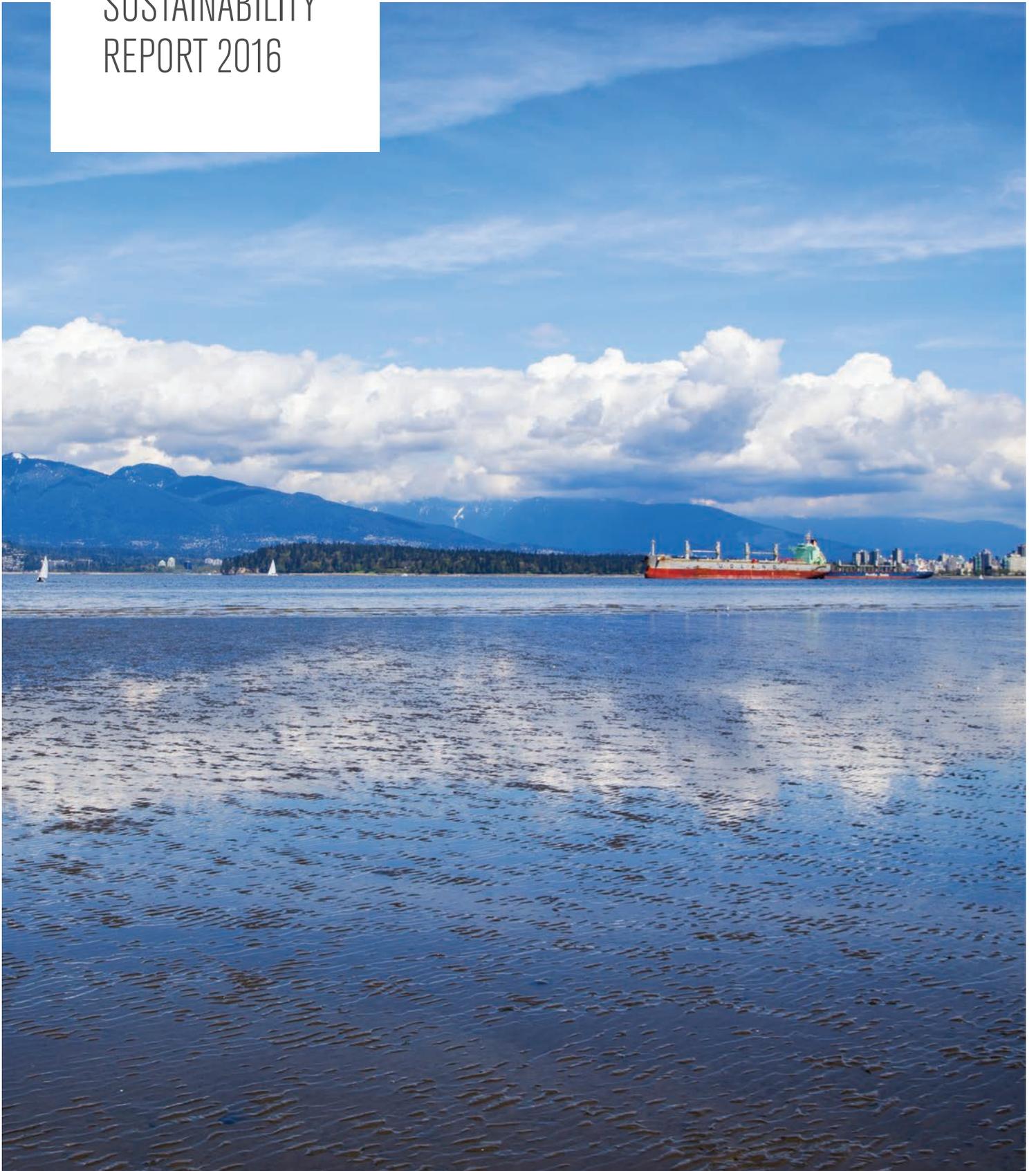
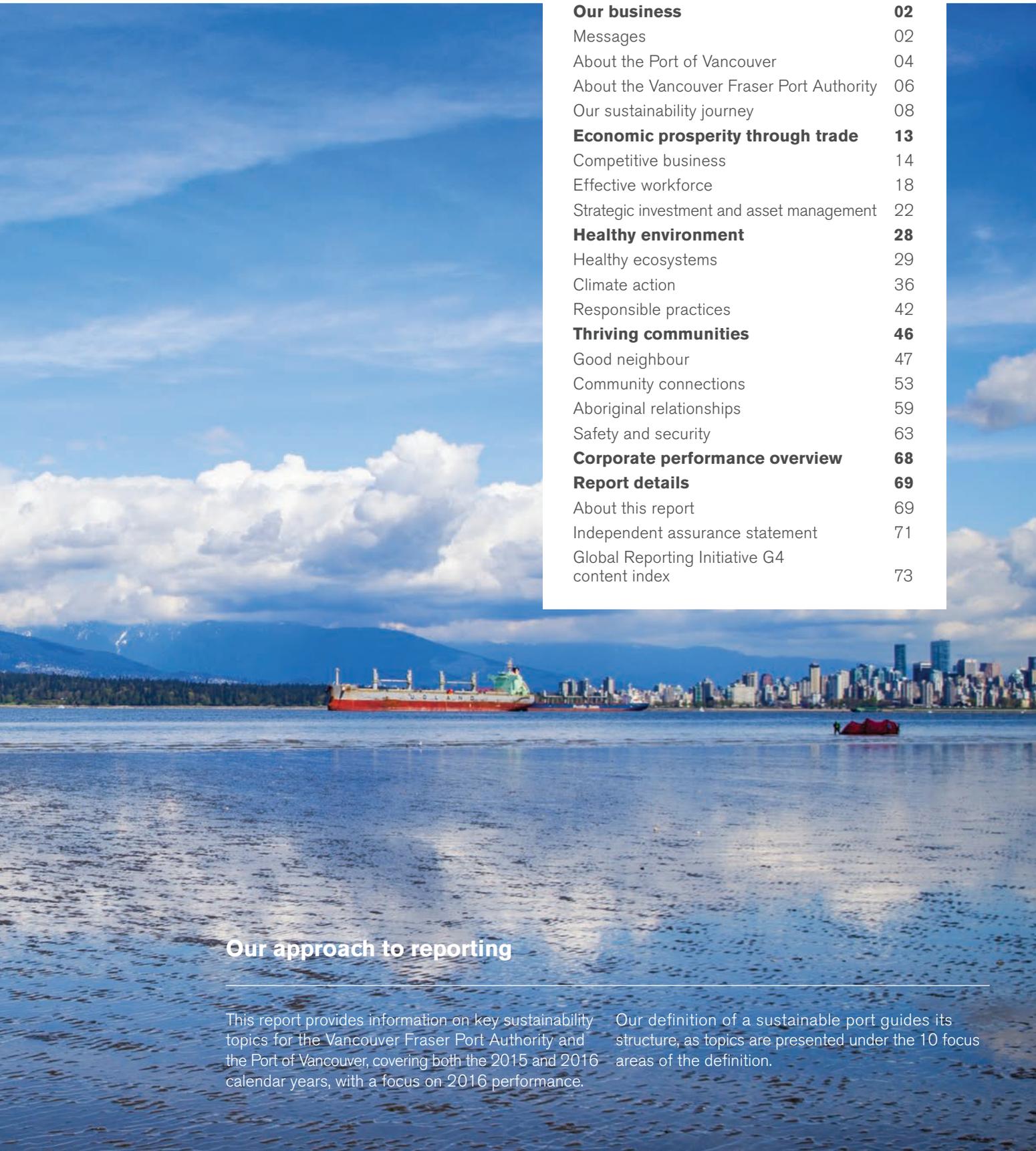


SUSTAINABILITY
REPORT 2016



Our vision, to be the world's most sustainable port, guides us as we chart a course to a more sustainable future for the Port of Vancouver.





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Our approach to reporting

This report provides information on key sustainability topics for the Vancouver Fraser Port Authority and the Port of Vancouver, covering both the 2015 and 2016 calendar years, with a focus on 2016 performance.

Our definition of a sustainable port guides its structure, as topics are presented under the 10 focus areas of the definition.



Message from the Chair, Board of Directors

A strong mandate and vision guides our journey

As the port authority overseeing Canada's largest port, we have a challenging mandate that requires us to balance multiple priorities and interests. We manage the Port of Vancouver to serve the many Canadian businesses and consumers who rely on trade, while ensuring a high level of environmental protection and careful consideration for local communities.

In 2010, we embarked on a journey that would help shape our future. We launched a long-range scenario planning process, called Port 2050, and invited over 100 different participants representing many different perspectives, all with a stake in the future of the port. Port 2050 provided us with important insights on key drivers of change and plausible scenarios of what the port and the region could look like in the future. Next, we invited interested parties to help us define what it means to be a sustainable port, which led us to our new vision: to be the world's most sustainable port.

With our new vision guiding the way, we are now focusing our efforts on integrating sustainability across governance, culture, performance and reporting. In 2016, we refined our approach to integrating sustainability into governance and board decisions, and partnered with Simon Fraser University to help us assess our organizational

culture for opportunities to further embed sustainability considerations. We also conducted a global scan of leading port sustainability practices to help us benchmark our performance.

Into 2017 and beyond, we will focus on how we measure progress toward our vision. We will continue integrating sustainability into all aspects of our business and providing leadership on key sustainability issues that affect the future of the port. I believe that bringing together industry, government, Aboriginal peoples and neighbouring communities is essential to create a more sustainable future for the Port of Vancouver.

I'd like to thank the port community and the long list of participants that have joined us in our sustainability journey so far. Your dedication to the future of this port and region is integral to our collective success. I'd also like to thank board members for their continued leadership, and congratulate the executive team, and all port authority staff, on progress made towards becoming the world's most sustainable port.

Craig Neeser
Chair, Board of Directors



Message from the President, and Chief Executive Officer

Collaborating for a sustainable future

Our bold new vision, to be the world's most sustainable port, is guiding our journey to a better future for the Port of Vancouver. We are fortunate to live and work in a naturally beautiful region, surrounded by a healthy environment and thriving communities. As trade continues to grow, so too does the importance of our work at Canada's largest port to enable this trade, delivering economic prosperity while protecting so many of the attributes that make our region such an attractive place to live, work and play.

As we proceed on our journey, we are overcoming challenges. For example, trade provides goods and prosperity for Canadian consumers and businesses, but this prosperity is potentially at risk due to the shortage of industrial land in our region. We believe this shortage could impede the entire port supply chain's ability to meet Canadian trade demand, resulting in constrained growth and loss of good jobs. We're working to raise awareness of this important topic and to advance the protection of trade-enabling industrial land.

To meet our vision, we are advancing initiatives that promote economic prosperity through trade, a healthy environment and thriving communities, for the benefit of future generations of Canadians. For example, our efforts to lead the Gateway Transportation Collaboration Forum are bringing together government, industry and port users to define funding priorities for infrastructure projects that will ease congestion and increase the efficiency of goods movement. We are laying out a roadmap for projects that will improve port capacity and efficiency as well as reduce impacts on local communities for years to

come. We have also moved forward proposals for two major infrastructure projects to increase the container capacity of Canada's West Coast, the Roberts Bank Terminal 2 Project and the Centerm Expansion Project. Through these collaborative efforts, we are doing our part to meet future trade demands.

In 2015, we helped deploy an underwater listening station as part of our Enhancing Cetacean Habitat and Observation (ECHO) Program, so we can better understand the impact of shipping on whales. We are now including consideration for underwater noise in our EcoAction Program for ships, as a way for customers to obtain a discount on harbour dues. These examples demonstrate how our work is fundamentally changing the future of the port in a positive way.

Collaboration is essential to moving toward a sustainable port, and we will continue to play a leadership role in bringing interested groups together. I'd like to thank the entire port community, government, and all groups for their ongoing contributions to our sustainability journey. I also want to thank our board of directors for their continual support and guidance, as well as warmly thanking and congratulating the dedicated employees at the port authority for their ongoing perseverance and passion that is helping us move forward, towards being the world's most sustainable port.

Robin Silvester
President and Chief Executive Officer

About the Port of Vancouver

The Port of Vancouver is Canada's largest port, and the third largest in North America in terms of annual tonnes of cargo. Positioned on the southwest coast of British Columbia in Canada, the port is home to 27 major marine cargo terminals and three Class 1 railroads, offering a full range of facilities and services to the international shipping community. The port consists of 16,000 hectares of water, more than 1,000 hectares of land and approximately 350 kilometres of shoreline. It borders 16 municipalities

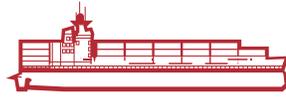
and intersects the asserted and established territories and treaty lands of several Coast Salish First Nations.

The port operates across five business sectors: automobiles, breakbulk, bulk, container and cruise. In 2016, 136 million tonnes of cargo valued at \$202 billion was traded with about 170 world economies. About 93 per cent of the cargo that moves through the port is for Canadian import and export markets, with the remainder for the United States.

Vessel calls

3,105

in 2016



Export and import cargo

\$550 million

each day



Moving goods at the Port of Vancouver

Many different enterprises operate at the port. Goods arrive and depart by sea on vessels owned and operated by global shipping companies and facilitated 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.

[Learn more at portvancouver.com/cargo-terminals](http://portvancouver.com/cargo-terminals)

826,820

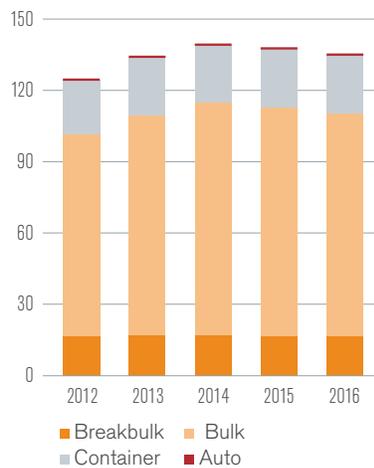
cruise passengers in 2016

Port of Vancouver-related activity generates

\$11.9 billion

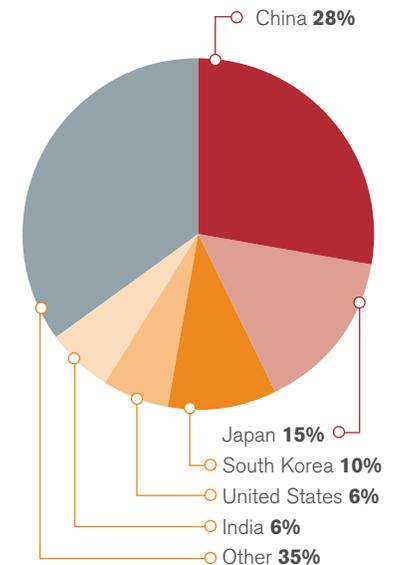
in GDP across Canada per year

Cargo volumes by sector (million metric tonnes)



[Learn more port facts and statistics at portvancouver.com/factsandstats](http://portvancouver.com/factsandstats)

Principal trading economies (tonnage of foreign cargo)



136 million

tonnes of cargo valued at \$202 billion was traded with nearly 170 world economies

More than 2.9 million

containers (twenty-foot equivalent units) moved through the port in 2016

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

The Port of Vancouver



Port of Vancouver brand

In April 2016, we changed the name of our port from Port Metro Vancouver to the Port of Vancouver, to strengthen the port's international name recognition. At the same time, we began to consistently refer to the port authority, also previously known as Port Metro Vancouver, by its legal name: Vancouver Fraser Port Authority, in order to provide clarity between the activities of the port authority and those of the greater port community.



