eliminating **58 tonnes of air pollutants and 2,493 tonnes of greenhouse gases**
- Completed a technical study, with support from BC Hydro, of clean technology options for container trucking, which is informing next steps to test select technologies
- Funded pilot projects to test Effenco auto-stop/start technology to reduce unnecessary engine idling of yard trucks at Centerm and Vanterm container terminals; with these systems, a yard truck's engine shuts down when the unit is stationary without causing lag when the operator re-accelerates, which results in decreased fuel consumption, reduced maintenance costs and lower emissions
- Commenced work with FortisBC to ready the port for LNG as a marine fuel, which will significantly reduce air pollutants such as sulphur and nitrogen oxides, and achieve modest reductions in greenhouse gas emissions
- Completed 10 lighting retrofits and a compressed air upgrade project at port terminal and tenant operations; these projects received more than \$800,000 in BC Hydro incentives through our Energy Action initiative and are expected to save 4.2 GWh of energy per year
- Provided 12 port tenants with funding to cover 50 per cent of the cost to participate in the Climate Smart Initiative, helping them collectively eliminate 4,341 tonnes of CO₂e from their operations while achieving \$1.28 million in annual cost savings
- Launched the [International Collaboration on Ship Emissions Reductions](#) with support from the ports of Long Beach, Los Angeles and Gothenburg, and the U.S. Environmental Protection Agency, Transport Canada, Natural Resources Defense Council (China), and the China Waterborne Transport Research Institute
- Continued to work with our port tenants to support the changeover to cleaner, [lower emission equipment](#)
- Joined the World Ports Climate Action Program, a new initiative bringing together port authorities from around the world to work together on projects that address the issue of global warming

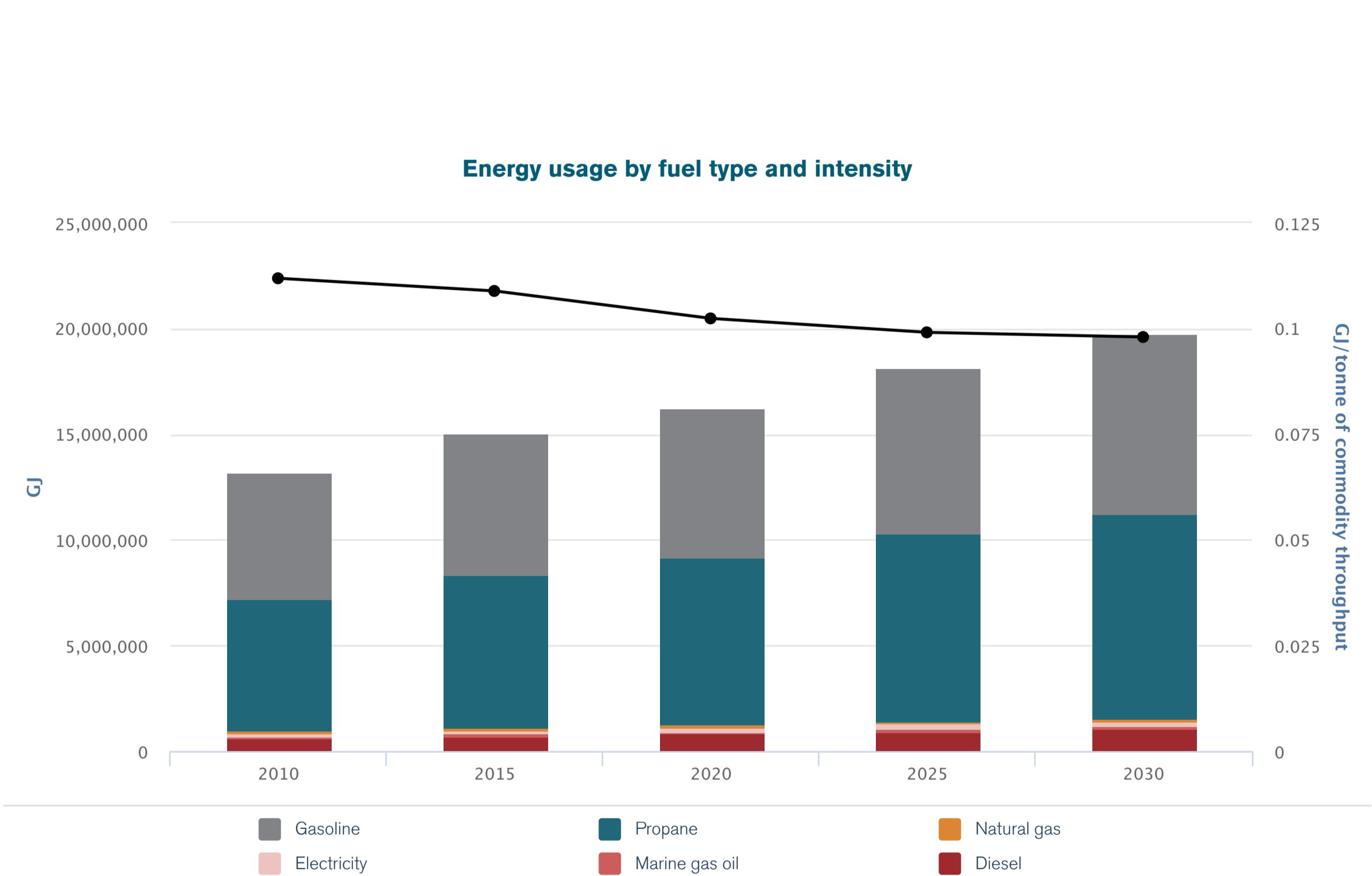
In 2019, we are planning the following:

- **LNG as a marine fuel:** Engage with regulators, industry associations, and researchers to improve our understanding of LNG bunkering best practices and preparedness, and to conduct preliminary risk assessments and promote the concept with customers
- **Clean Truck Initiative:** Partner with the Province of British Columbia and industry to promote pilot projects of clean technology solutions for container trucks
- **Shore power for container ships:** Work with marine carriers and terminal operators to promote use of the new shore power facilities at the Centerm and Deltaport container terminals
- **Northwest Ports Clean Air Strategy:** Work with the ports of Seattle and Tacoma, the Northwest Seaport Alliance and other partners to update the strategy for the 2020–2025 timeframe
- **Non-Road Diesel Emissions Program:** Begin consultation with terminal operators and tenants on the program and fee structure for 2021–2025
- **International collaboration on ship emission reductions:** Lead the first phase of this global initiative to develop a web-based platform for promoting environmental incentive programs for ships and simplifying application procedures; we aim to foster greater participation in port authority incentive programs and positively influence the sustainability of ships in the global shipping fleet
- **World Port Climate Action Program:** Action plans in the following areas:
 - Advancing efficiency of supply chains using digital tools
 - Increasing policy approaches for emission reductions within larger geographical areas
 - Accelerating development of shore power solutions
 - Accelerating development of sustainable low-carbon marine fuels including electrification of ship propulsion systems
 - Accelerating efforts to decarbonize cargo-handling equipment

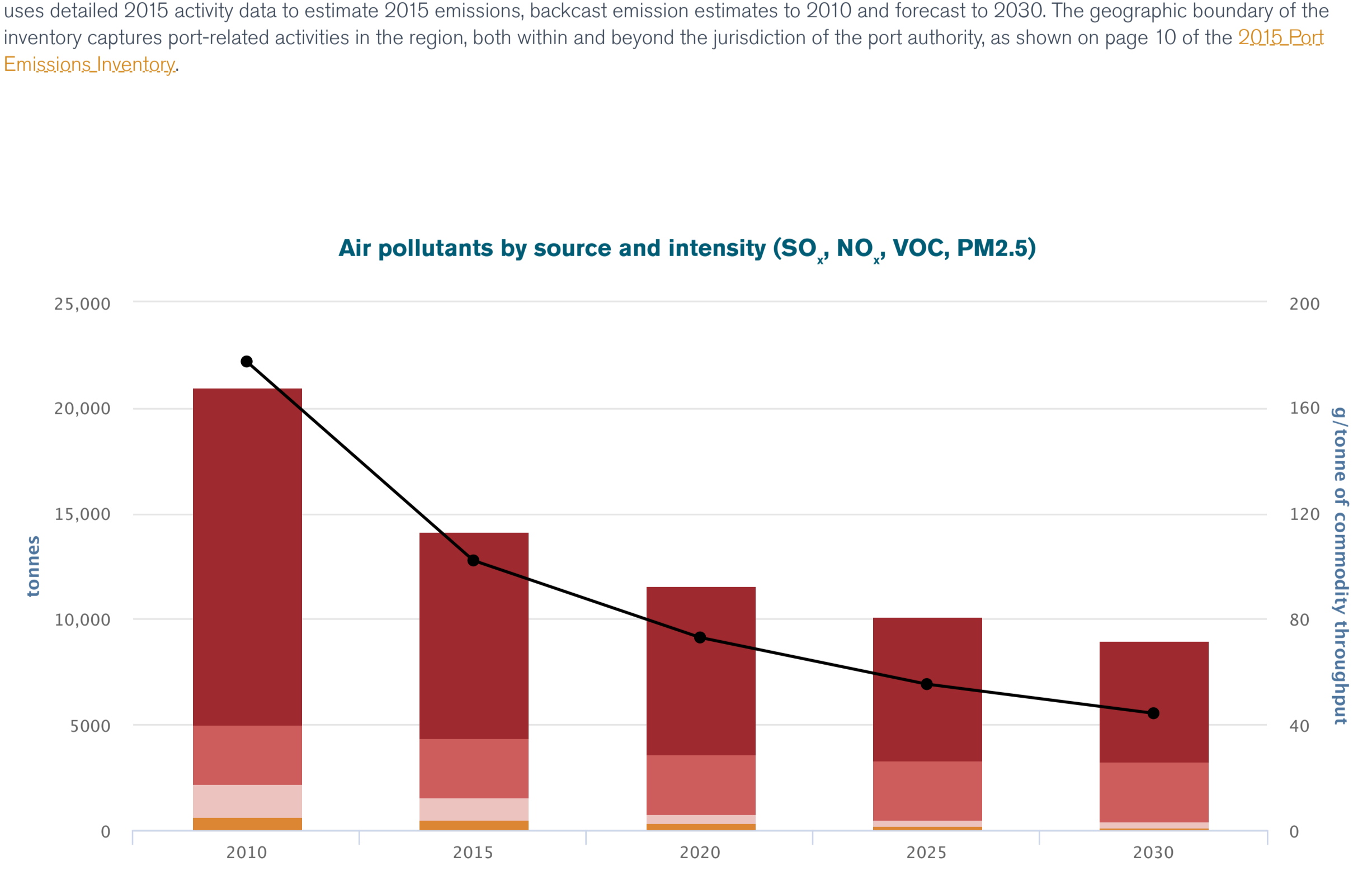
Port-related emissions data



Measures port-related greenhouse gas emissions by source and intensity (per tonne of commodity throughput). Data is taken from the 2015 Port Emissions Inventory, and includes emissions associated with fuel and electricity used by marine and rail sectors, on-road vehicles, non-road equipment, and administrative operations. The emissions inventory uses detailed 2015 activity data to estimate 2015 emissions, backcast emission estimates to 2010 and forecast to 2030. The geographic boundary of the inventory captures port-related activities in the region, both within and beyond the jurisdiction of the port authority, as shown on page 10 of the [2015 Port Emissions Inventory](#).



Measures port-related energy usage by fuel type and intensity (per tonne of commodity throughput). Data is taken from the 2015 Port Emissions Inventory, and includes fuel and electricity used by marine and rail sectors, on-road vehicles, non-road equipment, and administrative operations. The emissions inventory uses detailed 2015 activity data to estimate 2015 emissions, backcast emission estimates to 2010 and forecast to 2030. The geographic boundary of the inventory captures port-related activities in the region, both within and beyond the jurisdiction of the port authority, as shown on page 10 of the [2015 Port Emissions Inventory](#).



Measures port-related air pollutants by source and intensity (per tonne of commodity throughput). Data is taken from the 2015 Port Emissions Inventory, and includes emissions associated with fuel and electricity used by marine and rail sectors, on-road vehicles, non-road equipment, and administrative operations. The emissions inventory uses detailed 2015 activity data to estimate 2015 emissions, backcast emission estimates to 2010 and forecast to 2030. The geographic boundary of the inventory captures port-related activities in the region, both within and beyond the jurisdiction of the port authority, as shown on page 10 of the [2015 Port Emissions Inventory](#).

Blue Circle Awards

Our [Blue Circle Awards](#) recognize shipping lines with the greatest fleet-wide participation in the EcoAction program, and terminal operators and other tenants participating in Energy Action. Our 2018 Blue Circle Award winners are:

EcoAction Program category	Energy Action initiative category
Alliance Maritime	"K" Line
BC Ferries	MSC Mediterranean Shipping Company
China Navigation	North Arm Transportation
CMA CGM	ONE - Ocean Network Express
Disney Cruise Line	Pacific Basin Shipping
Evergreen Line	Princess Cruises
G2 Ocean	SAAM SMIT Towage
Hamburg Süd	Seaspan ULC
Hapag-Lloyd	TORM
Hyundai Merchant Marine	Westwood Shipping Lines
	Viterra Pacific Elevators
	Cascadia Port Management Corporation
	Neptune Terminals

Protect against potential impacts of climate change

Preparing for climate change requires regional collaboration to plan for sea level rise and to minimize impacts on coastal communities, the port, and marine ecosystems. It requires improvements to the resilience of at-risk port infrastructure to avoid potential disruptions to port operations caused by flooding. The port authority's approach involves:

- Developing a climate adaptation road map that identifies high-level climate risks and outlines the work that we will need to do to better understand and address these risks
- Working with regional and local government to undertake collaborative studies to assess and respond to risk, including:
 - Working with the District of North Vancouver, City of North Vancouver, District of West Vancouver and Squamish First Nation to conduct a coordinated sea level rise study for the north shore of Burrard Inlet
 - Working with the Fraser Basin Council and Government of Canada to undertake research and analysis into climate risks and vulnerabilities



In 2018, we conducted a preliminary climate risk review for key port assets, including roads, buildings and dock structures. The review indicated that the majority of assets are at a low risk of flooding from sea level rise in the next 30 years. However, some assets are already at risk and will require action in the next five to 10 years.

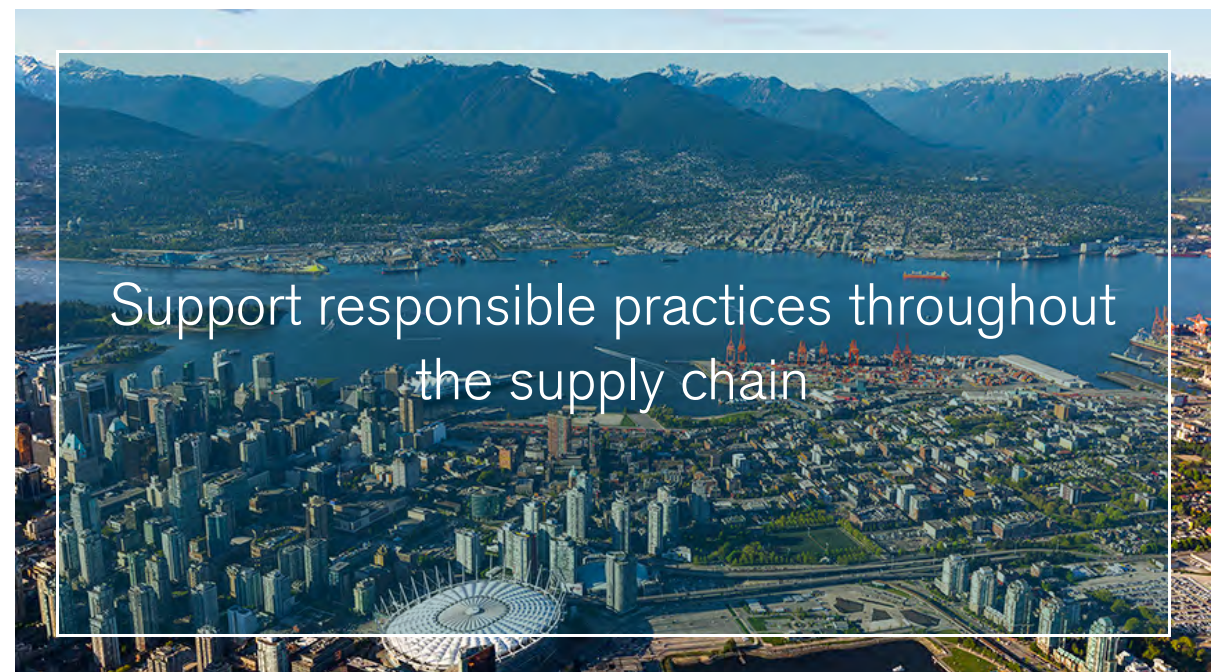
In 2019, we will continue our work with municipalities to assess risks along the north shore of the Burrard Inlet. We will also continue to develop an action plan to improve the resilience of identified at-risk port authority assets, and update port flood maps.

Responsible practices



Port authorities can play an important role in advancing sustainability at all levels: integrating sustainability in port authority operations, promoting sustainable practices throughout the port and in communities, and advocating for sustainability in the global supply chain.

The development and operation of port infrastructure enables Canadian trade, but this comes with environmental and social impacts. Sustainable development of port infrastructure refers to designing, constructing and operating terminals, roads, buildings and other supporting physical structures in a way that does not diminish the health of environmental, social and economic systems.



Improve sustainability performance of infrastructure

By integrating sustainability into our projects and encouraging port tenants to do the same, the port authority can deliver port infrastructure that maintains a healthy environment and enables thriving communities. Our approach involves:

- Applying green infrastructure guidelines, derived from the [Institute for Sustainable Infrastructure's Envision rating system](#) and the [Canadian Green Building Council's Leadership in Energy and Environmental Design \(LEED\) rating system](#), as appropriate, to large infrastructure projects led by the port authority
- Working closely with port tenants through our Project and Environmental Review process to encourage more sustainable practices in their projects; to assist tenants, we have published several guidance documents, including how to create [stormwater pollution prevention plans](#) and [air emissions management plans](#)



The Tsawwassen Container Examination Facility

In 2018, we reviewed the number of relevant green infrastructure guidelines followed in the planning, design or construction of the seven port authority-led projects worth over \$500,000 that were developed or completed during the year. In total, we implemented 65 per cent of the green infrastructure guidelines identified as applicable to our projects.

Our Rip-rap Rehabilitation Project along the south shore of Burrard Inlet implemented all of the applicable green infrastructure guidelines, including construction of shoreline suitable habitat for aquatic species, removal of invasive plant species and planting of local plant species along the new shoreline. Our [Tsawwassen Container Examination Facility](#) implemented over 50 per cent of applicable guidelines.

In 2019, we will continue applying green infrastructure guidelines to improve the performance of port infrastructure, including:

- [Centerm Expansion Project](#): The project is following our green infrastructure guidelines and is targeting the Gold level of the LEED green building rating system for the administrative building; we are seeking Envision Gold certification for the project's improvements to the container terminal and the port roads
- [Deltaport Truck Staging](#): The project followed our green infrastructure guidelines during project initiation and design; when construction is complete in 2020, we will analyze the number of green infrastructure guidelines implemented, with a target for over 50 per cent implementation
- Working to understand how port tenants are integrating sustainability into the design, construction and operation of infrastructure projects, to inform how we can encourage the cost-effective adoption of more sustainable practices

Support responsible practices throughout the supply chain

As the port authority responsible for Canada's largest port, we have an opportunity to provide leadership in guiding the port community and our supply chain towards more sustainable business practices. Our approach involves:

- Working with industry stakeholders to identify and respond to important sustainability issues that extend beyond our direct control or influence, such as air emissions and above-ground and underwater noise
- Developing and supporting initiatives that encourage and incentivize more sustainable practices regionally and internationally, such as our ECHO Program, the [World Ports Climate Action Program](#) and the International Collaboration on Ship Emissions Reductions
- Through [Port 2050](#), facilitating meaningful dialogue with a broad array of stakeholders about the key drivers of change and the long-term future of the port

Stakeholders such as local governments and environmental organizations have raised concerns about the environmental impacts of some products traded through the port. There are social and environmental impacts from many products shipped through the port, such as those occurring during extraction, harvesting and manufacturing processes, as well as impacts from the use of the end product. In particular, stakeholders are concerned about the global climate impacts of coal and oil products shipped through the port as well as possible local impacts such as airborne coal dust and potential oil spills. While we recognize the importance of these issues and are interested in encouraging open and respectful dialogue, Canada's trade policies are the responsibility of the federal government. Canadian Port Authorities do not have the legal authority to determine the resources that developed and traded. Learn more about who decides what moves through the Port of Vancouver [here](#).

In 2018, we supported responsible practices through:

- Launching the [International Collaboration on Ship Emission Reductions](#), which aims to increase participation in vessel incentive programs worldwide and increase the overall efficiency of ships in the global shipping fleet, with support from Transport Canada, Natural Resources Defense Council, the U.S. Environmental Protection Agency Green Ports and Vessels Initiative, and the ports of Los Angeles, Long Beach and Gothenburg
- Helping to launch the World Ports Climate Action Program with the ports of Antwerp, Hamburg, Rotterdam, Barcelona, Long Beach and Los Angeles
- Improving our rating in [Green Marine](#), a voluntary environmental certification program
- Continuing to support tenant participation in the [Climate Smart Initiative](#) and the Green Marine Program; 12 tenants participated in Climate Smart, and 10 tenants and four shipowners participated in Green Marine



Participation in environmental initiatives

Green Marine	Climate Smart
Fraser Surrey Docks	Alliance Grain Terminal
GCT Deltaport	Coast 2000 Terminals
GCT Vanterm	Fraser River Pile and Dredge (GP)
Neptune Terminals	Fraser Surrey Docks
Pacific Coast Terminals	Global Container Terminals
Seaspan ULC (shipyard)	Lafarge Canada
Trans Mountain Canada Inc. (Westridge Terminal)	Neptune Terminals
Tymac Launch Service Ltd.	SAAM SMIT Canada
West Coast Reduction	Schnitzer Steel Canada
Westshore Terminals	Vancouver Pile Driving
Ledcor Transportation & Resources LP	Western Stevedoring
North Arm Transportation	Kinder Morgan (Westridge Marine Terminal)
SAAM SMIT Canada	
Seaspan ULC	

Thriving Communities

A sustainable port contributes to thriving communities, working proactively to be a good neighbour, inspiring community connections, fostering Aboriginal relationships, and upholding safety and security.



61% of those surveyed rate the port as a good neighbour



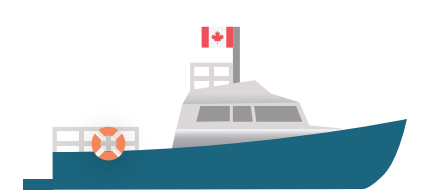
Port of Vancouver-related activity generates \$24.2 billion total economic output per year



Completed construction of the Tsawwassen Container Examination Facility



Responded to 6 safety and security incidents of note



Improving safety for ships by implementing speed restriction in the First Narrows

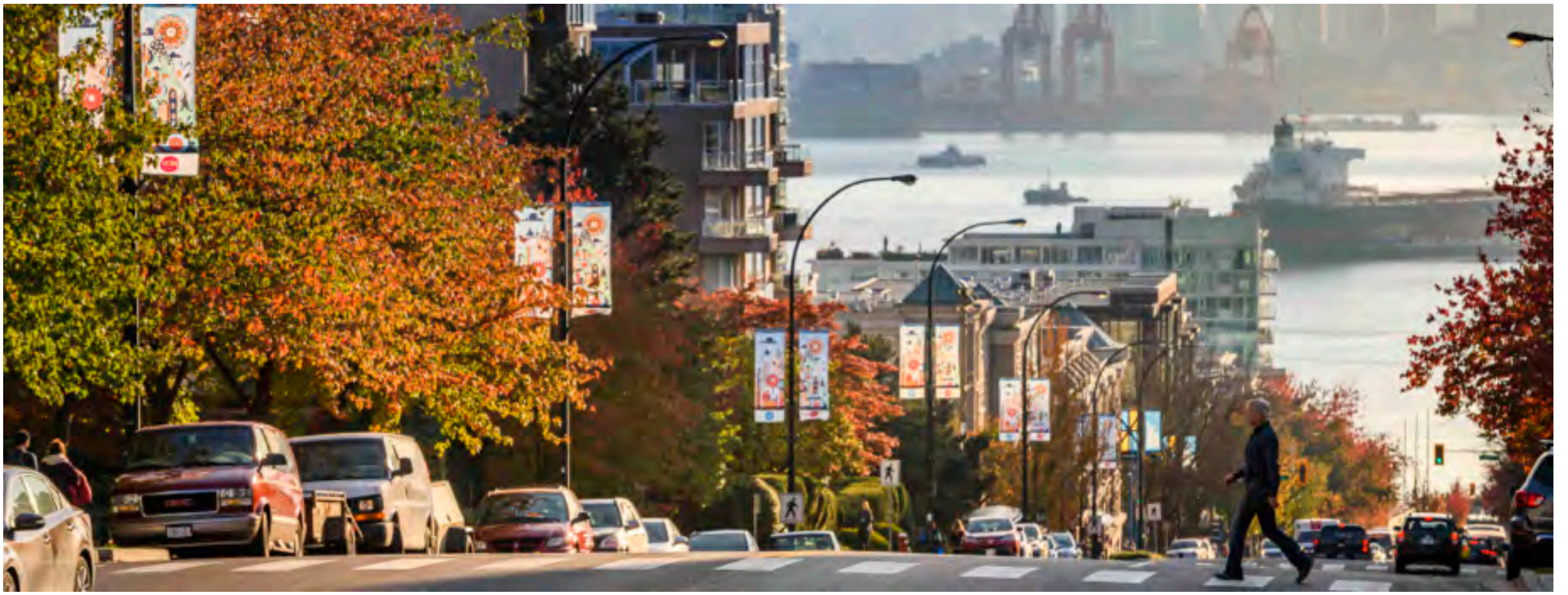
The First Narrows is the area to the east and west of Lions Gate Bridge at the mouth of the Vancouver harbour. The challenging tide and current conditions in this narrow waterway can make it difficult for small watercraft to navigate safely. During the summer months, this channel typically becomes congested due to an increase in commercial and recreational vessel traffic. This congestion increased further in 2017 when, in response to community input, the port authority increased the access in that area and around Siwash Rock off Stanley Park for recreational boaters.