The 2016 Vancouver Fraser Port Authority board of directors and executive leadership team.

About the Vancouver Fraser Port Authority

Our mission is to enable Canada's trade objectives, ensuring safety, environmental protection and consideration for local communities.

Our vision is to be the world's most sustainable port.

The Vancouver Fraser Port Authority is responsible for managing federal lands and waters at the Port of Vancouver on behalf of Canadians and in support of national trade objectives. We are a non-shareholder corporation established by the Government of Canada in January 2008, pursuant to the *Canada Marine Act*, and 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, much of which is reinvested in port-related infrastructure and services. The port authority does not receive tax dollars.

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, ensure marine transportation services are organized 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, and 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. We also advance environmental initiatives, and conduct project and environmental reviews of works and projects proposed for port lands and waters.

 [Learn more at portvancouver.com/about-us](http://portvancouver.com/about-us)

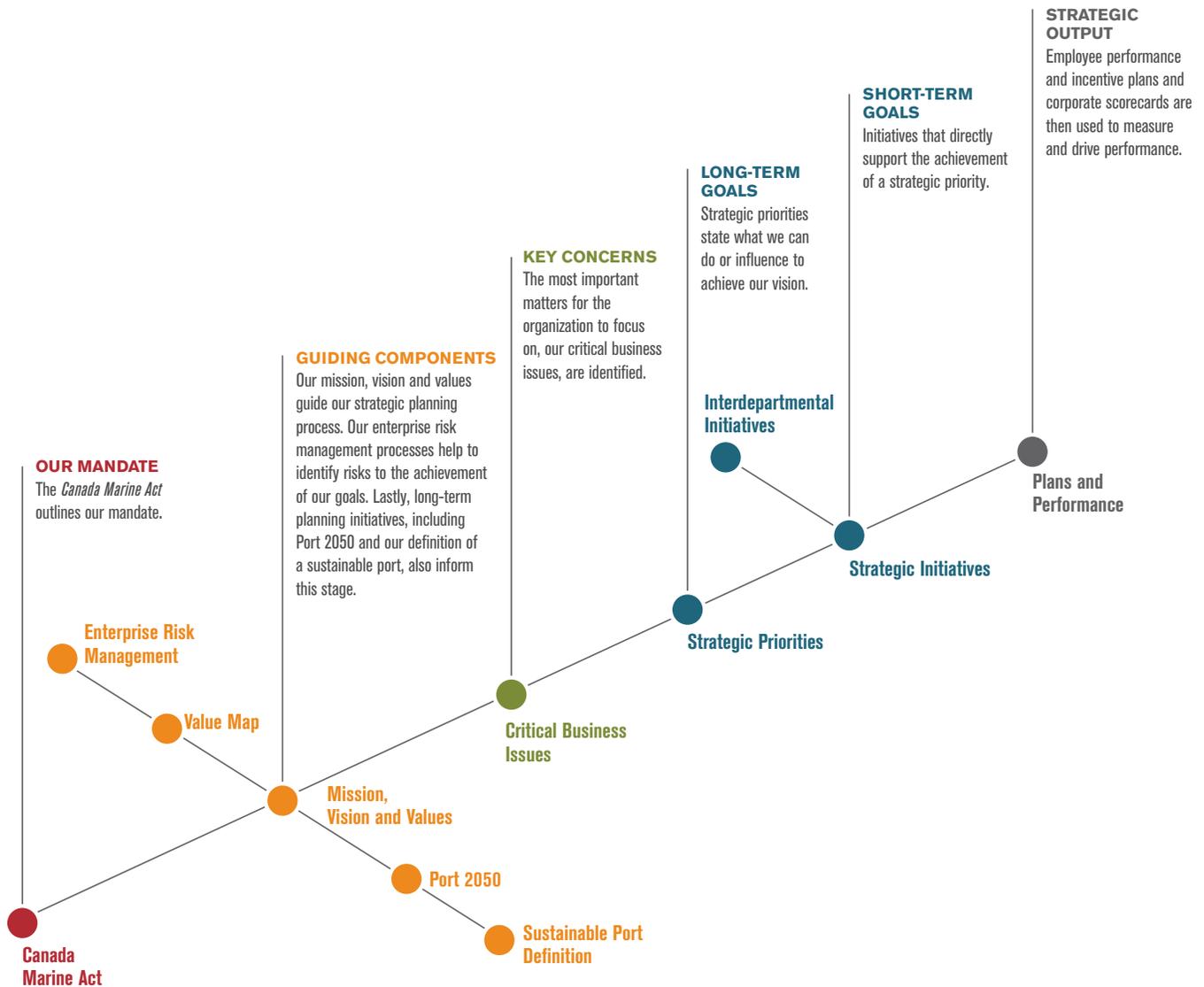
Governance

The port authority's board of directors provides governance, oversight and approval of strategic direction. The *Canada Marine Act* sets out the appointment and responsibilities of the board, which consists of 11 members, including four members appointed by the federal, provincial and local governments, and seven members recommended by the minister of transport in consultation with port users and appointed by the federal governor-in-council. Prior to 2017, a community and corporate social responsibility committee oversaw activities related to sustainability. Beginning in 2017, this oversight will be integrated into the responsibilities of all committees.

 [Learn more at portvancouver.com/governance](http://portvancouver.com/governance)

Strategic planning process

Our strategic planning process helps identify critical business issues and priorities where we need to focus our attention, efforts and resources. Sustainability is being integrated into this process to help us move toward our vision of being the world's most sustainable port.



Relevant strategic priorities and risks are noted in each section of this report. The Vancouver Fraser Port Authority's financial report provides more in-depth information on our strategic planning

process, risk management approach, and governance, as well as a management discussion and analysis and audited financial statements.

Learn more about our strategic planning process in our Financial Report 2016 at portvancouver.com/reporting

Our sustainability journey

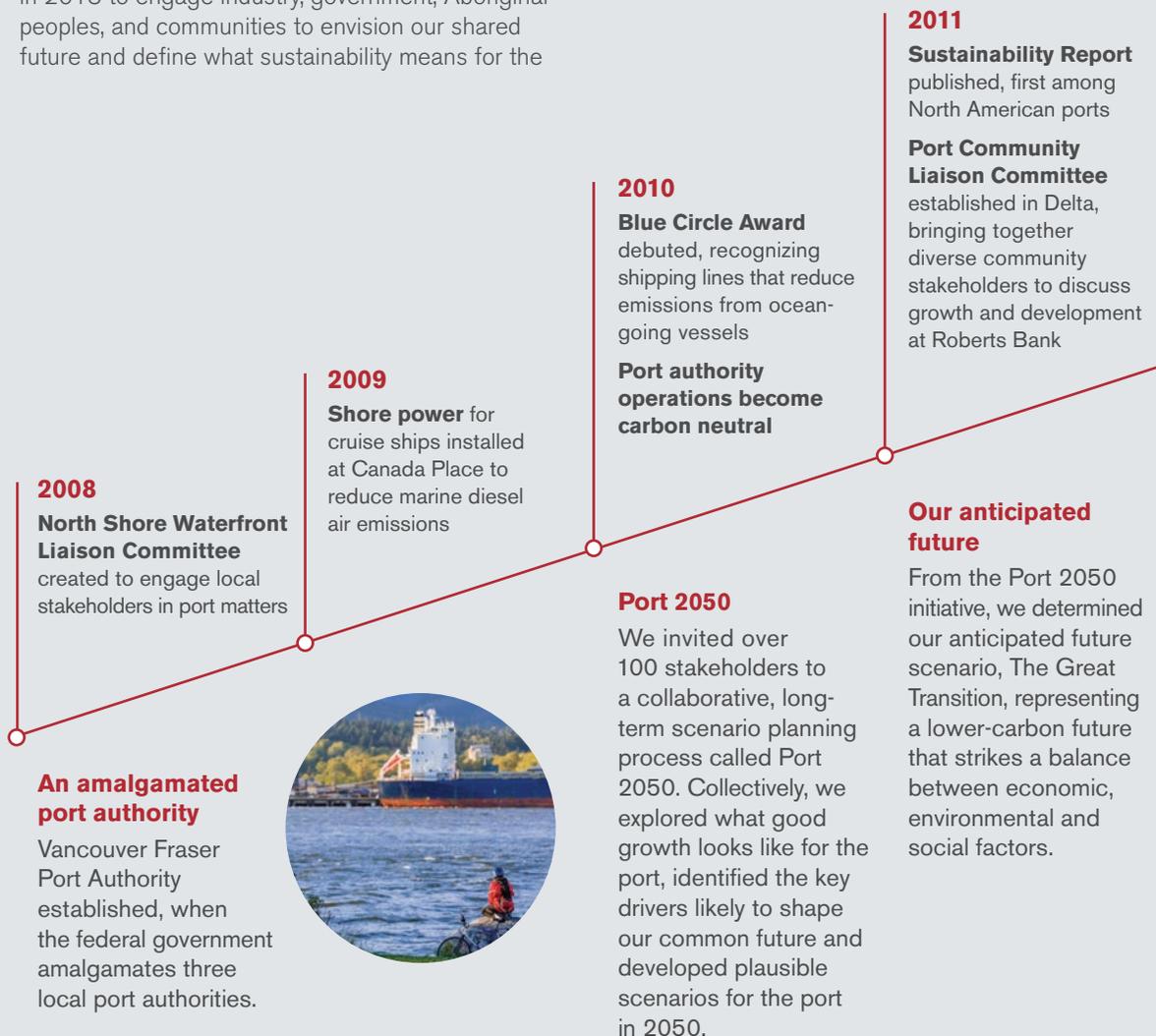
The port authority is committed to the long-term future of the port and to moving towards a more sustainable future.

In 2010, we embarked on a scenario planning process with over 100 individuals and organizations that have a stake in the future of the port. The Port 2050 process identified four plausible scenarios for the future, including one we believe is worth aspiring to: The Great Transition. This scenario represents a shift to a lower-carbon economy with a focus on sustainable trade that would allow for the ability to accommodate Canada's trade needs and, at the same time, maintain a healthy environment and enable thriving communities.

In order to contribute to this desired future, we began in 2013 to engage industry, government, Aboriginal peoples, and communities to envision our shared future and define what sustainability means for the

Port of Vancouver. The resulting definition now guides how we operate, and we continue to integrate and embed sustainability throughout our business, our planning processes and the way in which we conduct our operations.

In 2016, we announced a new vision: to be the world's most sustainable port. Our vision is aspirational, ambitious and bold. We believe it is also necessary to ensure continued prosperity and livability for our region and country.



2012

Container Truck Efficiency Pilot Program launched, using GPS technology to improve the efficiency and reliability of the container truck sector

Fraser River Improvement Initiative launched, cleaning up derelict vessels and structures to improve navigation, public safety and wildlife habitat



2013

Energy Action initiative launched, helping port tenants to conserve energy

Sustainability conversations

We began a two-year conversation with port stakeholders to define what sustainability means in the context of Canada's largest port.



2014

Enhancing Cetacean Habitat and Observation (ECHO) Program

launched to better understand and manage the impacts of shipping activities on at-risk whales

Delta community office opened, providing a space for community members to speak directly with port authority staff

New land use plan published to guide port development

2015

Non-Road Diesel Emissions Program

launched to reduce diesel particulate matter emissions from cargo-handling equipment

2016

Sustainable port definition

With the help of port stakeholders we defined what it means to be a sustainable port, identifying 10 focus areas and 22 success statements across economic, environmental and social factors.

 Learn more about our journey at portvancouver.com/sustainability

Our new vision

We adopted our new mission and vision to reflect our definition of a sustainable port.

Sustainable port definition

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 definition of sustainability includes 10 areas of focus and 22 statements that define success, which together describe the attributes of a sustainable port, and also 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 values 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

Embedding sustainability

We are working to integrate sustainability throughout our business processes and culture. We know we have a lot of work ahead. Providing leadership and working together with industry, government, Aboriginal peoples, and communities to balance priorities will be essential to becoming the world's most sustainable port.

In 2016, we began to develop sustainability priorities, further engage employees, and evolve our strategy and planning processes to continue to make better long-term decisions for a sustainable future.

Our progress

	Commitments made in 2015	Actions taken in 2016	Focus for 2017
Governance	Improve integration of sustainability considerations throughout all facets of board decisions.	Refined our board governance model to integrate responsibility for sustainability across all committees.	Implement changes to the governance model, monitor effectiveness and adjust as required.
Culture	Assess our organizational culture to identify ways to further embed sustainability practices and engage employees.	Completed a baseline assessment of the extent to which sustainability is embedded in our organization's culture and operations, and developed an action plan identifying priority next steps.	Conduct a review of our corporate culture and values to identify improvements and engage employees on the new vision.
Leadership	Benchmark best practices of global ports and other industries to better understand what it means to be a sustainability leader.	Conducted a scan to identify environmental and social sustainability trends and best practices among global ports.	Use the scan findings to assist in finding leadership opportunities for the port authority in developing future sustainability initiatives.
Performance	Develop sustainability priorities and goals, and evolve our strategy and planning process.	Further integrated sustainability into our business planning and established an initiative to develop sustainability performance metrics.	Develop sustainability performance metrics to help measure progress towards our vision.
Reporting	Re-evaluate our sustainability reporting practices to improve key performance indicators and create closer alignment with our strategic business planning processes.	Improved alignment of our financial and sustainability reporting processes, and developed a medium-term reporting plan.	Further align our sustainability and financial reporting processes. Incorporate new sustainability metrics into our reporting plan.

Our approach to collaboration

Our vision – to be the world's most sustainable port – requires that we engage and collaborate 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 developing our understanding of their material interests and responding to these interests. We use the International Association of Public Participation core values and principles to guide our

approach to engagement and involvement of interested groups in decision-making where appropriate. Mutual understanding of interests is important to constructively working together to resolve shared challenges, and to developing a sustainable port.