Large cargo ships can pose a danger to small watercraft. As we are responsible for maintaining the safe and efficient movement of marine traffic, we implemented a speed restriction in the First Narrows Traffic Control Zone (TCZ-1) in early 2018. Traffic Control Zones (TCZ) are designated areas where specific or unique navigational safety procedures are in place. This three-month voluntary trial, which was designed to encourage boaters to slow down, restricted speed to 15 knots. The restriction applied to all Tier II ships, including power boats, fishing boats, sailboats, tugs, ferries, and whale watching boats.

After the speed limit was introduced, the speed of ships and boats in the area was noticeably reduced. This resulted in extending the voluntary slowdown period until the end of 2018. Members of the public were invited to submit their feedback on the slowdown between December 18, 2018 and January 25, 2019, and we reviewed and considered all comments. On February 1, 2019, we formalized the 15-knot reduction as part of our continuing efforts to ensure a safe and secure port for all users. The now-mandatory speed reduction allows Tier II ships to respond to the prevailing circumstances and conditions. It also means that commercial and recreational traffic can coexist in a safe environment. The amendment was published in the [Port Information Guide](#) on February 13, 2019.



Good neighbour



To keep Canadians connected with the global economy, the Port of Vancouver operates 24 hours a day, seven days a week in a densely populated metropolitan region. As trade continues to grow, it is important that we work with communities to proactively identify their concerns, and with our tenants and port users to minimize impacts.

Industrial operations can create noise, odour, dust and light pollution that can negatively impact the well-being of neighbouring communities. Impacts associated with port operations may be a minor nuisances, or even cause health problems. Port authorities often do not have direct control over these activities, making managing these impacts challenging.



Proactive community outreach



Respond to community interests and issues

Our approach to being a good neighbour at a glance

The following table shows the potential community impacts of port activities, their potential effects, and the port authority's approach to mitigating and managing those effects.

Potential community impacts	Potential effects	Our approach
Noise, light pollution, odour, dust, and view obstruction from port operations and development	<ul style="list-style-type: none"> Loss of enjoyment (stress annoyance) Sleep disturbance 	<ul style="list-style-type: none"> Community feedback line Community liaison committees Delta Community Office Noise and nuisance clause in lease agreements Noise monitoring program Project and Environmental Review
Water quality degradation through stormwater runoff, and spills and leaks on land and in water	<ul style="list-style-type: none"> Loss of enjoyment of local amenities such as beaches Restriction on recreational activities (swimming, boating, fishing) Impacts on aquatic species Interference with traditional livelihoods 	<ul style="list-style-type: none"> 24/7 Operations Centre Community feedback line Project and Environmental Review Port Information Guide
Air pollution from cargo movement (ship, rail, truck and cargo-handling equipment)	<ul style="list-style-type: none"> Human health impacts through decreased regional and local air quality Loss of enjoyment of local amenities 	<ul style="list-style-type: none"> Climate Smart initiative EcoAction Program for ships Energy Action Environmental requirements for container trucks Non-Road Diesel Emissions Program Northwest Ports Clean Air Strategy Project and Environmental Review Shore power
Container truck and rail traffic	<ul style="list-style-type: none"> Traffic congestion in local communities Air pollution Noise from traffic and rail crossings Loss of productivity due to longer commute times Safety incidents related to rail and road traffic 	<ul style="list-style-type: none"> Community feedback line Community liaison committees Delta Community Office Gateway Transportation Collaboration Forum Project and Environmental Review
Cultural heritage resources	<ul style="list-style-type: none"> Disturbance of physical and cultural heritage (sites, buildings or structures) from project construction, increased traffic, or view obstruction 	<ul style="list-style-type: none"> Project and Environmental Review
Land availability	<ul style="list-style-type: none"> Competition for industrial land Constraints on trade 	<ul style="list-style-type: none"> Land use planning
Recreational marine activities (swimming, kayaking, boating)	<ul style="list-style-type: none"> Safety incidents Restrictions on marine recreational activities 	<ul style="list-style-type: none"> 24/7 Operations Centre Port Information Guide Safe Boating Guidelines

Proactive community outreach

We undertake community engagement work to learn about community concerns to address current issues and proactively avoid future issues. The port authority does this by:

- Working with our tenants and port users to minimize the negative impacts of port activities as much as possible
- Engaging municipal governments regularly to strengthen communications, build productive working relationships and find opportunities for collaboration
- Managing three [community liaison committees](#) in East Vancouver, in Delta and on the north shore of the Vancouver harbour, providing a forum to facilitate discussion, exchange ideas, share plans and provide updates related to port operations and development in the community; to support a broad and balanced dialogue, each committee includes individuals with diverse perspectives and varied backgrounds and experiences, including members from the community, port industry, railway representatives, municipalities and Aboriginal groups
- Maintaining a community office with two permanent staff members in Delta, B.C., where local residents can learn about port operations, initiatives and projects

In 2018:

- We hosted briefing sessions for 41 mayoral candidates before the B.C. municipal election to provide them with context and information about our role and mandate, and insight into Port of Vancouver operations
- Our community liaison committees identified a list of key topics that committee members wished to learn more about, including port development, expanding operations, noise and nuisance complaints, and investments in rail and facility infrastructure; information from these meetings is documented and posted on our [website](#)
- Our Port Community Liaison Committee in Delta engaged with our harbourmaster, who shared his insights about harbour protocols, anchorages and emergency response measures

Community office in Delta

In 2018, the port authority's Delta Community Office hosted free events to broaden the public's understanding of the Port of Vancouver and the Vancouver Fraser Port Authority, including:

- Guest speakers on topics of community interest, such as Lower Mainland air quality, ocean microplastics and reducing shipping impacts on local whales; attended by 662 people
- The Container Trail, a bus tour that highlights the container industry in Delta; 307 members of the community participated
- Screenings of a documentary about how underwater noise affects marine mammals, which drew 63 attendees



The Port of Vancouver Delta Community Office

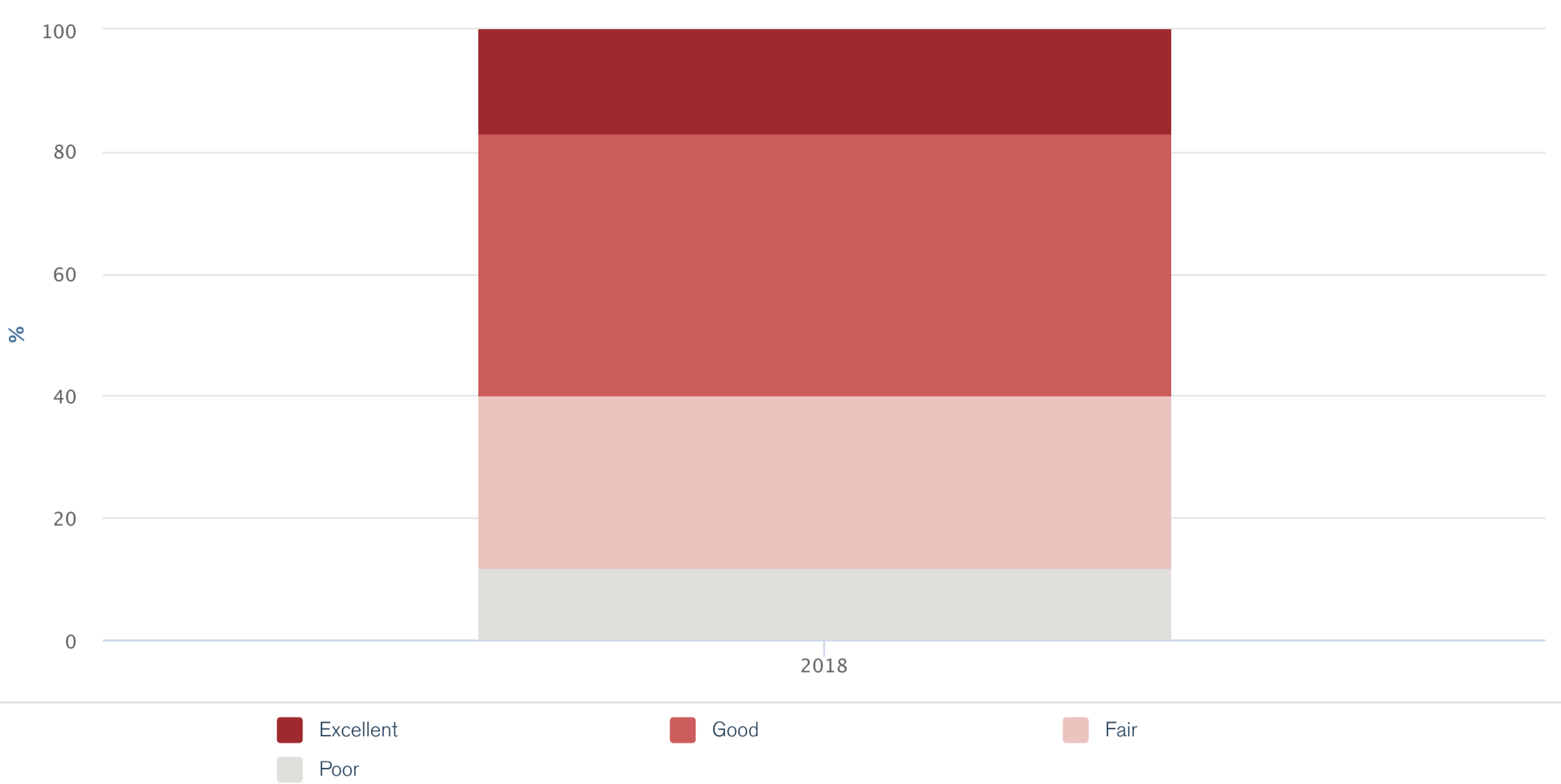
Respond to community interests and issues

Community feedback is vital to helping the port authority understand the impact of port operations on local communities, better plan and manage our operations and development projects, and identify areas for improvement. To identify and respond to community interests and concerns, in addition to work mentioned in the [Proactive community outreach section](#), we:

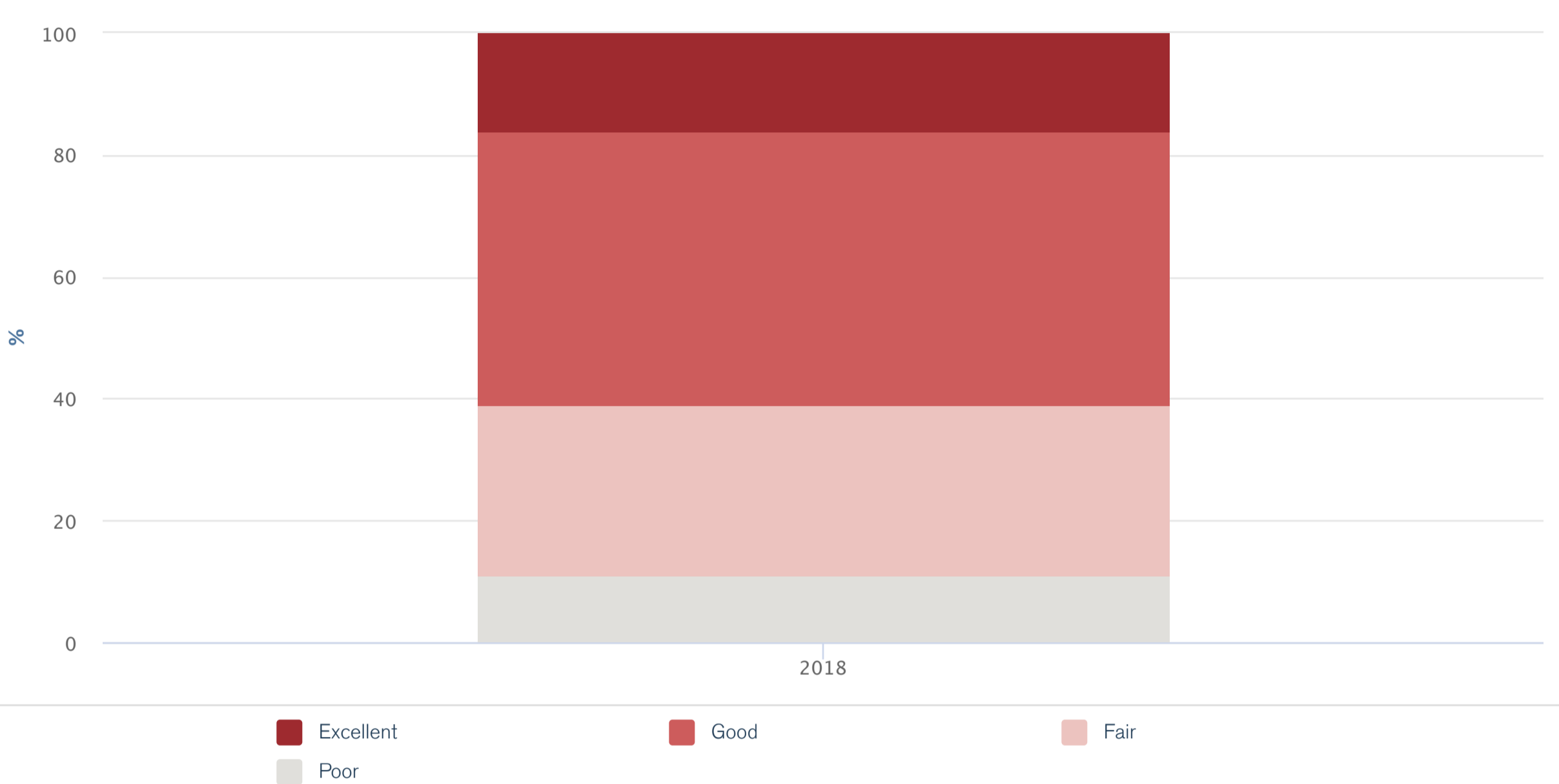
- Gather community feedback via a dedicated phone line, email and [online feedback forms](#)
- Investigate community feedback by seeking further information
- Respond to inquiries to provide context and clarity to port operations, pass on information to relevant governments, stakeholders or port users, and work with port users to minimize impacts
- Maintain a noise monitoring program to better understand the source and intensity of port-related noises and to track trends over time
- Conduct an annual survey to better understand community perceptions of the port and the port authority

Public opinion of the port as a good neighbour

How do you rate the port on proactively considering the effects on communities in planning and managing operations?