Groups that we regularly engage and collaborate with include:

Terminal operators	We lease land and water assets to 27 marine terminals offering berths for deep-sea, ocean-going vessels, which handle cargo across five business sectors. We work with terminal operators on a daily basis to develop trade opportunities, promote continuous environmental improvement and minimize impacts on communities.
Tenants	We lease land and water assets to companies and organizations with a variety of commercial interests ranging from construction and fishing to recreation marinas and container transload facilities. We work with tenants on a daily basis to manage leases and resolve issues as they arise.
Marine carriers	We work with marine carriers operating across five cargo sectors to optimize vessel arrivals and to ensure the port is safe, clean and reliably efficient.
Major shippers	We work with major importers and exporters who move goods through the port to understand their business and supply chain needs, ensure their cargo is handled reliably and efficiently, and plan future development.
Service providers	To enable fluid cargo movement through the port, we collaborate with rail and marine service providers, trucking companies and labour, promoting efficient and reliable service and helping address supply chain challenges as they arise.
Labour	We engage with unions and associations representing the thousands of workers that keep the port and supply chain moving.
Industry associations	We regularly work with industry associations that represent a variety of interests, including marine carriers, ports, and terminal operators, to obtain input on, and advance matters of, mutual interest.
Aboriginal peoples	We have a team dedicated to regularly engaging with Aboriginal peoples to help us 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 their support and participation.
Federal and provincial governments	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 port efficiency, capacity and sustainability, and to ensure we are facilitating Canada's trade priorities.
Local and regional governments	We have established a team dedicated to regularly working with local and regional governments to facilitate open communication, share ideas, resolve issues and build productive, long-term relationships.
Communities	We engage with 16 port communities to better understand their concerns and aspirations, and build strong relationships through regular meetings with community liaison committees, a variety of events and our community investment program.
Non-governmental organizations and academic partners	We engage with non-governmental organizations and academic partners to share knowledge and collaborate on issues of shared interest.

ECONOMIC PROSPERITY THROUGH TRADE

Competitive business
Effective workforce
**Strategic investment
and asset management**



Competitive business

The Port of Vancouver handles almost 20 per cent of Canada's trade by value, and competes with major ports on North America's west coast for international trade. A competitive, efficient, reliable and financially stable port is essential to retaining and attracting business and enabling continued investment in operational and infrastructure improvements.

The goods movement supply chain is a complex web of interconnected parts that requires supply chain partners, including truck, rail and terminal operators, marine carriers, and labour, to actively coordinate their operations and investments. We work with these partners to improve the flow of goods through the port and grow the trade capacity of the region to benefit Canadian consumers and businesses.

Interested groups

Major shippers
Terminal operators
Service providers
Government
Communities
Labour

What we've heard is important

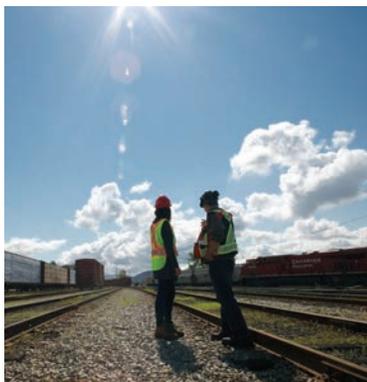
Ensure cargo moves efficiently and reliably
Respond to customer and Canadian consumer needs
Increase transparency of supply chain performance
Keep port fees and cost structures competitive

Strategic priorities

Increase supply chain efficiency, transparency and optimize operational capacity to deliver enhanced customer and stakeholder value

Risks

Supply chain capacity imbalances
Strike (or similar disruptive) action



A SUSTAINABLE PORT

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



Our approach

Improve port efficiency and reliability

The Vancouver Fraser Port Authority brings together port users, supply chain partners, and stakeholders to share information, identify opportunities and create solutions that help goods flow smoothly through the port. We work with supply chain partners to increase visibility over supply chain performance, such as by reporting on truck turn times at terminals, to enable port users to make more informed decisions and better plan their operations. We report supply chain performance metrics on our website and provide access to real-time monitoring through our PortVan eHub mobile app, webcams and GPS dashboard.

Understand and respond to customer needs

We engage industry and port users, including marine carriers, shippers and terminals, to understand how we can best facilitate trade, meet their needs and remain competitive. Feedback gathered through

customer surveys, industry engagement, trade visits and customer meetings helps identify operational improvements, inform infrastructure decisions, and improve our efficiency and responsiveness. This feedback has informed the development of an online permitting system, the creation of supply chain performance metrics and real-time reporting, and the approach we take to engage our customers.

Deliver lasting value and invest in infrastructure and resilience

We generate revenue through rent and fees, and reinvest earnings above operating costs in port infrastructure, such as roads, rail corridors and terminal expansions, to improve port competitiveness and help facilitate trade. Building capacity across multiple business sectors enables the port to accommodate a diverse range of cargo, increases the port's resilience to short-term changes in economic conditions and helps deliver lasting value.

Real-time monitoring of port activity

Our new mobile app, PortVan eHub, provides real-time monitoring of port activity and gives port users immediate information to help them make more informed decisions. Terminal operating status, truck turn times, vessel information, rail crossing activity and interactive maps are just a few of the live data feeds available. Users can also set up customized alert notifications. More than 2,000 people have downloaded the app since it was launched in August 2016. We continue to explore further opportunities to add to the app to increase its operational value to port users.

 Learn more and download the app at portvancouver.com/ehub

Performance overview

Improving port efficiency and reliability

Ocean-going vessel arrivals

Knowing when container cargo will arrive enables terminal operators, railways and trucking companies to better plan their operations to handle goods efficiently and cost-effectively. Our Container Vessel On-Time Incentive Program provides discounted wharfage fees to recognize container vessels that arrive on time. Weekly container volume forecast reports, which provide a two-week view of import containers arriving in Vancouver including their destination, help terminals and railways plan their operations. In 2016, we developed a model to forecast container volumes three to six months in advance, based on past trends and economic indicators. This model will be launched in 2017 to enable more informed decisions by supply chain partners.

Vessel on-time arrival



Vessel on-time performance is based on the ship's arrival within eight hours of the container scheduled berth window. Our target is for 75 per cent of vessels to arrive on time. In 2016 our average was 59 per cent. Independently assured

Vessel on-time performance can be affected during winter months when weather conditions across Asia and the Pacific Ocean delay vessel arrivals to the west coast. The drop in performance in late 2014 and early 2015 was also impacted by labour issues at U.S. west coast ports, coupled with increased container volumes through the port.

[Learn more at portvancouver.com/vessel-arrivals](http://portvancouver.com/vessel-arrivals)

Container terminals

The port authority provides daily container terminal performance reports to customers and supply chain partners to help increase visibility of the supply chain and identify operational issues. In 2016, we installed automated vehicle access control technology at the port's three major container terminals – Deltaport, Centerm and Vanterm – to reduce truck processing times and minimize delays.

Container terminal dwell



Dwell time is defined as the elapsed time from a container being discharged from a ship to being loaded onto a railcar. This industry-accepted metric is based on roughly 15,000 container transactions per month, which represents approximately 18 per cent of the total number of import containers moving through the Port of Vancouver. Our target is for 70 per cent of import containers to depart the container terminal within three days. In 2016 our average was 54 per cent. Independently assured

Construction at the intermodal yard of one container terminal resulted in a reduction in daily rail loading capacity, which impacted dwell times in 2016. Additional ocean carrier services that increased container volumes and some rail operating issues in late 2016 also affected performance.

Cruise

We continue to improve the Canada Place cruise terminal to ensure the efficient movement of passengers and to accommodate larger cruise ships with increased passenger numbers. In the past two years, we have leased new check-in space for passengers, improved wayfinding, and built infrastructure to better connect areas of the terminal. We are working with the Government of Canada and U.S. Customs and Border Protection to develop an agreement to enable all Alaska-bound cruise passengers to be precleared by U.S. immigration at our cruise terminal, allowing passengers to disembark in Alaska without further processing. In 2017, we will identify further facility requirements and impacts stemming from a U.S.-Canada preclearance agreement.

Trucking

Container trucking is an integral link in the port supply chain. Truck wait times at container terminals and rate undercutting practices affected the industry for years. In February 2014, truck drivers staged a work stoppage over compensation and wait times, which stranded container cargo and resulted in terminal congestion. The port authority worked closely with the federal and provincial governments to resolve truckers' concerns, and on March 26, 2014, the 14-point Joint Action Plan was put forward and accepted by the drivers.

As part of the plan, we fast-tracked our Smart Fleet Trucking Initiative, which included the introduction of our newly reformed Truck Licensing System, launched on February 1, 2015, following consultation with government, drivers, trucking companies and industry stakeholders. The new system is intended to stabilize the container trucking sector by ensuring that the supply of container trucks is more closely aligned with port-related container trucking demand, and that truckers are paid fairly. To provide much-needed data to support the new system, all port-licensed trucks are now outfitted with GPS technology.

In 2016, we developed a scorecard, in collaboration with trucking companies, to increase the transparency of trucking sector performance. This monthly scorecard is shared with all the licensed trucking companies that service the port, to enable them to measure their performance compared with the industry average. We also introduced in 2016 an improved system to increase the accuracy and efficiency of capturing truck wait-time performance at terminals, by combining truck GPS data with terminal truck gate transaction information.

Truck turn time



Turn time is measured as time spent in terminal staging lanes and within the terminal footprint. Our target is to have 75 per cent of all truck turns completed in 60 minutes or less. In 2016 our average was 77 per cent. Independently assured

Increases in cargo moving through the port affected truck turn time performance in 2016. Rail operating issues in the later part of 2016 were also a contributing factor, as the amount of import containers moved by trucks increased to alleviate congestion.

[Learn more at portvancouver.com/container-trucking](http://portvancouver.com/container-trucking)

Rail

Railways handle more than 75 per cent of international cargo to and from Port of Vancouver terminals. Visibility of cargo movements within the port is essential to understand current performance, enable better planning by terminals, shippers and other port users, and to keep goods moving efficiently through the port. In 2016, we launched a pilot project to explore the development of a supply chain visibility tool to track all cargo moving through the port. In 2017, we will continue to work with industry, railways and Transport Canada to collect data related to cargo movements. This data will support the development of a dashboard to monitor supply chain performance through the port, and to support rail network infrastructure decisions.

[Learn more about supply chain performance, including rail metrics, at portvancouver.com/supply-chain](http://portvancouver.com/supply-chain)

Understanding and responding to customer needs

More than half of the trade that comes through the port is destined to, or coming from, Asia. During our annual trade missions in 2015 and 2016, we visited China, Japan, Korea, Hong Kong, Vietnam, Singapore and Taiwan, meeting with marine carriers and shippers to strengthen existing relationships, develop new customer relationships and gather information to inform port planning. In 2015, we relocated our China office from Beijing to Shanghai, one of the most important port cities and business centres in the world, and a critical location to access and engage customers in Asia. With a continued presence in the region, we are able to further develop long-term customer relationships within important Asian markets.

Tenant feedback

Before conducting any physical works or activities on port-managed lands and waters, we require tenants to obtain a permit through our Project and Environmental Review process. In response to feedback received from terminal operators, we retained independent consultants to evaluate our process to recommend ways to improve clarity, efficiency, transparency, accountability, consistency and responsiveness. A renewed process incorporating the majority of these recommendations was launched in 2015, improving transparency and predictability for project proponents and other stakeholders. As of the end of 2016, we have implemented, or set directions to implement in 2017, all identified recommendations.

[Learn more at portvancouver.com/PER-review](http://portvancouver.com/PER-review)

Effective workforce

Port operations and the supply chain require a diverse, skilled and productive workforce to enable the safe, efficient and sustainable movement of goods, and to meet Canada's future trade demand. Numerous unions and associations represent the workforce that keeps goods moving, from rail, truck, terminal and tugboat operations, to pilots and more. The British Columbia Maritime Employers Association (BCMEA), on behalf of waterfront employers, works with the various Locals of the International Longshore and Warehouse Union (ILWU) to promote the stability and reliability of the Port of Vancouver, helping to meet user needs and make the port competitive and attractive to international trading partners.

At the Vancouver Fraser Port Authority, our employees play a critical role in meeting our responsibilities under the *Canada Marine Act* and moving us toward our vision of being the world's most sustainable port.

Maintaining collaborative labour-management relationships, and attracting and retaining talented people, is critical to the success of Canada's largest port and fundamental for a thriving and effective workforce.

Interested groups	What we've heard is important	Strategic priorities	Risks
Port authority employees International Longshore and Warehouse Union British Columbia Maritime Employers Association Terminals operators Labour	Maintain collaborative labour relations Provide information on workforce health and safety Improve internal communications, implement process improvements and support career development	Build a more connected and engaged culture at the port authority to drive operational excellence	Ineffective business planning Strike (or similar disruptive) action



A SUSTAINABLE PORT

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



Our approach

Maintain a skilled, productive and effective workforce

At the port authority, we focus on attracting and retaining talent and developing our employees. We do this by offering interesting and meaningful work, providing competitive salaries and benefits, offering a comprehensive education and training program to help employees be successful in their roles, and developing a diverse and inclusive workforce. We work collaboratively with the International Longshore and Warehouse Union Local 517, who represent our unionized employees, to negotiate attractive terms and conditions of employment.

Provide an attractive work environment through a thriving organizational culture

To provide an attractive work environment and enhance employee well-being, we work to engage our port authority employees and create an open, collaborative and thriving organizational culture. Our annual employee survey is an important tool in helping leadership understand the experiences and priorities of our employees and identifying areas of focus to keep our employees engaged. We offer a variety of programs, services and facilities to support employee well-being, including an on-site fitness facility and fitness allowance, an employee and family assistance program, personal care days, and an earned time-off program. We also have a safety program designed to support a safe work culture and prevent personal injury.

Performance Overview

Maintaining a skilled, productive and effective workforce

The Vancouver Fraser Port Authority employs 337 people full-time: 333 based in Vancouver, B.C.; two at our local community office in Delta, B.C.; one in Ottawa, Ontario; and another in our office in Shanghai, China. The BCMEA dispatches a workforce of about 6,500 port-related workers across the province.

A key component of attracting and retaining talent is providing competitive salaries and benefits. The port authority is a unionized workforce and committed to collaborative labour relations. In 2016, the port authority and the International Longshore and Warehouse Union, Local 517, negotiated a five-year extension to the existing collective agreement, providing competitive compensation and benefits for our unionized employees. We also engaged an independent third party to conduct an extensive salary review for our non-unionized employees, to confirm that their compensation is appropriate and to inform future salary decisions.

Education, training and career development

To build capabilities within our organization, we have an education and training program that provides support to port authority employees for job- and career-related development. We invest more than half a million dollars every year in training and development, with an average education spend of \$1,738 per employee in 2016. Following feedback from our annual engagement survey, in 2016, we delivered career development workshops, launched a coaching program with external certified coaches, and held systems thinking discussions with organizational leaders to provide tools to help simplify achieving results in the complex environment in which we operate.

Employee turnover

Tracking voluntary employee turnover helps anticipate our human resource needs in order to maintain a skilled and productive workforce. In 2015 and 2016, our rate of voluntary turnover was 4.3 per cent and 3.1 per cent respectively, well below the national and provincial averages.

Vancouver Fraser Port Authority annual voluntary employee turnover rate (per cent)

2014	2015	2016	2016 target	National average	B.C. average
3.8	4.3	3.1	2-3	7.8	9.4

Voluntary employee turnover measures employee-initiated departures by permanent employees, excluding retirement.

Workforce diversity

A diverse workforce is a reflection of the communities we live and work in, and it allows us to benefit from the unique skills and experience that diverse teams bring to the organization. At the port authority we continue to work towards consistent practices and also to taking special measures to accommodate differences. To meet our obligations under Canada's Employment Equity Program, we track and report our progress employing women, visible minorities, people with disabilities, and Aboriginal peoples. In 2016 we initiated an employment systems review to identify potential barriers to employment and strategies for recruitment and retention of individuals from these groups. In 2017 we will implement the recommendations from this review.

Diverse workplace recognition

In March 2016, the Vancouver Fraser Port Authority was recognized by the Ministry of Employment, Workforce Development and Labour for diverse representation in the workforce for women and members of visible minorities.

Providing an attractive work environment through a thriving organizational culture

Our corporate values are a key driver of our organizational culture at the port authority. In 2017, we will be reviewing our corporate values and conducting a survey about our culture to ensure they are aligned with our vision to be the world's most sustainable port.

 [Learn more at portvancouver.com/values](http://portvancouver.com/values)

Employee engagement

Our annual employee survey is an important tool in helping the organization's leadership team understand the priorities and experiences of our employees and to identify areas of focus to keep our employees engaged and support their well-being. Feedback received through our 2015 survey informed a number of initiatives to shape our culture, including work to support managers in their roles, the creation of career development resources, and process improvements to help employees conduct their work.

In 2016, 91 per cent of our employees responded to our annual engagement survey. Our engagement score increased by 5 percentage points over the prior

year, with improved scores in areas where we focused our attention following the 2015 survey results. The 2016 survey identified priority areas for improvement, including internal communications, career and development opportunities, leadership effectiveness, and systems and processes that enable work. We have developed an action plan to improve our performance in these areas, which will be rolled out in 2017.

Workplace safety

Keeping our employees safe is a critical part of employee well-being. Most port authority employees are office-based and, as a result, experience a low-risk environment with low injury rates. Injuries generally include slips, trips and falls. Nonetheless, in 2015 we launched a health and safety modernization program. In 2016, we created a new position to oversee employee safety and emergency management at the port authority. We also launched health and safety orientations for new employees and established a joint union-management health and safety policy committee to advise and assist on policy and procedures, and to complement our existing workplace safety committee. Our focus in 2017 will be on improving the safety of contractors working in our office and on our project sites, as well as educating employees on the importance of near-miss reporting to improve our safety management and performance.

Port and supply chain labour

Skilled labour, from tugboat, rail and truck operators to longshore workers and marine pilots, work together to keep goods moving through the port safely and efficiently. Port of Vancouver-related activities support 44,400 direct jobs across British Columbia. The British Columbia Maritime Employers Association (BCMEA) represents ship owners and agents, stevedores, container, bulk and breakbulk terminal operators on Canada's west coast, and oversees the training and recruitment of workers of the International Longshore and Warehouse Union (ILWU), and the daily dispatch of labour to port terminals.

In 2016, the BCMEA entered the sixth year of a historic eight-year agreement with the International Longshore and Warehouse Union. This agreement provides significant reliability and stability for the port's customers and waterfront workforce. In addition, the BCMEA invested \$12 million in training wages, providing 18,167 days of training to 4,231 longshore employees. Diversity in the workforce has remained a priority, as the number of female longshore workers on the waterfront has increased from 340 in 2015 to 600 in 2016, raising the level of representation to 10 per cent in the industry. The BCMEA is working to increase this representation to between 18 and 20 per cent. Recruiting women is an active, ongoing process, and the BCMEA is committed to ensuring a safe, secure and supportive environment.

Safety also continues to be a key focus for all port-related labour. In 2016 the BCMEA made progress by analyzing injury statistics, providing new gloves for lashing and log work, assisting terminals with hazard prevention and labour training programs, as well as implementing new leading-edge disability management programs.

Strategic investment and asset management

Canadian trade is forecast to grow over the long term, and throughput at the Port of Vancouver is expected to follow this trend. We must ensure Canada's largest port has sufficient capacity to meet this demand, including infrastructure and services, as well as a sufficient industrial land base to support trade.

The supply of trade-enabling industrial land in the region is expected to be exhausted roughly within the next 10 years. This poses a significant challenge for the Canadian businesses and consumers that depend on future trade, especially in the container sector, where strong growth is expected.

We are advocating for careful planning to protect industrial lands in the region, and are working with government and industry to develop the infrastructure needed to meet Canada's future trade needs.

Interested groups	What we've heard is important	Strategic priorities	Risks
Terminal operators and tenants Service providers Communities Government Aboriginal peoples Non-governmental organizations	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 Conduct a thorough review of environmental and community impacts Balance economic, environmental and social objectives in a transparent way	Anticipate, select and deliver new and repurposed infrastructure capacity to meet key sector demand Anticipate, deliver and optimize land supply to support port growth in key sectors	Land not available Ineffective business planning Project delay due to third parties



A SUSTAINABLE PORT

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



Our approach

Optimize land supply

We manage the development of lands and waters in our jurisdiction through our land use plan. This plan sets out present and proposed uses for port lands and waters and guides our decision-making. To address industrial land scarcity, we have worked with terminal operators to develop strategies to intensify the use of our current lands and to advocate for the protection of land for trade-enabling industrial use. We are calling for a multi-party discussion about how lands are managed in the region in order to protect the remaining stock of trade-enabling lands and to support Canada's trade priorities while also accommodating other regional priorities.

When appropriate, we acquire land to ensure future port-related activities can be accommodated, focusing on sites with ready access to shipping channels, truck routes or rail corridors and close proximity to existing port holdings.

Anticipate and deliver infrastructure

We collaborate and proactively bring other government agencies, port customers and industry together to anticipate and identify future infrastructure needs. We led the creation of the Gateway Transportation Collaboration Forum, which brings together the British Columbia Ministry of Transportation and Infrastructure, TransLink, Transport Canada and the Greater Vancouver Gateway Council to identify infrastructure needs in major trade corridors. We are now working with government and industry to pursue funding opportunities for infrastructure development in major trade corridors in the region. We also collaborate with provincial and local governments, industry and supply chain stakeholders throughout the western provinces and the rest of Canada to understand their needs with regard to goods movement through the Port of Vancouver.

Infrastructure projects can be led by the port authority, port tenants or other related stakeholders, and can range from large-scale terminal developments to improvements of existing facilities. Investment by the port authority is a catalyst for private investment in infrastructure, terminals and facilities.

Performance Overview

Optimizing land supply

Metro Vancouver's 2015 Industrial Lands Inventory shows that, of the region's supply of industrial land, 20 per cent (5,586 acres) is vacant and available for development. Only about 1,000 acres of this vacant land is suitable for trade-enabling uses, primarily logistics warehousing, due to site size limitations and distance from transportation infrastructure. This level falls well short of the roughly 1,500 to 3,000 acres of trade-enabling industrial lands required by supply chain partners to meet projected growth through the Port of Vancouver.

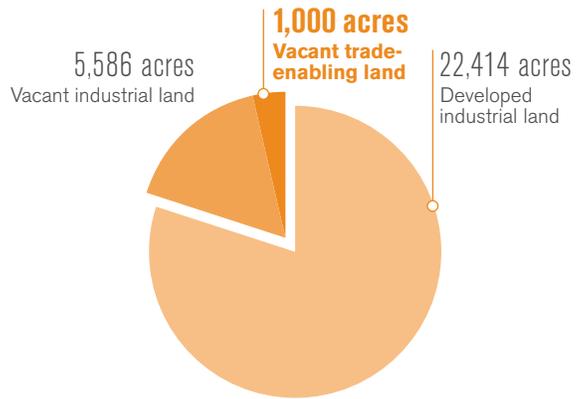
In response to the increasing shortage of trade-enabling industrial land, we took several steps during 2015 and 2016 to safeguard remaining industrial lands for port-related uses:

- Acquired five industrial properties and amended our land use plan accordingly
- Advanced awareness of the scarcity of industrial land and potential solutions to protect this land in the Lower Mainland
- Worked with policy-makers to encourage measures to protect strategic lands
- Started work to optimize the use of our vacant and underutilized industrial properties located along the Fraser River

In 2017 we will look at strategic opportunities to expand our real estate holdings to support future growth, and we will continue advocacy for the protection of trade-enabling industrial land.

[Learn more at portvancouver.com/land-use-planning](http://portvancouver.com/land-use-planning)

Industrial land availability in Metro Vancouver



Between 1,500 and 3,000 acres

of trade-enabled industrial lands is required by supply chain partners to meet projected growth through the Port of Vancouver

Every 100 acres

of land developed for logistics usage generates \$1.9 billion in economic benefits

The Richmond Logistics Hub

The Richmond Logistics Hub is a 700-acre port authority-owned industrial land development designed to facilitate a combination of marine terminal, transshipment and distribution facilities to support future port operations. In 2015 and 2016, we continued to upgrade the transportation infrastructure and prepare sites to support future developments. In 2017, we will continue to advance these strategic transportation infrastructure projects and prepare sites for development.

Anticipating and delivering infrastructure

To meet anticipated growth in trade, we are working with terminal operators and tenants to optimize existing facilities, build new ones, and improve rail and truck corridors.

Between 2009 and 2025, more than \$17 billion will be invested in transportation infrastructure in the region by government, industry and the port authority, more than twice the investment in recent upgrades to the Panama Canal. To date, \$7.5 billion of investment has already taken place. A large amount of this investment is private funding invested in projects spanning the port's main sectors, including bulk (such as grain and potash) and containers, signalling private industry's confidence in the continued growth in Canadian trade.

Between 2009 and 2016

\$7.5 billion

invested regionally in transportation infrastructure

 [Learn more about port growth at portvancouver.com/port-growth](http://portvancouver.com/port-growth)

Habitat enhancement

Our Habitat Enhancement Program was developed as part of a broader strategy around port growth, acknowledging that new habitat sites may be required to offset effects from port infrastructure development, and that enhancing habitat supports the port authority's approach to sustainability. As part of the program, which was formalized through a 2012 working agreement with Fisheries and Oceans Canada, the port authority maintains a habitat bank, from which habitat credits from proven functioning habitat may be withdrawn to offset potential effects of development, with approval from Fisheries and Oceans Canada. We focus on creating, restoring and enhancing fish and wildlife habitat, and monitor the viability of new and enhanced habitat projects across the Lower Mainland.

In September 2016, in collaboration with the Vancouver Board of Parks and Recreation, we began construction on the New Brighton Park Shoreline Habitat Restoration Project. This project is an opportunity to restore coastal wetland habitat to provide productive habitat for juvenile fish and wildlife, including shorebirds, songbirds and waterfowl,

and to increase public access to nature. The project is expected to be completed in 2017.

The proposed Tsawwassen Eelgrass Project, expected to launch in the fall of 2017, is currently in the design and permitting stage. The proposed project, which consists of two sites located on Roberts Bank, south of the Tsawwassen ferry terminal, would result in the conversion of subtidal areas into eelgrass habitat, an important habitat for fish and wildlife, including juvenile salmon, Pacific herring, Dungeness crab, migrating Brant geese, bivalves, shrimp, and sea stars.

As of December 31, 2016, there were 11 habitat sites in the habitat bank, and the value of habitat credits was 82,355 m².

 Independently assured

This includes:

- 62,992 m² of salt marsh credits
- 4,662 m² of brackish marsh credits
- 11,924 m² of tidal freshwater marsh credits
- 2,777 m² of tidal freshwater mudflat credits

 [Learn more at portvancouver.com/habitat-enhancement](http://portvancouver.com/habitat-enhancement)

Infrastructure investments

The following projects are port authority-led development projects, or projects in which we are a major partner, which are complete or underway in 2015 and 2016.

Project	Description	Status
Centerm Expansion Project	The Centerm Expansion Project is a proposed series of improvements to Centerm container terminal and port roads. The project, which is being delivered in partnership with Centerm terminal operator DP World, would increase the terminal footprint by approximately 15 per cent, and increase the maximum container handling capacity at Centerm by two-thirds, from 900,000 to 1.5 million twenty-foot equivalent unit containers. The project also 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.	The project is under review in the port authority's Project and Environmental Review process. Public consultation on the proposed project began in 2017.
Deltaport Terminal, Road and Rail Improvement Project	Deltaport is the largest container terminal in Canada. The Deltaport Terminal, Road and Rail Improvement Project aims to upgrade existing road and rail infrastructure to increase container capacity by 600,000 twenty-foot equivalent units per year, helping meet forecasted demand for additional container traffic. Project partners include the port authority, the Government of Canada, the Province of British Columbia and Deltaport operator Global Container Terminals (GCT) Canada.	Construction work to reconfigure the Deltaport intermodal yard is currently underway and is expected to be complete in 2017.
Roberts Bank Terminal 2 Project	The Roberts Bank Terminal 2 Project is a proposed new multi-berth container terminal at Roberts Bank in Delta. If built, the terminal would provide an additional container handling capacity of 2.4 million twenty-foot equivalent unit containers per year, which is required to meet forecasted demand.	The project is undergoing a federal environmental assessment by an independent review panel, under the <i>Canadian Environmental Assessment Act, 2012</i> . The project is also undergoing an assessment under the <i>British Columbia Environmental Assessment Act</i> and requires other permits and authorizations before proceeding.
Tsawwassen Container Examination Facility	The Tsawwassen Container Examination Facility will be a new facility for the inspection of shipping containers imported through the Deltaport Container Terminal. The facility, which will be located on Tsawwassen First Nation industrial lands at Roberts Bank and operated by the Canada Border Services Agency, is an important security and efficiency initiative helping to deliver infrastructure required to meet anticipated growth.	The facility is currently under construction, and expected to be complete in late 2018.
Low Level Road Project	The Low Level Road Project enhanced rail and port operations to increase capacity and to address long-standing community safety and traffic congestion challenges in the area around port terminals on the north shore of Burrard inlet. Project partners included Transport Canada, TransLink, industry and municipal government.	Completed in 2015, the Low Level Road Project was the first transportation project in the world to receive the Institute for Sustainable Infrastructure's Envision Platinum certification.



A rendering of the proposed Roberts Bank Terminal 2 Project

Port authority files environmental impact statement for Roberts Bank Terminal 2 Project

The Roberts Bank Terminal 2 Project is a proposed new three-berth container terminal at Roberts Bank in Delta. The project is being led by the Vancouver Fraser Port Authority, and planning and feasibility studies have been underway since 2010.

Forecasts show demand for goods shipped in containers is growing, and it is expected that container terminals on Canada's west coast will be at capacity by the mid-2020s. An independent Container Traffic Forecast Study conducted in 2016 by Ocean Shipping Consultants considered emerging global economic trends and data, and forecasted that container demand through the west coast of Canada would double 2016 volumes by 2035. Even with planned expansion of the Port of Prince Rupert and other container terminals at the Port of Vancouver, additional capacity will be required within the next 10 years. The Roberts Bank Terminal 2 Project will provide much-needed space for this growth, in order to meet the export and import needs of Canada's economy. If built, it will also be the largest project ever undertaken by the port authority.