How do you rate the port on identifying and responding to community interests and issues?

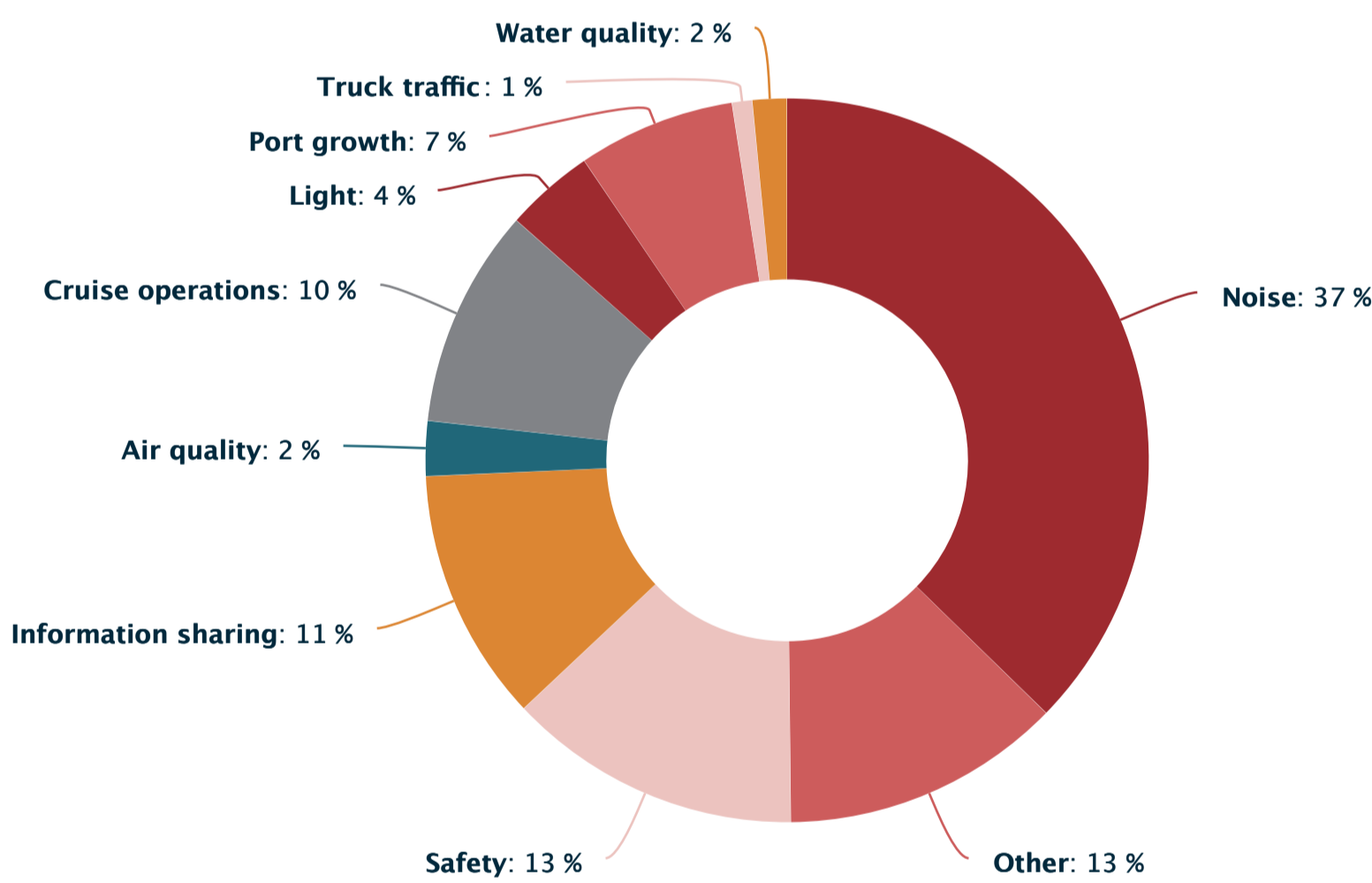


Results are based on a 2018 online survey of approximately 1,400 residents of our neighbouring 16 communities in Metro Vancouver. The survey was conducted in by an independent firm on behalf of the Vancouver Fraser Port Authority.

Community feedback

In 2018, our community feedback line received 326 inquiries and complaints about a variety of issues; 37 per cent of the feedback related to noise from port activities, particularly from terminals, ships and trains.

Inquiries and complaints received through community feedback line (2018)



Noise-related complaints (2018)

Noise source	# of complaints	% of total complaints
Terminal/tenant	58	18%
Ship	45	14%
Rail	17	5%
Truck	2	1%

In addition to the above, we also received concerns and complaints pertaining to light and noise related to vessels anchored in [British Columbia's southern Gulf Islands](#). Although waterways beyond the port are a federal responsibility and we do not normally have direct influence when it comes to managing ships that may be anchored in those areas, under Transport Canada's [Interim Protocol for the Use of Southern B.C. Anchorages](#), the port authority is currently [assigning Southern B.C. anchorages around the Gulf Islands](#).

Members of the public who have concerns pertaining to light and noise related to a specific vessel anchored in the Gulf Islands can [contact us](#). When a complaint about a specific ship's operations is received, we contact the ship's agent and request corrective action. We also log the complaint and advise Transport Canada through monthly reports.

Noise monitoring

We have a responsibility to local residents and businesses to minimize noise originating from port lands, such as ship engines, truck and rail movements, construction and normal terminal operations. While noise can never be completely eliminated, our noise monitoring program, shore power installations, and involvement with global and regional industry stakeholders allow us to better identify and track noise issues, shore power by installations, and to work toward mitigation where possible. [Real-time noise monitoring data](#) and annual noise monitoring [summary reports](#) from our long-term monitoring program are available on our website.

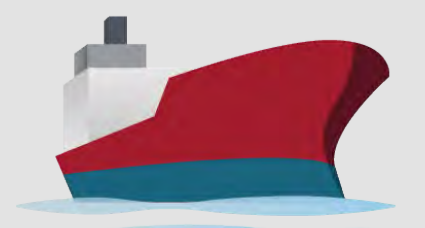
In 2018:

- With the support of Transport Canada and BC Hydro, and in collaboration with Global Container Terminals and DP World, we made [shore power](#) available to ships berthing at the Centerm and Deltaport container terminals
- We deployed two mobile noise monitoring stations in response to community concerns regarding noise and are studying the results to explore possible solutions
- We worked with Transport Canada to introduce [temporary measures](#) to reduce the noise impacts of large ships at anchor outside our jurisdiction in southern British Columbia

In 2019, we will continue to work with other ports and the maritime sector to share knowledge, develop mitigations and increase awareness around the potential for noise annoyance from ships at berth.

Understanding ship noise

In 2018, we completed the second year of a two-year partnership with [Project NEPTUNES](#) (Noise Exploration Program to Understand Noise Emitted by Seagoing Ships), an international consortium of 11 ports in Europe, Australia and Canada. This partnership researched what causes the characteristic sound generated by moored ships and how it can be mitigated. This resulted in a uniform, worldwide standard to measure, analyze, evaluate and classify airborne noise emission by individual ships in ports, and in best practices for the control of that noise emission.



Community connections



Trade connects us all with a variety of products that we use every day, and generates tax revenues and employment for communities. It is also essential for communities where prosperity depends on exporting resources such as agriculture and forestry products. The Port of Vancouver connects Canadian businesses and consumers across the country with about 170 trading economies.

An understanding of what activity is taking place locally, and how it affects everyone, helps community members appreciate the importance of the economic activity surrounding them. This understanding also provides context to guide input that community members may provide on port operations.

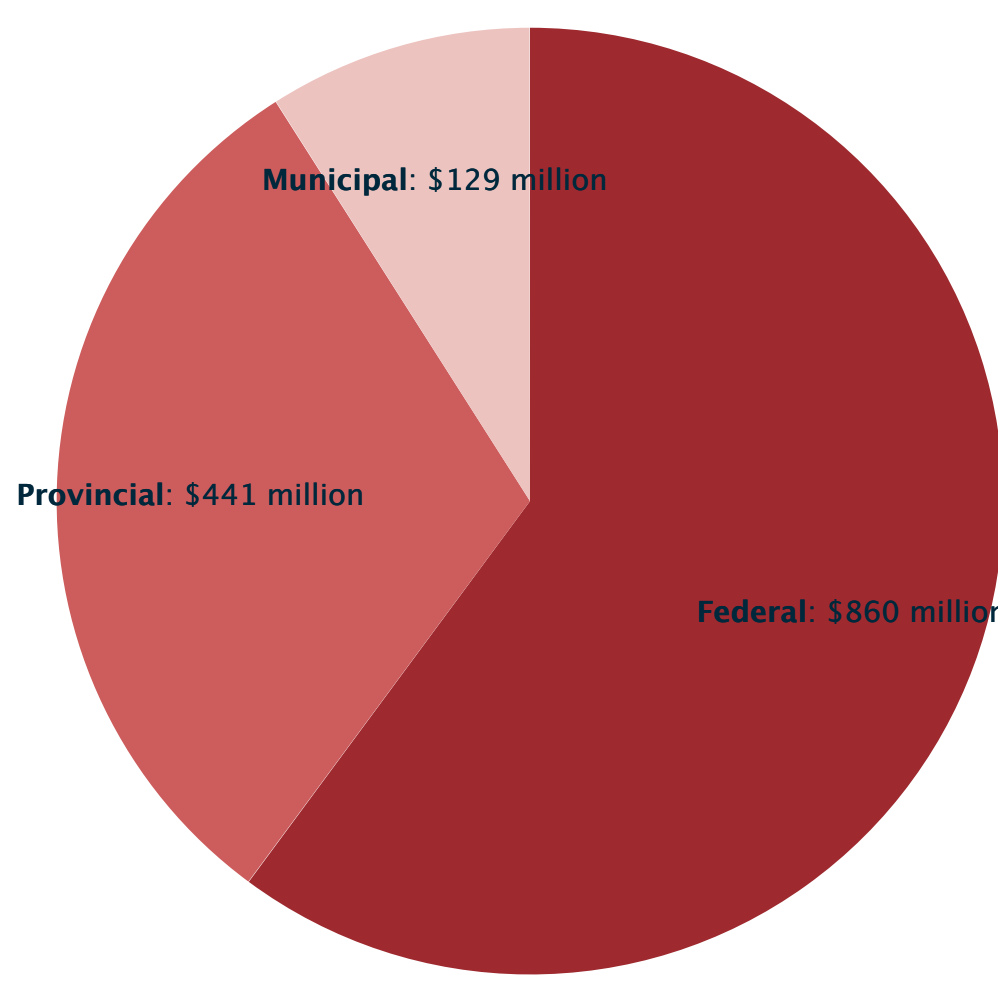


Deliver regional and national benefits

As a port authority, we deliver economic benefits to communities, businesses and government, both locally and nationally. The work we do facilitates trade, which creates significant impacts regionally and nationally. In general, we aim to:

- Collaborate with governments, industry and supply chain stakeholders throughout Canada to understand their needs regarding goods movement through the Port of Vancouver
- Undertake market and commodity forecasts and make the results available to help communities and businesses plan for the future
- Invest in our surrounding communities by supporting, sponsoring and donating to initiatives of significance to each community, including our contribution to dredging secondary, non-commercial channels
- Study and track the national and local economic impact of Port of Vancouver-related activities, and make this information available
- In lieu of taxes, provide payments to local governments on port property not currently leased

Tax revenues from Port of Vancouver-related activity (2016, \$ million)



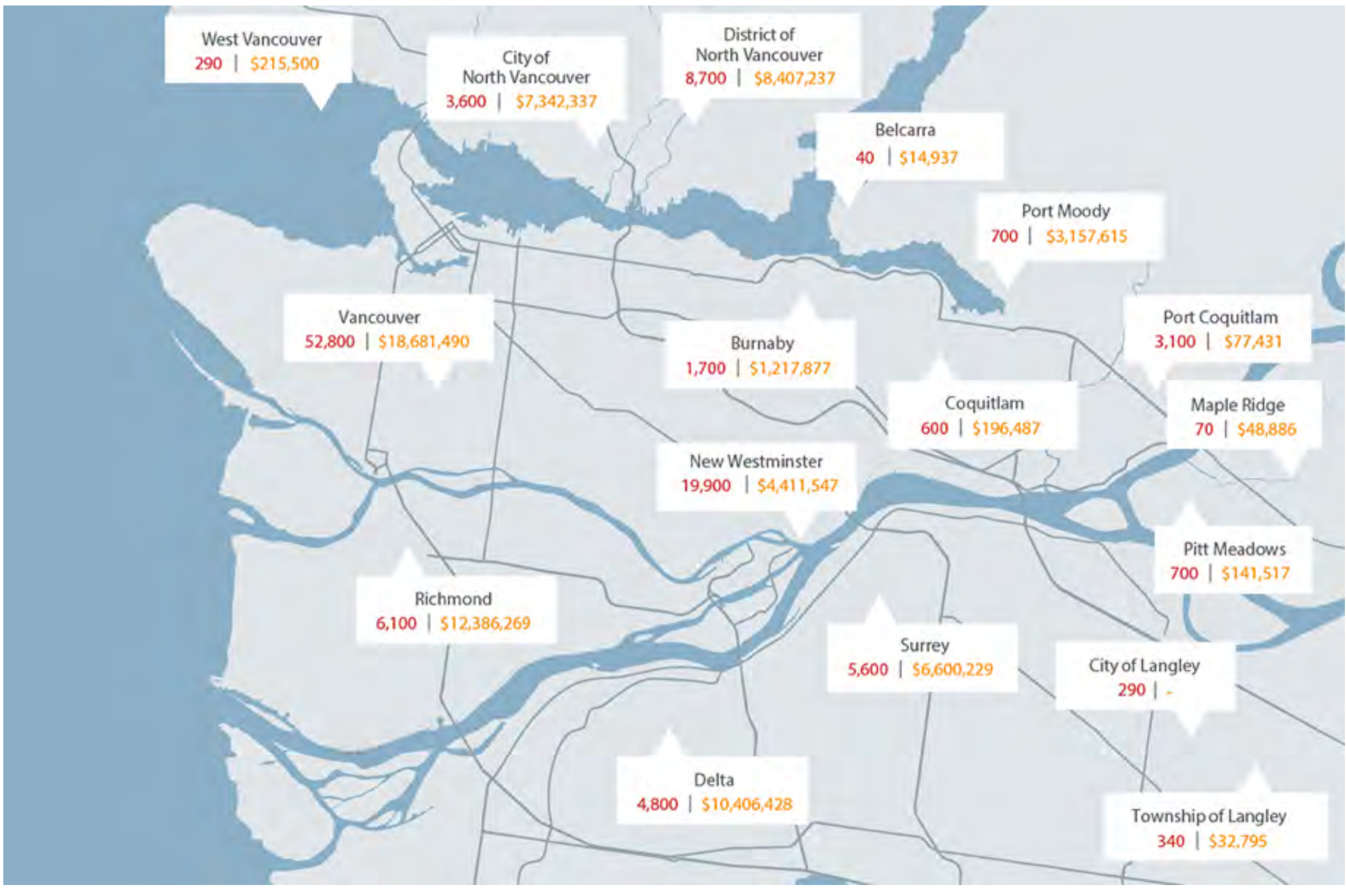
Jobs and economic contributions

Port of Vancouver-related activity supports and contributes 115,300 direct, indirect and induced jobs across Canada

Port of Vancouver-related activity generates \$24.2 billion total economic output per year

Ongoing operations at the Port of Vancouver, which include the daily work of terminals, supply chain operators and other tenants to move goods, contribute to government revenues by providing tax dollars to all levels of governments that help support critical community services. Additionally, the port authority provides an annual stipend to the federal government.

Ongoing operations also provide jobs in local communities and across the country, generating more than 115,300 direct, indirect and induced jobs in Canada, including 42,300 direct (e.g., dockworker or labourer) and 31,700 indirect jobs (e.g., cargo truck driver) in Metro Vancouver. Direct jobs across Canada related to the port pay an average of \$67,900 per year, well above the average annual Canadian wage of \$52,060.



■ Direct, indirect and induced jobs from all Port of Vancouver-related business, by municipality (Direct jobs from the [2016 Port of Vancouver Economic Impact Study](#). Indirect and induced jobs derived from modelling of the same study)

■ Total 2018 municipal, regional, and provincial property taxes paid by the port authority and our tenants. Note: this does not include tax contributions from other Port of Vancouver-related businesses and activities.

Tax contributions are estimates based on available tax rate and associated information at time of publishing.

There are no port authority-managed lands in the City of Langley; therefore, there are no direct tax contributions from the port authority or tenants.

Community investment

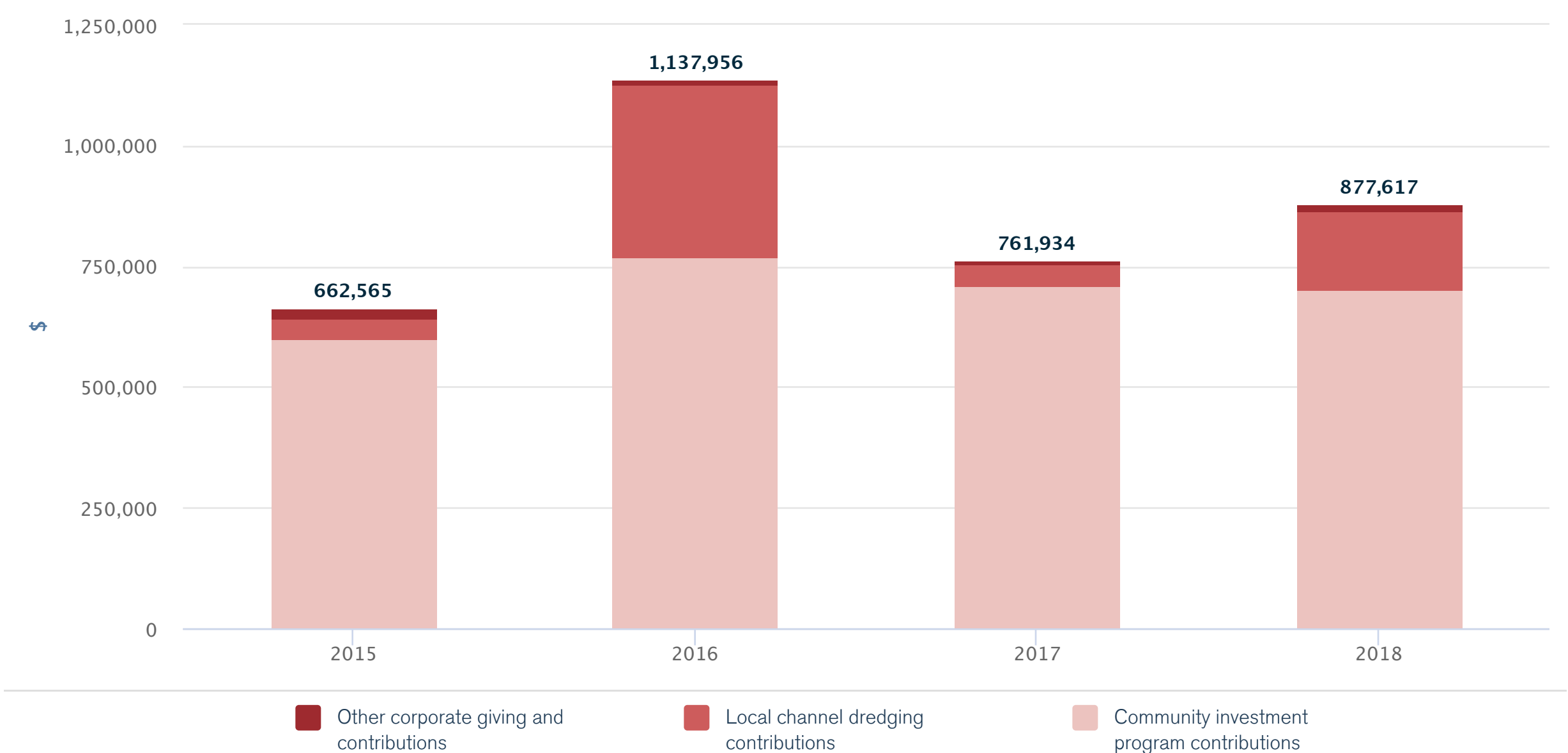
We dedicate up to one per cent of our net income to community investment based on three key pillars: education, community enrichment and environmental stewardship. Each year, we allocate funding across the communities that the port borders. In 2018, we supported more than 50 community organizations, events and institutions with \$701,000 of funding.

Examples of community investment initiatives in 2018 include:

- **The Pull of the Net: A Multicultural Celebration, Steveston:** The Gulf of Georgia Cannery's Pull of the Net is an annual family-friendly event that celebrates the diverse cultural communities that have been historically involved in the building of our west coast fishing industry. 2018 funding contribution: \$10,000
- **#BePlasticWise, Vancouver:** Vancouver Ocean Wise®, the parent organization of Vancouver Aquarium, created the #BePlasticWise pledge and campaign to raise awareness about ocean plastic and to build collective action by asking people to reduce their plastic waste from single-use items and other sources. We are a core partner of the initiative. 2018 funding contribution: \$50,000
- **Lynn Creek Ephemeral Channel Habitat Enhancement Phase 2, North Vancouver:** North Shore Streamkeepers worked with partners to enhance a Lynn Creek ephemeral channel (a channel that only flows for hours following rainfall) that was being impacted by increasing stormwater volumes. To enhance the habitat, large woody structures were installed. These structures naturally scour pools of water, create refuge areas in low water conditions, and provide in-stream and overhead cover—all essential elements for the return of spawning salmon. 2018 funding contribution: \$10,000

In addition to our programs, port tenants, terminal operators and port users also make community investments in the region.

Community investment



In 2018, we reviewed and updated the classification of our 'other corporate giving and contributions' category to better align with our definition of community investment. We have restated our 2015 and 2016 community investment data to reflect this change.

Local channel dredging

While dredging of secondary channels is not a formal responsibility of the port authority, our [local dredging contribution program](#) provides financial and consultation support for riverfront communities on the Fraser River to undertake dredging activities to help maintain local navigation, recreational opportunities and community safety.

In 2018, our funding contribution of \$164,000 financed:

- The permitting process to prepare for dredging of the Morey Channel in Richmond
- An analysis of the characteristics of the residual material in Shelter Island in Richmond to better prepare the site for future permitting
- The successful dredging of the entrance to Gunderson Slough in North Delta by the North Delta Harbour Association

In 2019, the final year of the program, funding is set to:

- Support dredging of the Morey Channel area in Richmond, the Douglas North and Catham areas in Port Coquitlam, and the Fox Reach area in Pitt Meadows
- Support any additional dredging work required in the Gunderson Slough in North Delta

Fundraising gala

Since 1999, in partnership with Global Container Terminals, Fraser Surrey Docks, Western Stevedoring and DP World, we have supported communities in need through the annual Port Fundraising Gala. In 2018, this fundraising event supported three local organizations: Mission Possible in Vancouver's Downtown Eastside, the Harvest Project in North Vancouver, and the Reach Child and Youth Development Society in Delta.

2018 funding contribution: \$230,000

2018 marked the 19th year for the Port Fundraising Gala. To date, more than \$2.1 million has been raised for deserving organizations in Metro Vancouver.



2018 Annual Port Fundraising Gala

Engage communities and inspire pride

It is important to bring the port story to local audiences to create awareness of the significance of port activities, as well as pride in Canada as a trading nation. The port authority does this by:

- Engaging in community relations activities, including hiring a team of university students who bring the port story to local community events
- Advertising in traditional and social media to bring the port story to local audiences
- Conducting an educational outreach program, and connecting with the public at our Discovery Centre at Canada Place
- Hosting free and accessible annual events and experiences intended to inspire national pride at Canada Place, an iconic landmark and venue in the heart of Vancouver's downtown and waterfront



In 2018:

- Our community relations student team worked 85 event days in neighbouring communities, talking to the public about port-related activities
- Our [Education Outreach Program](#) supported Grades 4 to 6 curriculum guidelines as outlined by the B.C. Ministry of Education, teaching students about port operations and the significance of trade to Canada; we expanded this program through relationships with Minerals Education, the Vancouver Lookout, FlyOver Canada and the Rivers Day School Program
- We brought port information to the public through our multimedia [community advertising campaign](#), which highlighted how port activities connect people and our world through shared interests
- We hosted [Canada Day at Canada Place](#), [Waterfront Cinema](#) and [Zumba at Canada Place](#), and we illuminated the [Canada Place Sails of Light](#) throughout the year in the colours of 68 non-profit organizations and charities
- To make better use of our resources and to enhance the core elements of our Canada Day programming, we made the difficult decision to remove the parade

In 2019, we will begin hosting a new, free community event to recognize World Maritime Day, which was created by the International Maritime Organization to celebrate the international maritime industry's contribution to the world economy.