In March 2015 we filed an environmental impact statement for the project with the Canadian Environmental Assessment Agency. The statement summarizes the results of extensive technical and environmental studies that were conducted to complement available scientific information.

In total, over 77 studies were undertaken over four years, with contributions from more than 100 professional scientists and more than 35,000 hours of field work. This work informed our assessment of potential environmental, economic, social, heritage and health effects of the project, including cumulative effects. The environmental impact statement includes proposed mitigation measures to reduce, avoid or offset potential effects and describes the monitoring and follow-up program that would be undertaken to ensure mitigation measures are effective.

The environmental impact statement is now undergoing a technical review by an independent review panel, under the *Canadian Environmental Assessment Act, 2012*. This process provides opportunities for participation and comment by government agencies, Aboriginal groups and the public. Once the review panel has considered these comments and received responses to requests for additional information from the port authority, it will proceed to public hearings.

 [Learn more about the Roberts Bank Terminal 2 Project at portvancouver.com/RBT2](http://portvancouver.com/RBT2)

HEALTHY ENVIRONMENT

Healthy ecosystems

Climate action

Responsible practices



Healthy ecosystems

Healthy ecosystems provide us with clean air, land and water, nutrients and even recreational opportunities. Biodiversity is an important indicator of ecosystem health, but unfortunately both terrestrial and aquatic biodiversity are in decline globally. Loss of biodiversity reduces the resilience of ecosystems and diminishes their capacity to support human livelihood.

Operations at the Port of Vancouver occur within an ecologically rich region that is home to culturally iconic species such as the southern resident killer whale and white sturgeon, whose populations are at risk. The industrial activities occurring within the port have the potential to affect the surrounding natural environment and human health. Ecosystem health can be affected through habitat loss, pollution, physical degradation, and introduction of invasive species. We are committed to supporting healthy ecosystems and to the long-term sustainability of the port.

Interested groups	What we've heard is important	Strategic priorities	Risks
Government Aboriginal peoples Non-governmental organizations Communities	Protect and improve land and water quality Mitigate port impacts on species at risk, such as southern resident killer whales Ensure infrastructure development doesn't result in loss of habitat and species Address cumulative impacts from port growth	Enhance and maintain gateway environmental health	Environmental spill in harbour or river Environmental impact on neighbours Loss of community acceptance



A SUSTAINABLE PORT

- 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



Our approach

Stewardship of air, land and water quality

The port authority leads, supports and develops programs and initiatives designed to manage and mitigate effects on the environment in and around the port. Our focus is on stewardship of air, water and soil quality, habitat, and aquatic and terrestrial species. Our efforts are directed toward the areas where we have either control or influence, starting within our jurisdiction.

We require permits for all new activities or developments on or in port lands or waters. Project proponents are most often terminal operators or port users. Through the Project and Environmental Review process, we review permit applications and make a determination on the potential environmental impact. We will not authorize or allow a proposed project to proceed if it is likely to result in significant adverse environmental effects. Should a project be approved, the permit will include environmental conditions designed to avoid or mitigate potential impacts.

Champion coordinated management approaches

We are one of many organizations with the potential to affect the environmental health of the port and region. Consequently, we work collaboratively with local, provincial and federal governments, environmental non-government organizations, Aboriginal groups, port tenants and supply chain stakeholders to monitor issues and develop solutions to enhance the environmental health of the port and surrounding areas. These collaborations allow us to extend our influence beyond our jurisdiction, for example when considering effects on air quality or reducing impacts on southern resident killer whales.

Our approach at a glance

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 and construction can affect water quality through spills and stormwater runoff.</p> <p>Vessels can affect water quality from accidental spills and planned discharges into water.</p>	<p>Accidental spills, planned discharges, stormwater runoff and unmanaged groundwater contamination can negatively affect water quality and negatively impact aquatic species.</p>	<p>Project and environmental reviews</p> <p>Stormwater management</p> <p>Port Information Guide 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>Contamination released into air, soil or water can have potential impacts on terrestrial and aquatic species and their habitats.</p>	<p>Land renewal strategy</p> <p>Contaminated sites management</p> <p>Project and environmental reviews</p>
<p>Air</p>	<p>Terminal operations such as cargo handling, and cargo movement by ships, trains and trucks, emit air pollutants such as particulate matter, sulphur oxides and nitrogen oxides, as well as greenhouse gases such as carbon dioxide, methane and black carbon.</p>	<p>Emissions from cargo handling equipment and ships, trains and trucks negatively affect regional and local air quality and contribute to climate change.</p>	<p>Northwest Ports Clean Air Strategy</p> <p>Non-Road Diesel Emissions Program</p> <p>EcoAction for ships</p> <p>Shore power initiatives for cruise ships</p> <p>Climate Smart Initiative</p> <p>Drayage trucking environmental requirements</p> <p>Energy Action initiative</p> <p>Project and environmental reviews</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 can 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>Habitat loss and degradation and invasive species introduction can displace plants and animals and negatively affect ecosystem productivity and biodiversity.</p> <p>In-water construction can cause mortality of some aquatic species and/or negatively affect their hearing.</p> <p>Underwater noise can displace animals and interfere with communicating, feeding and breeding.</p>	<p>ECHO Program</p> <p>Project and environmental reviews</p> <p>Habitat enhancement program</p>
<p>Terrestrial species (e.g., vegetation, wildlife)</p>	<p>Infrastructure development and ongoing 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 remove plants and displace animals and negatively affect ecosystem productivity and biodiversity.</p> <p>Light and noise emissions can displace wildlife and interfere with feeding and breeding.</p>	<p>Invasive species management</p> <p>Noise monitoring program</p> <p>Species at risk inventories and management plans</p> <p>Project and environmental reviews</p>

Performance overview

Stewarding air, land and water quality

We operate in an ecologically rich region with a high level of biodiversity. Two national wildlife areas, five provincial wildlife management areas and three designated rockfish conservation areas lie within or adjacent to our navigational jurisdiction.

 Independently assured

We are focusing on species at risk and water quality management as key means of preserving local biodiversity and contributing to the overall ecological health of the port.

 [Learn more at portvancouver.com/protected-areas](http://portvancouver.com/protected-areas)

Species at risk

A recent study identified 32 federally-listed species at risk that are known or likely to be present within our jurisdiction. Under Canada's *Species at Risk Act*, species at risk and designated critical habitat are legally protected from disturbance on federal lands. To better protect species at risk and manage any port-related effects on these species and their habitats, we carried out field surveys and testing in 2015 and 2016 for select species to improve our knowledge of their distribution within the lands and waters of our jurisdiction.

We conducted field surveys for the following species:

- Pacific water shrew
- Red-legged frog
- Nooksack dace
- Little brown bat

Our land use plan designates certain areas for conservation. These areas are primarily intended for habitat conservation, enhancement, restoration, or habitat banking, and are not generally intended for development. Within our jurisdiction, we also have federally protected areas of critical habitat for:

- Streambank lupine
- Pacific water shrew
- Marbled murrelet
- Southern resident killer whale

In 2017, we will implement the following works to enhance our knowledge of species at risk and their habitats within our jurisdiction:

- Conduct field surveys to determine the presence of western painted turtles and barn owl nest sites
- Perform additional eDNA sampling for northern red-legged frog and Pacific water shrew to determine if they are present at select locations
- Expand our pilot study on Burrard Inlet forage fish, which are food for larger predators, to identify forage fish spawning areas

For certain species at risk, such as the southern resident killer whales, we are taking active measures to improve habitat. In 2017 we will introduce new incentive criteria to our EcoAction Program to include harbour due rate discounts for quieter ships. This is intended to reduce underwater vessel noise, which can affect marine life.

 [Learn more about species at risk and find our inventory at portvancouver.com/species-at-risk](http://portvancouver.com/species-at-risk)



Identifying impacts from port activities

Through our Project and Environmental Review process, we must consider how proposed projects might affect species at risk. Knowing where these species are located and how port activities affect them helps the port authority determine whether a proposed activity or development is likely to have a negative impact and, if so, what mitigation measures are required.

Little brown bat

The little brown bat is one of B.C.'s most common bat species. However, there is limited understanding of their distribution and the factors that influence where they are located. Bats generally use habitats, such as mature trees for roosting, and vegetated shorelines for foraging. In 2016, we undertook a field study to improve our understanding of how industrial activity, such as noise, light and movement, on port authority-managed lands might affect their use of these habitats. The results show that little brown bats are distributed throughout our jurisdiction, except for areas with high nighttime light conditions, high noise levels and a lack of natural vegetation. These findings will inform our decisions on proposed development and activities through our Project and Environmental Review process by better identifying potential project-related impacts and by informing measures to manage and mitigate those potential impacts. This work may also help us protect existing habitat and identify areas in which to create new habitat such as bat roosts on port authority-managed lands.

White sturgeon

The port authority maintains the navigation channel in the Fraser River through an annual dredging program, to enable trade by providing ocean-going vessels with unimpeded access to terminals. Recent studies indicate that juvenile white sturgeon may be present in areas of the river where we regularly dredge, and that dredging may affect this species. We are supporting work by the B.C. Ministry of Forests, Lands and Natural Resource Operations to collect data on the timing, distribution and habitat use of the lower Fraser River white sturgeon population. This data will help us identify the risks to this species from dredging and develop measures to avoid harm to juvenile salmon, for example, potentially by adjusting the timing of our dredging activities.

 [Learn more about our review process at portvancouver.com/environmental-reviews](https://portvancouver.com/environmental-reviews)

Water quality

Maintaining good water quality is one of the key ways we can contribute to improved ecosystem health. As there are hundreds of entry points for pollutants into Burrard Inlet and the Fraser River, it is important for us to understand and manage port-related effects on water quality.

Stormwater from rainfall, snow, and ice melt can seep into groundwater or become runoff, which ultimately enters water bodies. When stormwater flows over land, pavement, and building rooftops, it accumulates debris, soil and sediment, oil and grease, metals, and other pollutants that could negatively affect water quality. Effective stormwater management is one way we can reduce water pollution from port-related properties.

In 2015, as part of our Project and Environmental Review process, we developed guidelines that outline our expectations for stormwater pollution prevention plans submitted by port tenants. As part of the review process, we work with our tenants to identify ways to improve their approach to stormwater management.

In addition, in 2015, we assessed port authority-managed facilities for water quality and pollution risks, and developed stormwater pollution prevention plans. In 2016, we began taking steps to address the identified risks. In 2017, we will conduct water sampling from outfalls near port authority-managed properties to determine the effectiveness of our stormwater pollution prevention measures.

 [Learn more at portvancouver.com/water](http://portvancouver.com/water)

Project and Environmental Review process

2016 was the first full calendar year of the revised Project and Environmental Review process. In that year the port authority completed 232 environmental reviews in accordance with the *Canadian Environmental Assessment Act, 2012*. We also conducted 134 preliminary project reviews, whereby applicants receive preliminary feedback from port authority staff to help them plan their project in a way that minimizes impact. During the preliminary and final reviews, we consider the following environmental components as part of an informed decision process: emissions to air, generation of noise on land and in water, lighting, impacts on water, soil, sediment, aquatic and terrestrial resources as well as on species and habitat with special status. For all approved projects, we determined that the project is unlikely to cause significant adverse environmental effects, subject to the application of specific environmental conditions and appropriate mitigation measures. In 2017, we will implement a formal and transparent program to monitor compliance with permit conditions and provide an effective deterrent for non-compliance with permit conditions and unauthorized works.

 [Learn more about our Project and Environmental Review process at portvancouver.com/PER](http://portvancouver.com/PER)



Underwater listening station deployment in the Strait of Georgia as part of the ECHO program.



Championing coordinated management approaches

ECHO Program

The Enhancing Cetacean Habitat and Observation (ECHO) Program is a port authority-led collaborative initiative aimed at better understanding and mitigating the impact of shipping activities on at-risk whales along the southern coast of British Columbia. The key threats to whales in the region are acoustic disturbance (underwater noise), physical disturbance (ship collisions), environmental contaminants and the availability of prey. The ECHO Program, with support and guidance from an advisory working group and technical committees, is advancing a series of short-term projects, scientific studies and educational initiatives. These endeavours will improve our understanding of vessel-related cumulative threats in the region and help inform the development of solutions to mitigate impacts.

Some of the accomplishments in 2015 and 2016 include:

- In partnership with the University of Victoria's Ocean Networks Canada, JASCO Applied Sciences, and Transport Canada, deployed an underwater listening station that monitors and reports on ambient noise levels, marine mammal detections and passing vessel noise in the Strait of Georgia.
- Supported Fisheries and Oceans Canada in the completion of whale tagging and aerial surveys to observe the movements of fin whales off the west coast of Vancouver Island.

- Evaluated options and implemented incentives to encourage ship owners to reduce vessel noise through our EcoAction Program.
- Identified and quantified the contribution to overall regional underwater noise by vessel type.
- Supported the development of the *Mariner's Guide to Whales, Dolphins and Porpoises of Western Canada*, designed to help crew members of large vessels identify key cetacean and sea turtle species, understand the potential threats their vessels pose to these species, and take action to minimize those threats.
- Engaged stakeholders on the work of the ECHO Program through more than 40 educational outreach presentations and two PortTV episodes.

In 2017, the ECHO Program aims to:

- Implement a voluntary slow-down trial for ocean-going vessels in Haro Strait, which is an important feeding area for endangered southern resident killer whales.
- Collaborate with regional partners to establish an integrated acoustic monitoring network for the Salish Sea to better understand ambient noise conditions and marine mammal presence in the region.
- Maintain operation of the underwater listening station in the Strait of Georgia to collect more data on vessel source levels and assess how vessel-generated noise can be reduced.

 [Learn more at portvancouver.com/ECHO](http://portvancouver.com/ECHO)

Climate action

Climate change impacts, including more frequent and severe weather events, ocean acidification and rising sea levels, pose serious risks to coastal ecosystems and communities. Ports are located in coastal areas and at low elevations, making them particularly susceptible to climate change impacts. These impacts have the potential to disrupt the global supply chain that enables Canadian trade.

Fossil fuels, such as diesel and marine bunker fuels, currently provide most of the energy for the transportation sector. The use of these fuels contributes to climate change and affects air quality. Widespread cooperation is required to support the transition of the transportation sector to clean, low-carbon technologies. We play an important role by collaborating with government and industry to support advancement of the technologies, fuels, policies, regulations and investment needed to create a climate resilient and low-carbon port.