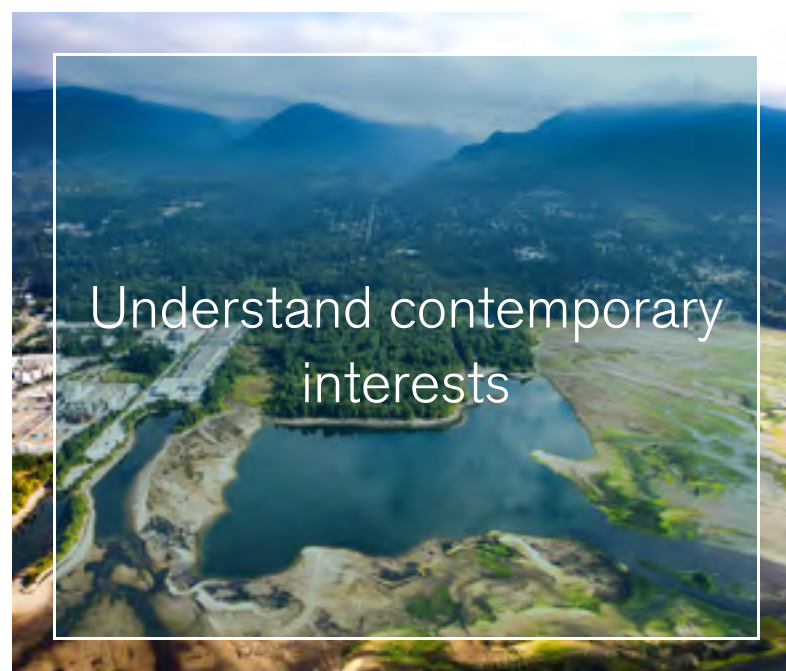
In 2018, more than 2.5 million people walked on the promenade at Canada Place, visiting The Canadian Trail. This is an increase of almost 500,000 (23%) over 2017.

Aboriginal relationships



Aboriginal peoples have unique histories, languages and cultural practices, as well as an inherent connection to the land. They also have unique rights that are enshrined in Canada's constitution. For thousands of years, the Coast Salish peoples lived and prospered in the area, with complex systems for trade and commerce in the Salish Sea, Burrard Inlet and Fraser River, long before settlers arrived and recognized this area as an ideal trading region.

The port authority manages the lands and waters that intersect the asserted and established traditional territories and treaty lands of several Coast Salish First Nations. To maintain operations and to be able to continue to grow in response to increasing trade, it is essential that we nurture and respect the relationships we have with neighbouring Aboriginal groups.



Respect traditional territories and knowledge

Respecting Aboriginal culture and history and looking for opportunities to work with and support Aboriginal peoples are essential to building strong and productive relationships with Aboriginal groups and to mitigating any negative effects that port-related activities have on Aboriginal groups.

We have been delegated the authority under the *Canada Marine Act* to manage federal lands. Therefore, we conduct Aboriginal consultation on behalf of Transport Canada when operations or developments have the potential to adversely impact asserted or established Aboriginal or treaty rights. This means we must meet both the legal requirements for Aboriginal consultation and our social responsibility to consider input from neighbouring communities. To do this, we:

- Focus our Aboriginal relations work on consultation and community engagement practices specific to Aboriginal interests
- Base our consultation approach upon Canada's [Aboriginal Consultation and Accommodation: Guidelines for Federal Officials to Fulfill the Duty to Consult](#)
- Draw upon Aboriginal knowledge in determining when operations and developments have potential impacts and how they can be avoided, mitigated or otherwise accommodated; when mitigation is not possible, accommodation may take the form of jobs or other opportunities provided to Aboriginal groups, but mitigation measures may also include actions such as:
 - Changes to project design or approach
 - Delaying in-water works to accommodate the fisheries windows of Aboriginal fishers
 - Using machinery that could reduce the environmental effects
 - Conducting archeological assessments

We work to consider and address areas of importance raised through consultation with Aboriginal groups, including potential impacts on archeological and cultural resources, cumulative environmental and socio-economic impacts, and other regional development initiatives.

In 2019, we will focus on advancing engagement and mutually beneficial opportunities with Aboriginal groups.

Learn more at portvancouver.com/aboriginal-relations



Understand contemporary interests

Through consultation and community engagement, we have the opportunity to understand areas of mutual interest to Aboriginal people and the port authority, and then to identify opportunities to support these interests.

In 2018, the port authority worked with Aboriginal groups on several environmental and economic initiatives:

Maplewood Marine Restoration Project: We are working with the Tsleil-Waututh Nation [to restore habitat in the marine and tidal area near Maplewood Flats](#) in North Vancouver. This project was identified by the Tsleil-Waututh Nation as a restoration priority.

- Proposed work includes creating and restoring marine habitat in a previously dredged deep marine basin to benefit juvenile salmon, eelgrass, kelp, ling cod and crabs
- Engagement and collaboration, which could include economic and employment opportunities offered through contracting with the Tsleil-Waututh Nation and other Aboriginal groups, will continue through project delivery in 2019–2020
- At the request of the Tsleil-Waututh Nation, we hosted a workshop along with Aboriginal groups and experts to select the best location to source donor eelgrass; following the workshop, some members of the Nation participated in fieldwork, resulting in an assessment report prepared for Burrard Inlet to inform future eelgrass restoration in the inlet

Tsawwassen Container Examination Facility: We completed construction on a [new container examination facility](#) on Tsawwassen First Nation industrial lands:

- The new facility augments an existing facility in Burnaby and will facilitate the new Canada Border Services Agency marine container examination process, which will increase the use of technology for inspections, relying less on manual inspections
- The Tsawwassen First Nation leases the land to the Canada Border Services Agency, and the port authority contracted three Tsawwassen First Nation joint-venture companies to complete various stages of construction and operation



Location of the proposed Maplewood Marine Restoration Project

Celebrate Aboriginal culture

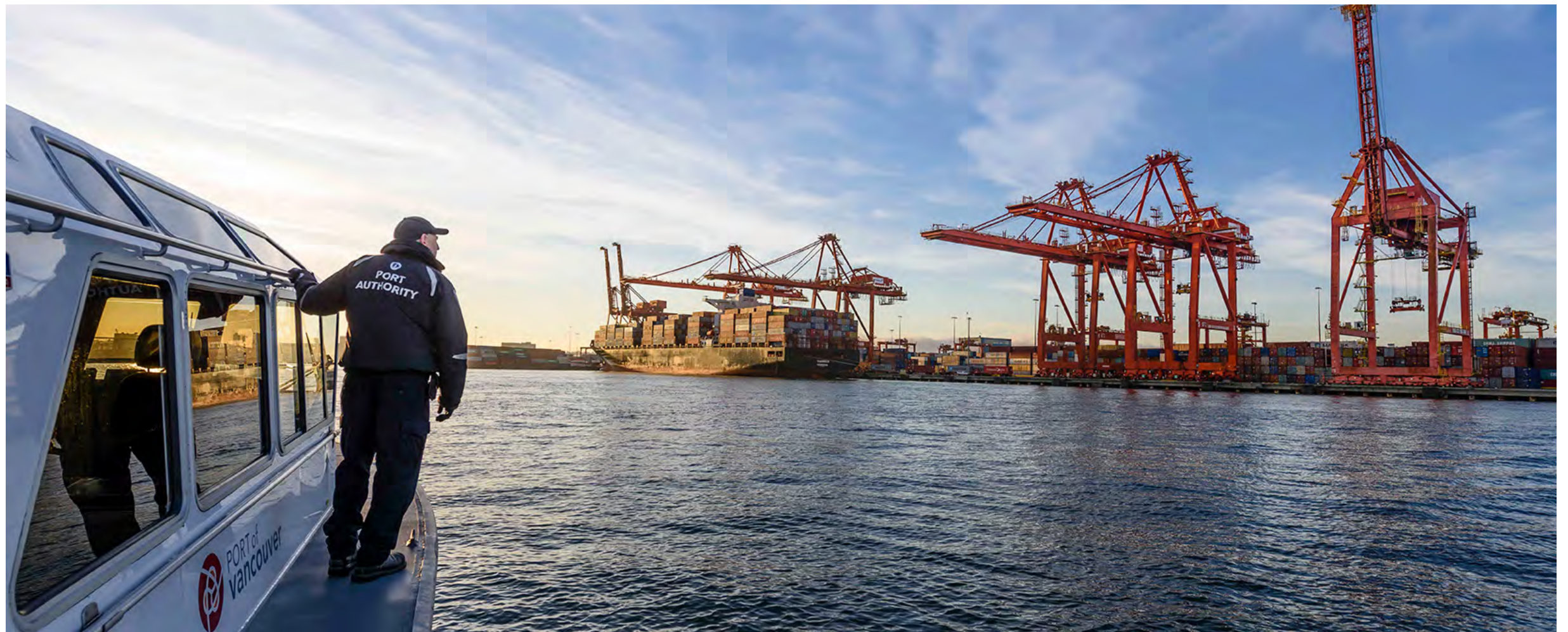
To celebrate Aboriginal culture, the port authority sponsors events that are designed to promote Aboriginal culture.

In 2018, we:

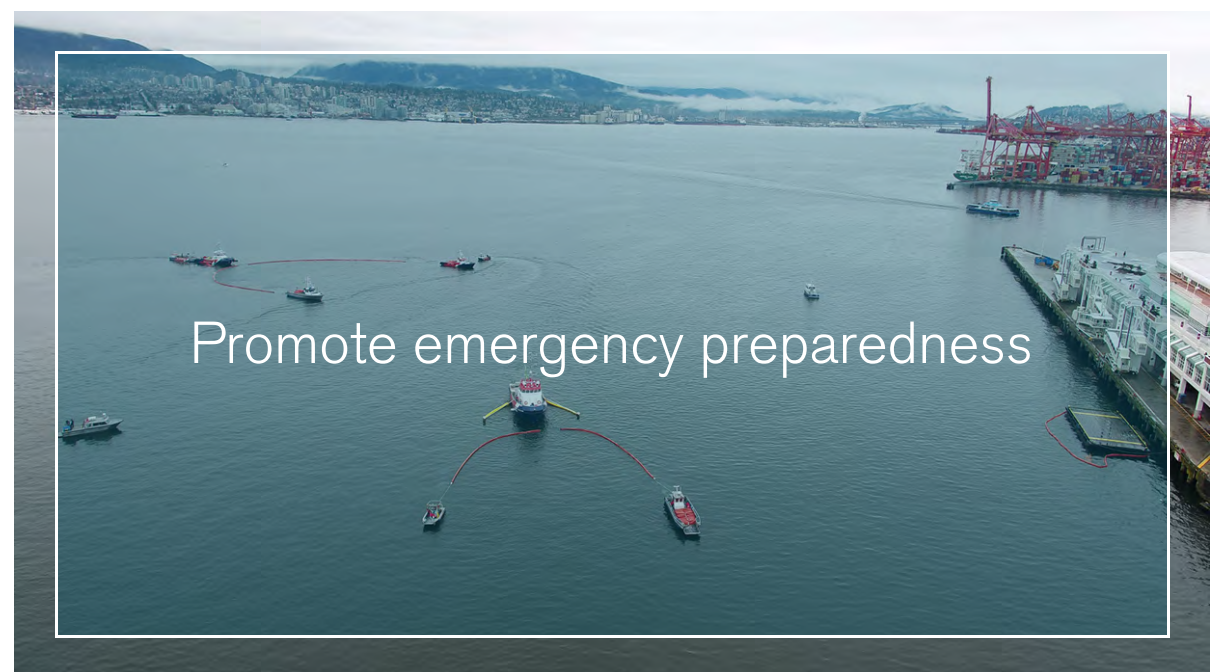
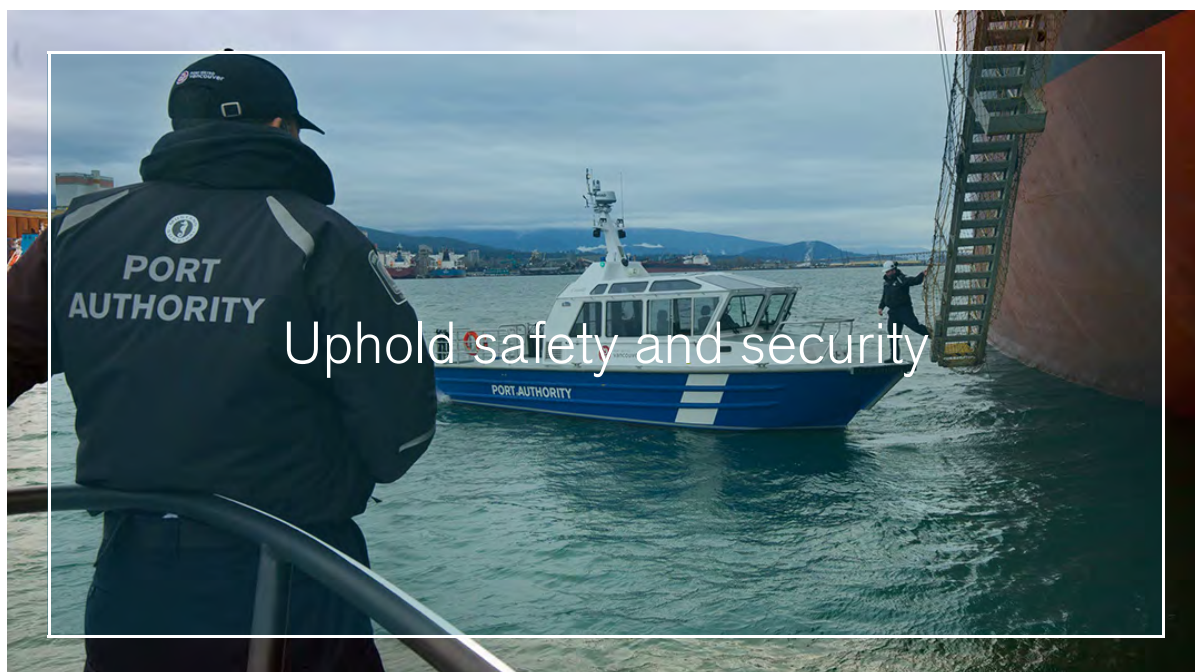
- Sponsored National Indigenous Peoples Day events at Trout Lake in Vancouver, at the Gulf of Georgia Cannery in Richmond and in Holland Park in Surrey, which showcased Aboriginal artists, performers and vendors in celebration of Aboriginal peoples and cultures from across Canada
- Donated to/sponsored Aboriginal events through our [Community Investment Program](#)



Safety and security



Port operations involve heavy equipment and industrial processes that can present significant safety risks. Ports can also become targets for intentional damage to property and other security threats that can potentially harm workers, port users and surrounding communities. Maintaining a focus on safety and security, and being prepared for any emergency that may arise, is imperative for a sustainable port.