Interested groups

Communities
 Aboriginal peoples
 Government
 Non-governmental organizations
 Terminal operators
 Tenants
 Marine carriers
 Service providers

What we've heard is important

Reduce port-related air emissions affecting air quality and contributing to climate change
 Accelerate the adoption of clean technology and alternative energy in port operations
 Coordinate with others when protecting port assets against sea level rise and extreme weather events
 Maintain competitiveness

Strategic priorities

Enhance and maintain gateway environmental health
 Achieve alignment with policy-makers on a vision for the port

Risks

Environmental impact on neighbours
 Climate change
 Impact on competitiveness



A SUSTAINABLE PORT

- 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



Our approach

Minimize air emissions

The port authority is committed to reducing air emissions that contribute to climate change or affect air quality. Our approach starts with a comprehensive activity-based emissions inventory that enables us to estimate port-related air emissions across a variety of sources. This information informs our policy and programs, and helps to identify trends and determine priority areas for action. We collaborate with government and industry stakeholders to support or develop programs and initiatives that promote emission reductions amongst key sources including ocean-going vessels, container trucks and tenant operations.

Protect assets against potential impacts of climate change

Our climate adaptation approach is currently in the early phases of planning and risk identification. We are working with stakeholders throughout the region to assess risk of flooding and sea level rise, which will inform planning of adaptation strategies. Our intent is to assess port infrastructure for climate risks, and to proactively implement adaptation strategies that will enhance resiliency.

Performance overview

Minimizing air emissions

Northwest Ports Clean Air Strategy

We partner 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. It is important for major ports within the region to work collaboratively, as air emissions readily cross national boundaries.

The overarching goals of the Northwest Ports Clean Air Strategy are to:

- Reduce diesel particulate matter emissions per tonne of cargo by 75 per cent by 2015 and 80 per cent by 2020
- Reduce greenhouse gas emissions per tonne of cargo by 10 per cent by 2015 and 15 per cent by 2020

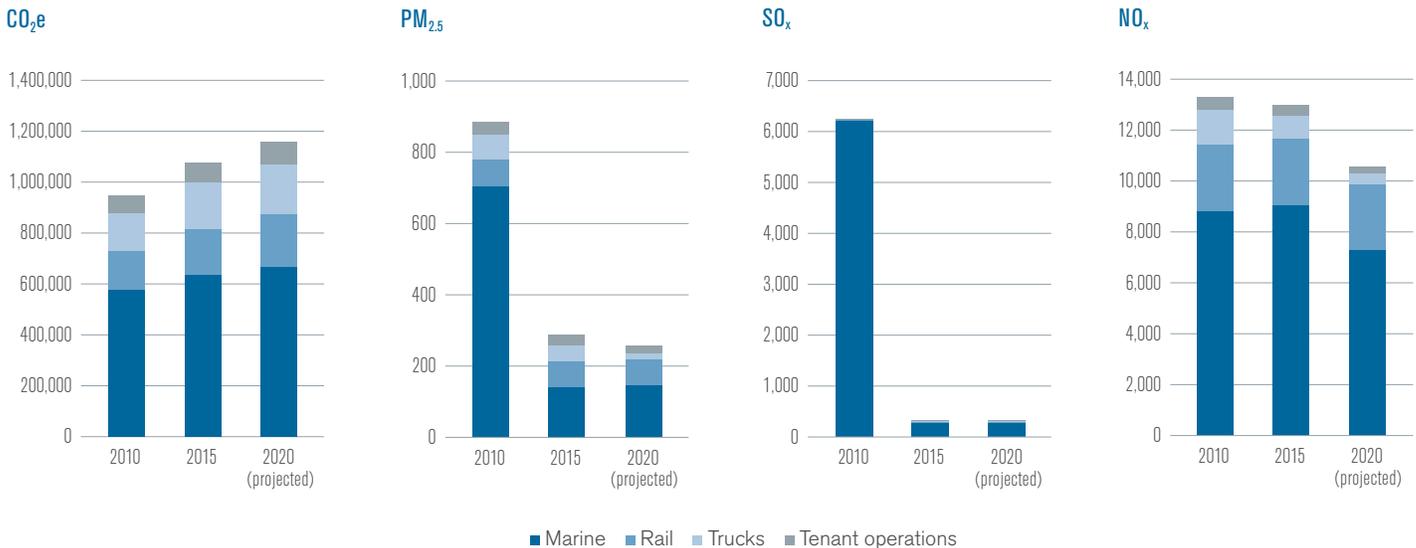
The strategy includes performance targets for each of the primary port emissions sources, including ocean-going vessels, harbour vessels, cargo-handling equipment, container trucks, locomotives and port administration.

Port emissions inventory

We monitor progress on our emissions reduction objectives and targets through the Port of Vancouver Emissions Inventory, which we conduct every five years. The figures below, which are derived from our 2015 Port Emissions Inventory, show emissions by primary port sources. Greenhouse gas emissions, measured as carbon dioxide equivalent (CO₂e), are increasing with growth in trade through the port. Sulphur oxide (SO_x) and fine particulate matter (PM_{2.5}) emissions declined sharply in 2015 as a result of regulations such as the introduction of the low-sulphur fuel requirements for vessels operating in the North American Emission Control Area. Nitrogen oxide (NO_x) emissions decline with the turnover of older equipment and the new standard for NO_x emissions that came into effect in 2016 for ocean-going vessels.

[Learn more at portvancouver.com/clean-air](http://portvancouver.com/clean-air)

Port of Vancouver air emissions (tonnes) by source

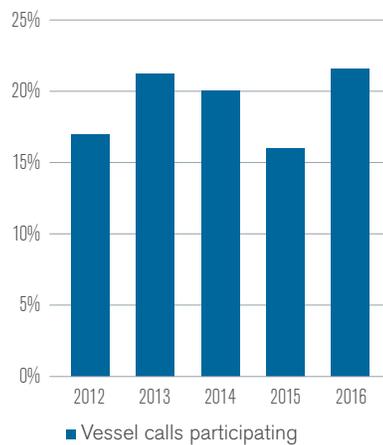


The figures above are derived from a draft version of the 2015 Port of Vancouver Emissions Inventory. Marine includes emissions from ocean-going vessels and harbour crafts. Rail includes emissions associated with Class 1 freight railroads, a regional short line railroad, and switching activity. Trucks covers emissions from vehicles that service port terminals and facilities. Tenant operations comprise emissions associated with administrative buildings and non-road equipment operating on port lands. 2010 and 2015 emissions are estimated using cargo volumes in those years, and 2020 emissions are forecast based on expected increases in trade. CO₂-equivalent is calculated using IPCC 100-year global warming potentials for CH₄ and N₂O, and excludes black carbon. Refrigerants and emissions associated with processing commodities are excluded.

Ocean-going vessels

Vessels that call at the Port of Vancouver account for about half of port greenhouse gas emissions. We are using satellite positioning technology to track the movement of ships and estimate emissions. We promote emissions reductions through our EcoAction Program for ships, and through the installation of shore power facilities where appropriate. Our EcoAction Program offers discounts on harbour dues for meeting voluntary best practices that reduce emissions and environmental impacts, such as obtaining third-party environmental designations for energy efficiency and quiet ships, or using alternative fuels. Participation in the program decreased in 2015 due to the introduction of new laws requiring ships to use low sulphur fuels, which was previously voluntary. In 2016, participation grew to 561 vessel calls, representing 22 per cent of all eligible calls for the year.

EcoAction Program participation



In 2015, in partnership with the Government of Canada and with support from BC Hydro, we embarked on an initiative to install shore power facilities at the Deltaport and Centerm container terminals. This will enable container ships visiting these terminals to shut off their diesel-powered auxiliary engines and connect to the hydroelectric grid while at-berth. Installations are expected to be complete in 2017. The shore power facilities at Canada Place cruise terminal continue to enable emissions reductions.

Emissions reduction through cruise ship shore power at Canada Place

	2012	2013	2014	2015	2016
Percentage of shore power-equipped vessel calls participating	81	77	78	84	77
Net GHG emission reductions (tCO ₂ e)	2,266	3,092	2,656	2,811	2,185
Criteria air contaminants reduced (tonnes)	80	91	78	66	51

[Learn more at portvancouver.com/ecoaction](http://portvancouver.com/ecoaction)

We are working with our partners to help prepare the Port of Vancouver for liquefied natural gas (LNG) as a marine fuel. LNG represents an opportunity for the shipping industry to significantly reduce air pollutants such as sulphur oxide and nitrogen oxide emissions, as well as to achieve more modest reductions in carbon dioxide and black carbon emissions that contribute to climate change. In 2016, we conducted a study to assess future demand for LNG as a marine fuel at the Port of Vancouver and to identify priority areas for our next steps. In 2017, we plan to work collaboratively with industry stakeholders to develop guidance on LNG fueling at the port, including best practices for minimizing fugitive methane emissions.



Blue Circle Award

Our Blue Circle Award recognizes vessel operators who go above and beyond regulatory requirements to reduce air emissions. The 2016 Port of Vancouver Blue Circle Award recipients are:

- Swire Bulk
- CMA CGM
- Disney Cruise Line
- Evergreen Marine
- Grieg Star Shipping A S
- Hamburg Süd
- Hapag-Lloyd AG
- Hyundai Merchant Marine
- “K” Line
- Mediterranean Shipping Company
- NYK Line
- Princess Cruise Lines
- United Arab Shipping Company
- Yang Ming
- Westwood Shipping Lines

Container trucking

Container trucks must enter into an agreement with the port authority to access the port. This agreement applies to about 1,700 trucks and includes strict environmental requirements for engine age, emissions controls and idle reduction. We use global positioning system (GPS) technology to track container truck activities and estimate air emissions, which account for roughly 12 per cent of Port of Vancouver particulate matter and greenhouse gas emissions. We have been targeting 2007 engine particulate matter emissions equivalency by 2017 for all trucks accessing effective emissions controls. As an interim step, trucks with engines from 2006 or earlier are required to install an approved emissions control device, which has resulted in an 18 per cent reduction in the amount of fine particulate matter emitted each year. We also worked with container terminal operators to extend the hours that gates are open to reduce truck congestion and improve turnaround times by spreading truck appointments over more hours in the day. This helps to further reduce emissions associated with idling in queue. Going forward, we are collaborating with industry to assess the feasibility of low- and zero-emissions solutions for the trucking sector.

Container truck particulate matter emissions were reduced by

18%

as a result of our environmental requirements

[Learn more at portvancouver.com/clean-trucks](http://portvancouver.com/clean-trucks)

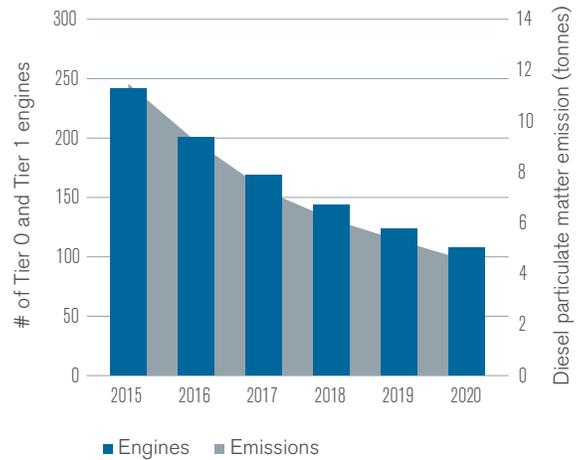
Tenant operations

We lease federal lands and waters to over 100 industrial tenants, including 27 deep-sea marine terminal operators. We are focused on reducing diesel particulate emissions associated with tenant cargo handling equipment through the Non-Road Diesel Emissions Program, and promoting energy conservation and greenhouse gas reductions through our Energy Action and Climate Smart initiatives.

Non-Road Diesel Emissions (NRDE) Program

Port of Vancouver tenants are required to register diesel-powered non-road equipment, report equipment operating hours, and pay a fee for operation of older, higher emission equipment. To accelerate the transition to newer, cleaner equipment, up to 80 per cent of the fee is eligible for rebate once the tenant replaces, retrofits or retires the older equipment. As we increase fees, we expect the use of older engines operating at the port to decline and the emissions associated with their operation to decrease. We are also investigating low- and zero-emission technologies for cargo-handling equipment, such as engine idle reduction technologies and electric equipment.

Tier 0 and Tier 1 non-road diesel engines and emissions



Emissions standards are used to classify non-road diesel engines into tiers based on emission rates of several pollutants, including particulate matter emissions. Engines manufactured before emissions standards are referred to as Tier 0 engines. The first non-road diesel engine emissions standards (Tier 1) were introduced in 1996. The number of engines shown in 2015 is from tenant records and is used to estimate 2015 emissions. 2016–2020 data is a forecast based on accelerated fleet turnover rates, with scheduled NRDE fee increases

[Learn more at portvancouver.com/NRDE](http://portvancouver.com/NRDE)

Energy Action initiative

Combined, over 100 industrial tenants at the Port of Vancouver use more than 2,000 GWh of electricity per year. As Canada's demand for trade increases, more energy will be needed to support port operations. Since power from BC Hydro is 93 per cent clean and renewable, meeting this growing energy demand with electricity from the grid can lower greenhouse gas emissions. We partner with BC Hydro through the Energy Action initiative to provide port tenants with specialized expertise in industrial energy management and access to BC Hydro's financial incentives. Through this initiative, we facilitate workshops with tenants to determine the extent to which energy management practices have been incorporated into operations and to identify priorities for future actions. In 2016, we helped tenants undertake several energy audits including at Container World Distribution Centre and at the Seaspan Drydock facility. We also supported participation of several distribution centres, located at our Vancouver Fraser Richmond Properties, in the City of Richmond Building Energy Challenge. Westran Intermodal Transport won the energy challenge after reducing its energy consumption by more than 50 per cent through retrofitting its site with LED lights.

 [Learn more at portvancouver.com/energy-action](http://portvancouver.com/energy-action)

Climate Smart initiative

We partner with a Vancouver-based social enterprise, Climate Smart, to provide a training program that supports our tenants in measuring and reducing greenhouse gas emissions. The initiative facilitates a port-focused peer group to share knowledge and practices for minimizing emissions. We provide funding that covers 50 per cent of the cost to participate. In 2015, we supported 11 tenants in participating, which helped them collectively eliminate 2,788 tonnes of CO₂e from their operations while achieving \$670,000 in annual cost savings. In 2016, four tenants joined the program and several tenants elected to repeat the training to further cut carbon and costs in their operations. We are aiming to increase the number of Climate Smart certified tenants in 2017.

2,788 tonnes

of CO₂e were reduced by Port of Vancouver tenants with Climate Smart certification in 2015 – an annual reduction equivalent to emissions from 644 cars

Port authority emissions

Our corporate operations have been carbon neutral since 2010. We use an environmental footprint index to help us track and manage greenhouse gas emissions associated with energy consumption, waste and employee commuting at our facilities. Carbon offsets are purchased to render our operations carbon neutral. Ernst & Young provides limited assurance over our corporate greenhouse gas emissions and carbon neutrality assertion.