Uphold safety and security

The port authority's safety practices and procedures, per [Section 56 of the Canada Marine Act](#), are designed to promote safe and efficient navigation within the local waters of the port and to protect the marine environment. In partnership with a variety of safety, security and emergency response organizations, we uphold the safety and security of the port by:

Marine navigational safety:

- Communicating localized practices and procedures to promote safe and efficient navigation within the waters of the port, and to support efforts to protect the marine environment, through our [Port Information Guide](#)
- Monitoring marine and land activities within our jurisdiction through our 24/7 Operations Centre, office staff, harbour patrol officers and security team
- Managing a permitting process for port users who wish to conduct certain marine operations or events within our jurisdiction
- Managing marine-side planning, permitting, safety arrangements and traffic for major events taking place within the port
- Promoting safe boating practices to recreational boaters



Port security:

- Managing card-only and gate access to port terminals and roadways, and implementing perimeter security and intrusion detection on port properties
- Monitoring video surveillance from cameras on port roadways, terminals and lands
- Patrolling port lands 24/7
- Maintaining an incident reporting program to track suspicious activity
- Collaborating with local police agencies, the Canadian National Railway and Canadian Pacific Railway police services, and the Canada Border Services Agency, to preserve the ongoing [safety and security](#) of the port
- Working closely with federal agencies to apply security measures and standards for international recognized Marine Security (MARSEC) response levels

Marine and navigational safety

We are responsible for monitoring, regulating and controlling ship traffic at the port.

Traffic Control Zones

Traffic Control Zones (TCZ) are designated areas where specific or unique navigational safety procedures are in place. These procedures are documented in our [Port Information Guide](#).

In 2018, we:

- Renamed Movement Restricted Areas (MRA) as Traffic Control Zones (TCZ) to be consistent with terminology used in the *Canada Marine Act*
- Implemented a voluntary 15-knot speed restriction for all non-deep-sea piloted ships in the First Narrows Traffic Control Zone (TCZ-1), which includes either side of the Lions Gate Bridge at the entry to the Vancouver harbour
- Formalized existing practices and procedures for marine vessel traffic control and safety in the Fraser River
- Developed and implemented Traffic Control Zone 4 (TCZ-4) in the south arm of the Fraser River to improve vessel navigation, in collaboration with the Pacific Pilotage Authority, the Fraser River Pilots and the broader marine community

In 2019, the voluntary 15-knot speed restriction will become a mandatory safety initiative. We will lead the amendment of the navigational channels that ships use to approach Vancouver, to better reflect ships' current sizes and dimensions, specifically the next generation of larger cruise and container ships calling at the Port of Vancouver.

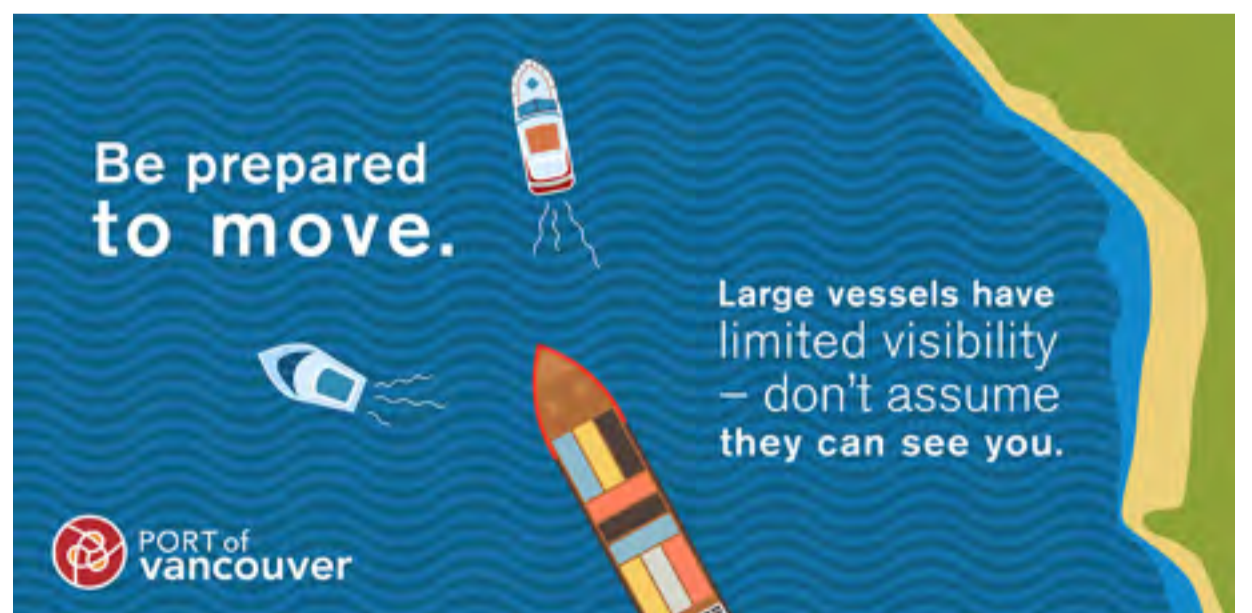
Read more in our [Feature story](#).

Safe boating awareness

While our primary responsibility is to keep navigation channels clear for commercial traffic, the increasing number of recreational boaters using the same waterways can create risks for all port users. We update our safe boating guides for the Burrard Inlet and Fraser River when safe navigational procedures are updated or changed.

In 2018, we:

- Met the public at various boat launching sites to distribute the guide, provide boat safety inspections and answer questions related to boating safety, in collaboration with the Vancouver Police Department, Fisheries and Oceans Canada, and the Canadian Coast Guard
- Translated our safe boating guides into Vietnamese and Simplified Chinese
- Provided deep-sea safety escorts to help commercial ships navigate through groups of fishing boats in the Fraser River, in collaboration with [Fish Safe](#)



In 2019, we will work with float plane terminal operators and pilots to add their safety and procedural messaging in the Safe Boating Guide.

Learn more at portvancouver.com/marine-operations

Promote emergency preparedness

Although the port authority is not a first responder, following an emergency or a business interruption, our objective is to re-establish safe and efficient operations as quickly as possible. To do this, we:

- Follow the Incident Command System and the [British Columbia Emergency Management System](#), which provide a framework for emergency response and recovery activities
- Maintain procedures and have equipment and personnel in place to address a variety of emergencies on land and water
- Play a situational awareness role and, where appropriate, a coordinating role within our jurisdiction for emergency response, which requires collaboration with multiple first responders, communities and industry stakeholders
- Work with our tenants to develop and implement emergency response procedures
- Maintain close ties to [Public Safety Canada](#), Transport Canada and other federal departments and agencies to share information and resources to respond and recover in a collaborative manner
- Design and conduct an annual security exercise that tests elements of coordination, resource availability, response protocols and communication procedures
- Participate in exercises led by external agencies, organizations and terminals

In 2018, we:

- Conducted Exercise Full Throttle, a two-day discussion-based tabletop security exercise with limited marine response simulation; this exercise, which focused on a mock security incident affecting cruise, Canada Place and port operations, provided an opportunity for participants to collaboratively respond to various security and processes, drawing from their experience and knowledge, and from the current plans and procedures used by their agencies
- Participated in the [Integrated Partnership for Regional Emergency Management](#) (IPREM) Phase 2 Engagement Sessions #1 and #2, which provided an opportunity for local emergency planning leaders to contribute to the development of a regional resilience recovery framework that will provide strategic and overarching direction and serve as a guide to create a more disaster-resilient region
- Formed the Roberts Bank Emergency Management Working Group, which provides a twice-yearly venue for committee members to maintain an open dialogue on operational response and procedures, to achieve good communications among stakeholder partners while providing cross-training opportunities, and to develop a collaborative approach to the coordination of emergency response
- Presented, with the Canadian Coast Guard, at multiple events for the Greater Vancouver Integrated Response Plan (regional oil spill plan)



2018 Exercise Full Throttle

Safety and security incidents

In 2018, we assisted with a number of safety and security incidents that occurred within our jurisdiction. Several of these incidents had the potential to impact the port's ability to facilitate Canada's trade objectives and required the activation of an Emergency Operations Centre, which included the port authority, or coordination between multiple jurisdictions and stakeholders. These incidents are outlined below:

Incident	Environmental Impact	Lead agency coordinating response	Port authority role	Port authority emergency response tactics
Protest on Ironworkers Memorial Bridge July 3, 2018 – Protestors suspended themselves from the bridge	n/a	Law enforcement agencies	Situational awareness gathering; liaising with field and boat crews; supporting law enforcement; point of contact between law enforcement and the marine industry	Restricted marine movement in the area
Barge fire #1 August 10, 2018 – A large fire on a barge in the Fraser River near the east side of the Pattullo Bridge	Significant air pollution; no water pollution detected	Vancouver Fraser Port Authority	Situational awareness gathering; liaising with field and boat crews; activating port authority Emergency Operations Centre; activating Vancouver Fire and Rescue Services (VFRS) fire boat	Dispatched VFRS fire boat; port authority patrol boat on scene; provided support to VFRS
Capsized tugboat August 13, 2018 – A tugboat carrying approximately 22,000 litres of diesel capsized near Deering Island in the north arm of the Fraser River	No pollution	Canadian Coast Guard	Situational awareness gathering	n/a
Barge fire #2 October 9, 2018 – A fire on a barge near the east side of the Pattullo Bridge in the Fraser River	Moderate air pollution; no water pollution detected	Vancouver Fraser Port Authority	Situational awareness gathering; liaising with field and boat crews; activating VFRS fire boat	Dispatched VFRS fire boat; port authority patrol boat on scene; provided support to VFRS
Tyee Princess fire October 30, 2018 – The <i>Tyee Princess</i> caught fire while under demolition near the east side of the Pattullo Bridge in the Fraser River	Moderate air pollution; no water pollution detected	Vancouver Fraser Port Authority	Situational awareness gathering; liaising with field and boat crews; activating VFRS fire boat	Dispatched VFRS fire boat, which applied foam smothering to control the fire; port authority patrol boat on scene
Drifting barges December 26, 2018 – Two barges drifted from North Vancouver into the Coal Harbour Marina, causing serious damage to boats and structures	No debris in the water detected	Vancouver Police Department	Situational awareness gathering; liaise with police and operator	Patrol boat on scene to report to Emergency Operations Centre

GRI index

This report has been prepared in accordance with the Global Reporting Initiative (GRI) Standards: Core option. The GRI Index below links to report content relevant to each GRI indicator and each port authority-specific indicator.