Protecting assets against potential impacts of climate change

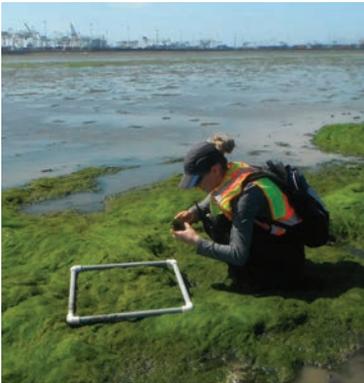
In 2016, we commenced work on an initiative to assess the susceptibility of port infrastructure to climate change impacts. We used drones to capture high-resolution elevation data and imagery, which has helped us identify areas at risk, due to flooding and sea level rise. Through the Fraser Basin Council, we have been actively engaged with federal, provincial and local agencies and organizations to share information and build consensus on coordinated flood hazard management strategies for the Lower Mainland. We also engaged experts at Simon Fraser University and the University of British Columbia to inform our climate change adaptation planning.

Responsible practices

The development and maintenance of port infrastructure is critical to enabling Canadian trade, but it comes with environmental and social impacts. Sustainable infrastructure development refers to the design, construction and operation of infrastructure in a way that does not diminish the health of environmental, social and economic systems. By integrating sustainability into our projects, and encouraging port tenants to do the same, we can develop port infrastructure that maintains a healthy environment and enables thriving communities.

The port authority can also play an important role in supporting sustainable practices throughout the broader supply chain, such as promoting the use of cleaner and quieter ships. By engaging global stakeholders on important sustainability issues, we can facilitate dialogue, share best practices and collaborate to support the transition toward a lower-carbon, sustainable future.

Interested groups	What we've heard is important	Strategic priorities	Risks
Terminal operators and tenants Service providers Industry associations Government Aboriginal peoples Communities Non-governmental organizations	Ensure port infrastructure does not adversely impact the environment or local communities Encourage sustainable practices within the broader supply chain Help facilitate the transition to a low-carbon economy Don't ship coal and oil, which could harm the environment	Enhance and maintain gateway environmental health Achieve broad public support for port operations and growth	Environmental impact on neighbours Loss of community acceptance Climate change



A SUSTAINABLE PORT

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



Our approach

Improve sustainability performance of infrastructure

We aim to lead by example, and are integrating sustainability into the infrastructure projects we deliver. We have established best practice guidelines and are assessing sustainability performance for select projects using third-party rating systems, such as the Institute for Sustainable Infrastructure's Envision rating system and the Canadian Green Building Council's Leadership in Energy and Environmental Design rating system.

We work closely with tenants to encourage sustainable practices in their projects. Through our Project and Environmental Review process, we assess new projects or activities proposed by tenants in order to avoid or mitigate significant adverse effects on the environment and communities. We have published several best practice guidance documents to assist tenants, for example, with developing stormwater pollution prevention plans and air emissions management plans.

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 towards a more sustainable future. We work with industry stakeholders to identify and respond to important sustainability issues such as air emissions, and above-ground and underwater noise. Where possible, we develop initiatives that encourage or incent more sustainable practices such as our EcoAction Program for ships. We are also facilitating meaningful dialogue about the long-term future of the port, and where possible, shared aspirations for a sustainable future. Since 2010, our Port 2050 scenario planning process has brought together hundreds of individuals and organizations to discuss the long-term future of the port, which identified our anticipated, and desired, future: The Great Transition. The scenario represents a societal shift to a low-carbon economy and more sustainable global prosperity model.

Performance overview

Improving sustainability performance of infrastructure

Green infrastructure

During 2015 and 2016, we developed a set of green infrastructure guidelines to assist our project teams to incorporate sustainable infrastructure practices. The guidelines are based on third-party initiatives such as the Envision sustainable infrastructure rating system, which incorporates economic, environmental and social considerations and performance ratings that are applicable to many port projects. Seven of the 20 asset management projects undertaken in 2016 implemented a majority of guidelines.

In 2017, we will continue to refine and implement the guidelines for asset management and infrastructure development projects delivered by the port authority, including the proposed Centerm Expansion Project, if approved, and the Canada Border Services Agency Tsawwassen Container Examination Facility. We are working toward consistent application of sustainable infrastructure practices by improving the processes that integrate sustainability into the design, construction and operation of port infrastructure projects.

Canada Place upgrades

We are incorporating environmentally friendly technology upgrades into Canada Place, a port authority-owned subsidiary that is home to the main port authority office as well as the Port of Vancouver cruise terminal. These infrastructure upgrades, including updated lighting in the parkade, are intended to make the facility more energy- and cost-efficient. We are also developing an energy plan to replace the existing heating and cooling systems with new equipment that will improve efficiency, reduce greenhouse gas emissions and potentially integrate with a district energy system.

Supporting responsible practices throughout the supply chain

Local communities have raised concerns about some of the products traded through the port. Canadian port authorities do not have the legal authority to decide what goods Canada trades; our elected government officials make these decisions. We are legally mandated to ensure whatever goods are traded are done so safely and efficiently within the physical limits of federal port lands.

As a port authority we recognize that we have the opportunity to provide leadership in moving the port, and our supply chain, towards a more sustainable future. To date, we have implemented a number of initiatives that go beyond the requirements of our mandate to encourage voluntary adoption of sustainable practices throughout the port supply chain. The EcoAction Program, for example, offers discounts on harbour dues to shipping lines for reducing emissions and environmental impacts. We are encouraging broader participation and support for these initiatives, and continue to look for new opportunities to engage and collaborate with supply chain stakeholders, to respond to important sustainability issues.

 [Learn more about coal, climate change and the port authority's legal authority at portvancouver.com/coal-and-climate-change](http://portvancouver.com/coal-and-climate-change)

 [Learn more about petroleum products and tanker safety at portvancouver.com/petroleum-products](http://portvancouver.com/petroleum-products)



The Low Level Road in North Vancouver

Low Level Road project receives Envision Platinum certification

The Low Level Road project in North Vancouver was designed to enhance rail and port operations as international trade through the Port of Vancouver continues to grow. The project, led by the port authority, included partners Transport Canada, TransLink, port industry, Canadian Pacific Railway and the City of North Vancouver.

Completed in March 2015, the \$101.6 million project involved the realignment and elevation of approximately 2.6 kilometres of the Low Level Road, a high-use public road that provides access to several Port of Vancouver terminals. This realignment provided space for two new rail tracks to improve rail switching efficiency and capacity. The project addressed safety concerns, recreational opportunities and noise challenges associated with port operations through reconfiguration of three intersections, improvements to bicycle lanes, and stabilization of slopes along the adjacent bluff. It also included the construction of concrete retaining walls that display art to reflect the area's rich indigenous and logging/milling history, and allowed for continuation of the recreational North Shore Spirit Trail.

Stakeholder and community engagement was a fundamental component of project development. The design plan was refined through a public consultation process involving residents, Aboriginal groups, business owners, and staff at the City of North Vancouver. A new design was developed that met the project's goals while also appropriately reflecting community needs and interests.

In 2015, the project was the first transportation project, and only the second project in Canada, to receive the Institute for Sustainable Infrastructure's Envision Platinum certification. The certification recognizes projects that have achieved the highest levels of sustainability in project design, construction, and operation.

THRIVING COMMUNITIES

Good neighbour
Community connections
Aboriginal relationships
Safety and security



Good neighbour

The Port of Vancouver operates 24 hours a day, in a dense metropolitan region, keeping Canadians connected with the global economy. The industrial operations of the port can create noise, odour, dust and light that can impact neighbouring communities. These impacts can be a nuisance for communities, and even cause health problems. In some cases, these impacts can be avoided or at least minimized with implementation of technological or operational improvements, such as elimination of rail crossings with audible safety signals adjacent to communities. As the port grows, we work with communities to proactively identify their concerns, and work with our tenants and port users to minimize impacts.

Interested groups	What we've heard is important	Strategic priorities	Risks
Communities Government Tenants Terminal operators Marine carriers Major shippers Service providers	Consult on major developments and consider community values and priorities in decision-making processes Minimize noise, dust, light and congestion from port operations and development Provide more information about port impacts on communities	Achieve broad public support for port operations and growth	Loss of community acceptance Environmental impact on neighbours



A SUSTAINABLE PORT

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



Our approach

Proactively consider effects on communities

We focus on reducing the negative impacts of port activities as much as possible. We collaborate with a wide variety of stakeholders to proactively manage potential issues and address concerns as they arise, including through local government engagement, three community liaison committees, and a community office in Delta. We collaborate with local government, industry, terminal operators and supply chain partners to address concerns about potential negative impacts wherever possible, and we develop long-term strategies as needed.

Identify and respond to community interests and issues

We listen and respond to community concerns to better plan and manage our own operations and development projects. Our community feedback phone line and email address, and the porttalk.ca online forum, help us track and respond to community questions and concerns as they arise. We also conduct an annual community survey to help us understand broader concerns and topics of interest and identify opportunities to address them, if possible. As part of our Project and Environmental Review process to assess projects on port lands and waters, community consultation provides opportunities for dialogue and helps us identify and respond to interests and issues.

Our approach at a glance

Potential community impacts	Potential effects	Our approach
Noise and light pollution from port operations and development	<ul style="list-style-type: none"> · Loss of enjoyment (stress and annoyance) · Sleep disturbance 	<ul style="list-style-type: none"> · Noise monitoring program · Community feedback line · Community liaison committees · Community office in Delta
Water quality degradation through spills on land and in water and stormwater runoff	<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"> · Project and Environmental Review process · Port Information Guide · 24/7 Operations Centre · Community feedback line
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"> · Northwest Ports Clean Air Strategy · Non-Road Diesel Emissions Program · EcoAction for ships · Shore power for cruise ships · Climate Smart initiative · Environmental requirements for container trucks · Energy Action initiative
Truck traffic and rail traffic	<ul style="list-style-type: none"> · Traffic congestion in local communities · Air pollution · Noise from traffic and rail crossings · Loss of personal productivity due to longer commute times · Safety incidents 	<ul style="list-style-type: none"> · Community consultation · Community feedback line · Community liaison committees · Community office in Delta · Gateway Transportation Collaboration Forum

Performance overview

Proactively considering effects on communities

Our community engagement work provides us opportunities to learn about community concerns in order to address current issues and proactively avoid potential concerns.

Local government

Our port borders 16 municipalities and one treaty First Nation, each with shared and distinct interests and issues. Through working groups, liaison committees, formal consultation, information sessions and presentations to council, we meet with municipal governments regularly to strengthen communications, build productive working relationships, gain support for trade-related initiatives and find opportunities for collaboration.

In 2016, we led a delegation of seven mayors, municipal staff, Transport Canada and port authority representatives to the Worldwide Network of Port Cities conference in Rotterdam to learn more about the relationship between cities and ports. A key learning for attendees was the opportunity to improve relationships and communication between mayors and the port authority, as well as the recognition that regional planning processes in the Lower Mainland could benefit from a stronger understanding of the impact of goods movement in the region.

Over the past year we have focused on building stronger communications channels to build capacity to address issues and find areas for mutual collaboration. We launched an electronic newsletter to keep government representatives informed of port projects and port authority initiatives.

The majority of municipal stakeholders within port-hosted communities believe that the Vancouver Fraser Port Authority does a good job communicating with them, an impression maintained over 2015 and 2016. Stakeholders noted satisfaction with our engagement efforts, including being open and consultative, providing quick responses or feedback, and good or clear communications by our staff. Areas of dissatisfaction included a perceived lack of consultation or inclusiveness in decision-making, and a lack of quality or adequate communication.

Municipal engagement satisfaction

2015	2016
60%	59%

Liaison committees

Our three community liaison committees, in East Vancouver, Delta, and Vancouver's north shore communities, bring together local residents, port industry, railway representatives, municipal representatives and Aboriginal groups to provide a forum for dialogue on issues related to port operations and developments. The intent of our liaison committees is to work directly with diverse stakeholders and interested groups to better understand community issues and share information related to port activities in the community. Some of the key areas of focus for the committees have been port development, and noise and nuisance impacts. Key priorities in 2017 for all committees are continued consideration of port-related impacts on communities, and committee outreach to the broader community.

 [Learn more at portvancouver.com/community](http://portvancouver.com/community)

Public support for the port, as measured by our community feedback survey, rose from 47% in 2015 to

56% in 2016

Positive response to the question: Thinking about port-related operations in your local community, such as terminals, railways, waterways and truck routes, how would you describe your level of support for the port in your community?

Collaborating with partners: Port Moody's Designated Anchorage Area

We collaborated with the City of Port Moody on their Designated Anchorage Pilot Program. Four new buoys were installed in the inlet of Port Moody in 2016 as part of the program, in response to community concerns related to unauthorized, long-term moorage of uninsured vessels, as well as safety issues stemming from abandoned and improperly anchored boats and from dumping of sewage into the inlet. In some cases, boaters were using the inlet as permanent moorage and as an alternative to safely storing their boats at marinas. The program gives the city more control over local waterways, requiring all boats to anchor within the designated area. It also reduces the potential for navigational and environmental hazards in the inlet.

 Learn more at portvancouver.com/safeboating

Identifying and responding to community interests and issues

Community feedback

Community feedback related to port operations and infrastructure projects is received through our community feedback line and email, as well as through porttalk.ca, our online feedback forum. We received feedback about a variety of issues and topics in 2015 and 2016, with roughly half of the feedback related to noise from port activities, particularly from ships, terminals and trains.

In 2016, we exceeded our service target for response time to calls to the community feedback line, responding to 87 per cent of calls within four days. We also received feedback on port authority-led projects.

 Learn more at portvancouver.com/contact-us

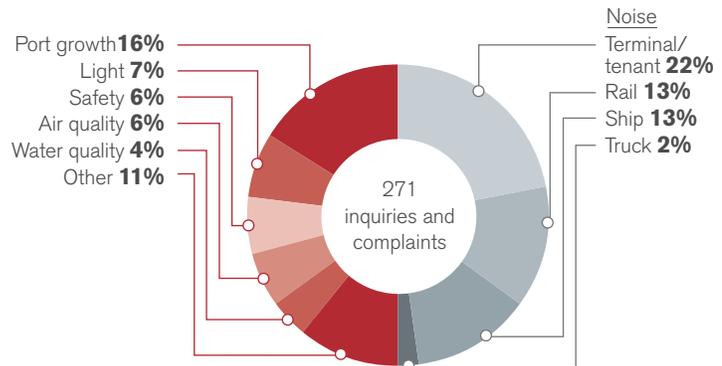
85%

of our responses to community feedback satisfied the community member's complaint or concern.

Complainant satisfied with actions to mitigate issue or, if no mitigation possible due to operational or safety requirements, then complainant is satisfied with information provided.