Indicator number	Indicator name	Link/direct response	Omissions*
General disclosures			
Organizational profile			
102-1	Name of the organization	About the Vancouver Fraser Port Authority	
102-2	Activities, brands, products and services	About the Vancouver Fraser Port Authority About the Port of Vancouver	
102-3	Location of headquarters	Contact us	
102-4	Location of operations	About the Port of Vancouver	
102-5	Ownership and legal form	About the Vancouver Fraser Port Authority	
102-6	Markets served	About the Port of Vancouver	
102-7	Scale of the organization	Port authority data – Employee information About the Port of Vancouver Vancouver Fraser Port Authority's Financial Report 2018 - pg.3	
102-8	Information on employees and other workers	Port authority data – Employee information	
102-9	Supply chain	About the Port of Vancouver Collaboration	
102-10	Significant changes to the organization and its supply chain	There were no significant changes to the port authority or in its supply chain in 2018.	
102-11	Precautionary principle or approach	The precautionary principle is incorporated into our Permit and Environmental Review process . We will not allow a proposed project to proceed if it is likely to result in significant adverse environmental effects.	
102-12	External initiatives	Port authority data – External initiatives	
102-13	Membership of associations	Port authority data – Membership of associations	
Strategy			
102-14	Statement from senior decision maker	Message from the President and CEO	
102-15	Key impacts, risks and opportunities	Strategic planning Anticipate and deliver infrastructure Stewardship of air, land and water quality Good neighbour	
Ethics and integrity			
102-16	Values, principles, standards, and norms of behaviour	About the Vancouver Fraser Port Authority Introduction Port authority data – External initiatives Port authority data – Membership of associations	
Governance			
102-18	Governance structure	Governance	
Stakeholder engagement			
102-40	List of stakeholder groups	Collaboration Report details	
102-41	Collective bargaining agreements	Port authority data – Employee information	
102-42	Identifying and selecting stakeholders	Collaboration Report details	
102-43	Approach to stakeholder engagement	Collaboration Report details	
102-44	Key topics and concerns raised	About this report	
Reporting practice			
102-45	Entities included in the consolidated financial statements	Port authority data – Economic value generated and distributed Vancouver Fraser Port Authority's Financial Report 2018 - pg.11	
102-46	Defining report content and topic boundaries	Report details	
102-47	List of material topics	About this report	
102-48	Restatements of information	Report details	
102-49	Changes in reporting	Report details	
102-50	Reporting period	Report details	
102-51	Date of most recent report	Report details	
102-52	Reporting cycle	Report details	
102-53	Contact point for questions regarding the report	Report details	
102-54	Claims of reporting in accordance with the GRI Standards	Report details	
102-55	GRI content index	GRI index	
102-56	External assurance	Assurance	
Topic-specific standards			
Economic prosperity through trade			
<i>Competitive business</i>			
DMA	Management approach disclosures	Competitive business Improve port efficiency and reliability Respond to port-user needs	
Port authority-specific ✓	Port efficiency and reliability Container ships arriving on time: Measures the percentage of container ships arriving within eight hours of their scheduled berth window. Container terminal dwell time: Measures the percentage of import containers departing the terminal via rail within three days of being unloaded from a vessel. This metric is based on a sample of approximately 15,000 container transactions per month. Container truck turn time: Measures the percentage of container truck trips (time spent within a designated terminal area to pick up or drop off a container) completed within 60 minutes or less.	Improve port efficiency and reliability	
<i>Effective workforce</i>			
Port authority-specific	Training spend per employee	Port authority data – Employee information	
Occupational health and safety			
DMA	Management approach disclosures	Effective workforce Maintain a skilled and productive workforce, providing an attractive work environment	
403-9 ✓	Work-related injuries	Port authority data – Employee safety incidents	We report number and rate of work-related injuries for: <ul style="list-style-type: none">Port authority employeesPort authority contractors and subcontractors on asset management projects and port authority-led infrastructure projects We do not report injury number or rates for contractors working in the port authority's office.
<i>Strategic investment and asset management</i>			
Indirect economic impact			
DMA	Management approach disclosures	Strategic investment and asset management Anticipate and deliver infrastructure	
203-1	Infrastructure investments and services supported	Anticipate and deliver infrastructure	
Port authority-specific ✓	Habitat bank balance: The number of habitat credits deposited less the number of habitat credits withdrawn from the habitat bank. Habitat credits have been approved by DFO and represent the area of habitat enhanced (m2)	Anticipate and deliver infrastructure	
Healthy environment			
<i>Healthy ecosystems</i>			
Biodiversity			
DMA	Management approach disclosures	Healthy ecosystems Stewardship of air, land and water quality	
304-2 ✓	Significant impacts of activities, products and services on biodiversity	Stewardship of air, land and water quality Healthy ecosystems	Project and Environmental Review permit conditions list potential impacts on species or habitat, as well as duration and reversibility of impacts.
<i>Climate action</i>			
Energy			
DMA	Management approach disclosures	Climate action Minimize air emissions Port authority data – Energy Use	
302-1	Energy consumption within the organization	Port authority data – Energy Use	
Emissions			
DMA	Management approach disclosures	Climate action Minimize air emissions Port authority data – Greenhouse gas emissions	
305-1 ✓	Direct (Scope 1) GHG emissions	Port authority data – Greenhouse gas emissions	
305-2 ✓	Energy indirect (Scope 2) GHG emissions	Port authority data – Greenhouse gas emissions	
305-3 ✓	Other indirect (Scope 3) GHG emissions	Port authority data – Greenhouse gas emissions	
Port authority-specific	Port-related air emissions (GHGs, NO _x , SO _x , PM _{2.5})	Minimize air emissions	
Port authority-specific	Waste	Port authority data – Waste	
Port authority-specific	Employee commuting	Port authority data – Sustainable commuting	
Port authority-specific ✓	Carbon neutrality: Carbon neutrality is achieved when the number of carbon offsets purchased exceeds the total tonnes of CO2e included in the port authority's corporate GHG emissions inventory for the period.	Port authority data – Greenhouse gas emissions	
<i>Responsible practices</i>			
DMA	Management approach disclosures	Responsible practices Improve sustainability performance of infrastructure	
Port authority-specific	Implementation rate of applicable green infrastructure guidelines across all port authority-led projects with values greater than \$500,000	Improve sustainability performance of infrastructure	
Thriving communities			
<i>Good neighbour</i>			
Local communities			
DMA	Management approach disclosures	Anticipate and deliver infrastructure Healthy ecosystems Good neighbour Proactive community outreach Respond to community interests and issues	
413-1	Operations with local community engagement, impact assessments, and development programs	Anticipate and deliver infrastructure Good neighbour Proactive community outreach Respond to community interests and issues	
413-2 ✓	Operations with significant actual and potential negative impacts on local communities	Anticipate and deliver infrastructure Good neighbour Respond to community interests and issues	
Port authority-specific	Public opinion of the port as a good neighbour	Respond to community interests and issues	
<i>Community connections</i>			
Economic performance			
DMA	Management approach disclosures	Community connections Deliver regional and national benefits	
201-1 ✓	Direct economic value generated and distributed	Deliver regional and national benefits Port authority data – Economic value generated and distributed	
<i>Aboriginal relationships</i>			
Rights of Indigenous peoples			
DMA	Management approach disclosures	Aboriginal relationships Respect traditional territories and knowledge	
411-1	Incidents of violations involving rights of Indigenous peoples		We have not included an indicator for Aboriginal relationships. We are currently in the process of developing an indicator as part of our initiative to create a suite of sustainability indicators to measure progress towards our vision.
<i>Safety and security</i>			
DMA	Management approach disclosures	Promote emergency preparedness	
Port authority-specific	Number of safety and security incidents	Promote emergency preparedness	

✓ Independently assured indicators.

Port authority-specific: These indicators are specific to the Vancouver Fraser Port Authority.

DMA: Disclosure on management approach

*The column lists elements of required GRI disclosures that we are unable to report and the reason this information is not reported.



Independent Limited Assurance Report

To the Management of Vancouver Fraser Port Authority:

We have been engaged by the management of Vancouver Fraser Port Authority (the 'Port of Vancouver') to undertake a limited assurance engagement on selected information disclosed in the Port of Vancouver Sustainability Report 2018 ('the Report'), for the year ended December 31, 2018, as described below.

Subject matter and applicable criteria

The scope of our limited assurance engagement, as agreed with management, comprises the following performance information (the 'Subject Matter Information'):

Subject Matter	Selected Indicators	Applicable Criteria	Assurance Standard
Subject Matter 1	<ul style="list-style-type: none"> Direct (Scope 1) greenhouse gas ('GHG') emissions Energy indirect (Scope 2) GHG emissions Other indirect (Scope 3) GHG emissions 	Global Reporting Initiative's Sustainability Reporting Standards ("GRI Standards"), specifically: <ul style="list-style-type: none"> GRI 305-1 GRI 305-2 GRI 305-3 	ISO 14064-3
Subject Matter 2	<ul style="list-style-type: none"> Direct economic value generated and distributed Significant impacts of activities, products, and services on biodiversity Work-related injuries Operations with significant actual and potential negative impacts on local communities 	GRI Standards, specifically: <ul style="list-style-type: none"> GRI 201-1 GRI 304-2 GRI 403-9 GRI 413-2 	ISAE 3000
Subject Matter 3	<ul style="list-style-type: none"> Gateway efficiency Habitat bank balance Carbon neutrality 	The Port of Vancouver's own internal guidelines and definitions for sustainability reporting	ISAE 3000
Subject Matter 4	<ul style="list-style-type: none"> The Port of Vancouver's assertion that the Report is in accordance with the GRI Standards: Core option. 	GRI Standards	ISAE 3000

The Selected Indicators, contained within the GRI content index and denoted by the symbol √, have been determined by management on the basis of the Port of Vancouver's assessment of the material issues contributing to sustainability performance and most relevant to its stakeholders.

There are no mandatory requirements for the preparation, publication or review of sustainability performance information. As such, the Port of Vancouver applies the GRI Standards and its own internal reporting guidelines and definitions for sustainability reporting which can be found in the [GRI content index](#) of the Report website.

Port of Vancouver's responsibilities

Management is responsible for the preparation and presentation of the Subject Matter Information in accordance with the GRI Standards and the Port of Vancouver's internal reporting guidelines and definitions for sustainability reporting, current as at the date of our report. Management is also responsible for determining the Port of Vancouver's objectives in respect of sustainability performance and reporting, including the identification of stakeholders and material issues, and for establishing and maintaining appropriate performance management and internal control systems from which the reported performance information is derived.

Our responsibility and professional requirements

Our responsibility in relation to the Subject Matter Information is to perform a limited assurance engagement and to express a conclusion based on the work performed. We conducted our engagement in accordance with International Standard on Assurance Engagements ('ISAE') 3000 (Revised) Assurance Engagements other than Audits or Reviews of Historical Financial Information issued by the International Auditing and Assurance Standards Board and ISO 14064-Part 3 Specification with guidance for the validation and verification of greenhouse gas assertions, issued by the International Organization for Standardization. Both ISAE 3000 and ISO 14064-3 require that we plan and perform this engagement to obtain the stated level of assurance, in accordance with the applicable criteria.

Our conclusion does not cover any periods prior to the year ended December 31, 2018.

Assurance approach

We planned and performed our work to obtain all of the evidence, information and explanations we considered necessary in order to form our conclusion as set out below. A limited assurance engagement consists of making inquiries, primarily of persons responsible for the preparation of the Subject Matter Information, and applying analytical and other evidence gathering procedures, as appropriate. Our procedures included:

- Inquiries of management to gain an understanding of the Port of Vancouver's processes for determining the material issues for its key stakeholder groups;
- Inquiries with relevant staff at the corporate level as well as third-party service providers to understand the data collection and reporting processes for the Selected Indicators,
- Where relevant, performing walkthroughs to test the design of internal controls relating to data collection and reporting of the Selected Indicators;
- Comparing the reported data for the Selected Indicators to underlying data sources on a sample basis;
- Inquiries regarding key assumptions and the re-performance of calculations on a sample basis;
- Reviewing the Report, the GRI Index and reported indicators to assess the Port of Vancouver's assertion that the report has been prepared in accordance with the GRI Standards – Core option; and,
- Reviewing the presentation of the Subject Matter Information in the Report to determine whether the information presented is consistent with our overall knowledge of, and experience with, the sustainability performance of the Port of Vancouver.

The extent of evidence gathering procedures performed in a limited assurance engagement is less than that for a reasonable assurance engagement, and therefore a lower level of assurance is obtained.

Inherent limitations

Non-financial information, such as that included in the Report, is subject to more inherent limitations than financial information, given the characteristics of significant elements of the subject matter and the availability and relative precision of methods used for determining both qualitative and quantitative information. The absence of a significant body of established practice on which to draw allows for the selection of different, but acceptable, measurement techniques which can result in materially different measurements and can impact comparability

The nature and methods used to determine such information, as described in management's internally developed criteria, may change over time, and the scope of our work did not include the appropriateness of such criteria.

Independence, quality control and competence

We have complied with the relevant rules of professional conduct/code of ethics applicable to the practice of public accounting and related to assurance engagements, issued by various professional accounting bodies, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

The firm applies *International Standard on Quality Control 1* and accordingly maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

The engagement was conducted with a multidisciplinary team, which included professionals with suitable experience in both assurance and in the applicable subject matter, including environmental performance and GHG accounting.

Our conclusion

Based on the procedures performed, nothing has come to our attention that causes us to believe that for the year ended December 31, 2018, the Subject Matter Information, as described above and disclosed in the Sustainability Report, has not been prepared and presented, in all material respects, in accordance with the applicable criteria, current as at the date of our report.

Emphasis of matter

Without qualifying our opinion above, we draw your attention to the following:

As described in the *Port authority data* section of the Report, although Canada Place Corporation (CPC) is included within the Port of Vancouver's organizational boundary, the scope of the Port of Vancouver's verified and reported emissions excludes GHG emissions associated solely with CPC on the basis that CPC manage their emissions separately. CPC's own Scope 1 GHG emissions are estimated to be 7,401 tonnes CO₂e, based on consumption of natural gas in their boilers, which supply heat to all CPC tenants.

Chartered Professional Accountants

June 4, 2019

Vancouver, Canada