Community feedback received in 2016 through community feedback line

 Independently assured



Noise monitoring

Local communities have raised concerns regarding noise impacts associated with port activities such as ship engines, truck noise, rail noise and safety sirens. In response, the port authority implemented a long-term noise monitoring program in 2014. The program, which includes 11 long-term noise monitoring stations located around the port, enables us to better understand the source and intensity of port-related noises, and then work with terminal operators, railways and industry to respond to issues raised by community members. The noise monitoring network has helped our team to address inquiries and concerns more effectively, and to better distinguish between port-related and urban noise sources. We also assess the potential for noise from proposed projects on port lands during our Project and Environmental Review process, and have developed project guidelines to assist terminal operators and other port developers in conducting noise assessments.

 Learn more about noise monitoring and access real-time data at portvancouver.com/managing-port-noise

Project and Environmental Review process

In 2016, we conducted 232 environmental reviews through our renewed Project and Environmental Review process, in accordance with the *Canadian Environmental Assessment Act, 2012*. Our process includes technical and environmental reviews, and any required consultation with Aboriginal groups, and municipal, stakeholder and community engagement. Our aim is to earn public trust in our process by ensuring robust reviews with appropriate public consultation and transparency.

We established a new permit comments phone line to collect feedback and questions on permit applications. We also launched a new project permit newsletter to inform subscribers about the review process and to provide status updates on projects of interest.

 [Learn more at portvancouver.com/PER](http://portvancouver.com/PER)

Major project consultation: Proposed Roberts Bank Terminal 2 Project

We began a comprehensive engagement and consultation process regarding the port authority-led

proposed Roberts Bank Terminal 2 Project in 2011, early in project development and prior to the initiation of the federal environmental assessment process. During the pre-consultation phase in 2011, the port authority sought input regarding how participants wanted to be consulted and what topics should be addressed. As a result, topics of consultation during the ensuing three rounds of public consultation included elements of project design, topics of environmental studies, potential project effects and draft environmental mitigation concepts.

In March 2015, taking into consideration input received during consultation and engagement with the public, regulators, Aboriginal groups, local government, and stakeholders, as well as information from technical and environmental studies, the port authority filed the environmental impact statement for the project with the Canadian Environmental Assessment Agency. We will continue to engage and consult throughout the environmental assessment process and, should the project proceed, into the construction and operation phases.

 [Learn more at portvancouver.com/RBT2](http://portvancouver.com/RBT2)

Restoring habitat: New Brighton Park Shoreline Habitat Restoration Project

The Vancouver Board of Parks and Recreation and the Vancouver Fraser Port Authority, through our Habitat Enhancement Program, are working together to restore habitat in New Brighton Park. The project, developed in collaboration with Musqueam, Squamish and Tsleil-Waututh First Nations, is one example of how the port can be a good neighbour. The project aims to restore and enhance just over a hectare of habitat, and increase public access to nature. A stakeholder advisory group made up of community representatives, park users and technical experts was key to gathering input and sharing information about the project. The port authority and the Vancouver Board of Parks and Recreation held four rounds of public and stakeholder engagement regarding the project. A parallel consultation process with Aboriginal groups was undertaken and will continue throughout project development. Feedback from consultation has been considered throughout the project and included topics such as public use of beaches, park amenities and access, restored habitat design, potential effects and proposed mitigation measures. Participants expressed support for the project's approach to balancing diverse uses as well as appreciation for consultation, design work and incorporation of feedback into the project. Once planted in the spring of 2017, the new tidal wetland is expected to provide critical habitat for juvenile salmon, and resting and feeding habitat for local shorebirds.

 [Learn more at: portvancouver.com/new-brighton](http://portvancouver.com/new-brighton)

Community connections

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

Supporting, celebrating and connecting with the communities that depend on the port for their livelihoods, whether because of jobs, goods traded or tax revenues, is important to keeping the port working for Canadians. We involve these communities in helping to grow the world's most sustainable port.

Interested groups

Government
Communities
Aboriginal peoples

What we've heard is important

Continue to facilitate trade that delivers regional benefits and supports livelihoods across the nation

Provide support to initiatives in communities impacted by port operations

Continue providing free events and programming at Canada Place

Strategic priorities

Achieve broad public support for port operations and growth

Risks

Loss of community acceptance



A SUSTAINABLE PORT

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



Our approach

Deliver regional and national benefits

Port operations provide significant contributions to municipal, provincial and federal government revenues, and provide jobs in local communities and across the country. The port authority invests in surrounding communities by supporting, sponsoring and donating to initiatives of significance for each community. We also invest in community benefits related to infrastructure projects, contributing to local quality of life. We collaborate with governments, industry and supply chain stakeholders throughout the western provinces and the rest of Canada, in order to understand their needs with regards to goods movement through the Port of Vancouver.

Engage communities and inspire pride

We engage with and support our port communities through community relations and marketing initiatives that bring the port story to local audiences, creating awareness about the significance of port activities as well as pride in Canada as a trading nation. We support and attend events in our surrounding port communities that provide opportunities for engagement and support community priorities. We also host free events and experiences at Canada Place. Our events are designed to bring communities together and inspire national pride.

Performance Overview

Delivering regional and national benefits

Jobs and government contributions

Port operations provide significant contributions to government revenues, as well as jobs locally and nationally. Contributions to government revenues include tax dollars to municipal governments from

tenants and terminal operators, and payments in lieu of taxes from the port authority. Our contributions to municipalities support critical community services, and high-paying employment created by port activity helps maintain a high standard of living in our region amongst a high cost of living. Additionally, the port authority provides a stipend to the federal government, and the port community and industry provide significant tax contributions to all levels of government.

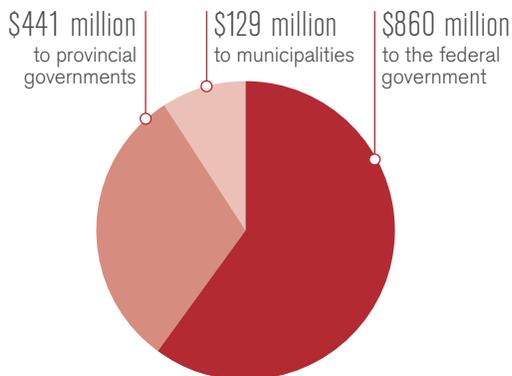
Jobs and property taxes per municipality



■ Direct jobs from all Port of Vancouver-related business, by municipality
 ■ Total 2016 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 no direct tax contributions from the port authority or tenants

Tax revenues from Port of Vancouver-related activity



Figures from the Port of Vancouver 2016 Economic Impact Study

Port of Vancouver-related activity supports and contributes

115,300 jobs

direct, indirect and induced across Canada

Port-related activity generates

\$24.2 billion

total economic output per year

Strengthening national prosperity

We regularly engage with provincial and local governments, industry and supply chain stakeholders throughout the western provinces and the rest of Canada. This engagement focused on educating about infrastructure projects and operations at the Port of Vancouver and in the region, as well as gathered input about needs in regards to goods movement through the Port of Vancouver. In 2015 and 2016 the port authority held board meetings in Alberta and Saskatchewan to facilitate engagement between provincial government, industry and port authority leadership. In 2017 a board meeting will take place in Manitoba. In 2016 a Memorandum of Understanding was signed between the port authority and the government of Alberta, focused on facilitating and implementing opportunities for improved market access for Alberta goods through the Port of Vancouver and on to world markets. In 2017 work will continue with the governments of Manitoba and Saskatchewan towards the same goals that were formalized with the government of Alberta.

More than

\$1 million

invested through our Community Investment and Local Channel Dredging Programs in 2016

 [Learn more about our Community Investment Program and how to apply at portvancouver.com/community-investment](http://portvancouver.com/community-investment)

Community investment

We dedicate up to one per cent of our annual net income to initiatives that matter to local communities through our Community Investment Program. Our investments support three key pillars: community enrichment, education and training, and environmental leadership.

Examples of community investment initiatives in 2016 include:

Marine Mammal Rescue Centre, Vancouver

The Vancouver Aquarium's Marine Mammal Rescue Centre is a hospital for sick, injured or orphaned marine mammals. Each year, the Rescue Centre rescues over 100 marine mammals and rehabilitates them for release back into their natural habitat.

Funding contribution: \$50,000 in 2016

Fraser River Discovery Centre Society, New Westminster

The Fraser River Discovery Centre provides age-appropriate interactive educational experiences to increase public appreciation and understanding of the Fraser River's environmental conditions, with consideration for the river's social and economic importance.

Funding contribution: \$30,000 in 2016

Fundraising gala

Each year, the port authority and port terminals – DP World Vancouver, Fraser Surrey Docks, Global Container Terminals and Western Stevedoring – support communities in need through the annual Port Gala. The gala has helped raise awareness and funds for important community organizations since 1999. In 2015 and 2016 the fundraising event supported three local organizations, Mission Possible in Vancouver's Downtown Eastside, Harvest Project in North Vancouver, and Reach Child and Youth Development Society in Delta. Over 17 years, the Port Gala has raised more than \$2 million for local community organizations.

Local channel dredging

The local channel dredging contribution program provides financial support – a one-time commitment of up to \$7 million over 10 years – for riverfront communities on the Fraser River to undertake their own dredging activities beyond deep-sea and domestic shipping channels. While dredging of secondary channels is not a formal responsibility of the port authority, it does provide much-needed support to communities to help maintain local navigation, recreation opportunities and community safety.

The program has contributed to the completion of projects in Delta and Richmond since 2009. In 2015, the port authority, together with its partners – the Department of Fisheries and Oceans, the B.C. Ministry of Transportation and Infrastructure, the Corporation of Delta and the City of Richmond – completed the Ladner/Steveston local channel dredging project. This project provided safe access for smaller vessels and harbours in the Ladner and Steveston communities. In 2016, the program funded dredging activities in Gunderson Slough in Delta and at Shelter Island in Richmond. In 2017, the program will focus on support for dredging of the Morrey Channel and Shelter Island areas in Richmond, and the Douglas North area in Port Coquitlam/Pitt Meadows.

 [Learn more at portvancouver.com/dredging](http://portvancouver.com/dredging)

The 2015 and 2016 Port Galas together raised

\$480,000

for Mission Possible, Harvest Project, and Reach Child and Youth Development Society

8,592 students

participated in our Education Outreach program in the 2014/2015 and 2015/2016 school years

Engaging communities and inspiring pride

Community relations and outreach

We conducted ongoing community relations and educational outreach programs, and connected with the public at our newly renovated interpretive space, the Port of Vancouver Discovery Centre, at Canada Place. Our community relations team attended events in neighbouring communities and talked to the public about port-related activities. Our Education Outreach Program supported grades four to six curriculum guidelines, as outlined by the B.C. Ministry of Education, teaching students about port operations and the significance of trade to Canada. We also brought port information to the public through our ongoing marketing activities, including advertising and social media outreach. In 2015, the port authority was ranked as the fourth most social port in the world, and our social media program received recognition as one of the top 10 ports of the world by the Spire 2015 Social Media Re-Port.

More than

1,000,000 people

attended Canada Day celebrations at Canada Place in 2016

In 2016, our online YouTube channel, PortTV, surpassed

1,000,000

views for the year

Canada Place events

Canada Place, owned and operated by the Vancouver Fraser Port Authority, is home to our main office as well as the Port of Vancouver's cruise ship terminal. It is an iconic landmark and venue for events and Canadian experiences, located in the heart of Vancouver's downtown and waterfront. Canada Place allows communities to celebrate our nation and its diverse cultures at free and accessible events. Visitors can enjoy interactive and educational elements showcasing information about Canada, as well as national celebrations. 2016 marked the 30th anniversary of Canada Place, which was one of several unique and recognizable architectural features constructed for the 1986 World Exposition (Expo 86). The birthday was celebrated throughout the year's Canada Place events, including Canada Day, and a special look back for locals and visitors on the history of Canada Place.

We collaborated with the City of Vancouver and other partners and sponsors to host the largest

Canada Day celebration outside of Ottawa, and ensure the event was enjoyable and safe for all participants.

In September 2016, we hosted a free pop-up concert at Canada Place featuring Canadian talent, in celebration of the 100-day countdown to Canada 150 celebrations.

In 2017 we will focus on celebrating Canada's 150th birthday with a larger and longer Canada Day celebration, including more activities and more entertainment stretching over two days, as well as Canada 150-focused events throughout the year. We will also add a new free event, Multicultural Day.

In 2016, more than

2 million people

walked on the promenade at Canada Place, visiting The Canadian Trail.



A renovated Discovery Centre

The Port of Vancouver Discovery Centre, located at Canada Place, allows the public to learn about Canada's largest and busiest port in a free, fun and interactive way. In 2015 we commenced a renovation project to update the centre, which reopened in February 2016. The updated Discovery Centre allows visitors to interact with video, graphics, photos and historical artifacts, and learn more about the importance of the Port of Vancouver and port operations via state-of-the-art touchscreen benches and a video wall. The space also provides a venue for presentations to large groups, and to students as part of our Education Outreach Program.

Aboriginal relationships

Canada's Aboriginal peoples have unique histories, languages and cultural practices as well as an inherent connection to the land. They also have unique rights, enshrined in Canada's constitution. For thousands of years, the Coast Salish peoples have lived and prospered in the Lower Mainland and Vancouver area. They had 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 Vancouver Fraser Port Authority manages the lands and waters that intersect the asserted and established traditional territories and treaty lands of several Coast Salish First Nations. Port-related activities have the potential to affect Aboriginal groups. Upholding our legal obligations, respecting Aboriginal culture and history, and looking for opportunities to work with and support Aboriginal people are essential to building strong and productive relationships with Aboriginal groups.

Interested groups

Aboriginal peoples
Terminal operators and tenants
Government

What we've heard is important

Understand and consider the social and environmental impacts of port activities on Aboriginal rights

Engage Aboriginal peoples to better understand their interests

Support business opportunities for Aboriginal peoples

Address cumulative environmental and socio-economic impacts of port growth

Strategic priorities

Achieve broad public support for port operations and growth

Risks

Loss of community acceptance

Environmental impact on neighbours

Environmental spill in harbour or river



A SUSTAINABLE PORT

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



Our approach

Respect traditional territories and knowledge

We aim to balance both our legal requirements for Aboriginal consultation and our mandated responsibility to consider input from neighbouring communities. All new projects or activities on port lands and waters require a permit from the port authority. As part of our Project and Environmental Review process, proposed projects are assessed to determine whether they have the potential to adversely impact asserted or established Aboriginal or treaty rights. If the potential is identified, consultation is required. Respecting traditional knowledge during our consultation process allows us to make better decisions and avoid or manage impacts. The port authority's Aboriginal consultation approach is based upon *Canada's Guidelines for Federal Officials to Fulfill the Legal Duty to Consult*.

Celebrate Aboriginal culture

Canada Place provides a stage on which to celebrate Aboriginal culture and history. Our community investment program also Aboriginal cultural events and initiatives.

Understand contemporary interests

Through consultation and engagement, we work to understand areas of mutual interest to Aboriginal peoples and to the port, and then to identify opportunities to support these interests. We are committed to the development of long-term working relationships with Aboriginal groups who share an interest in the lands and waters we manage.

Aboriginal consultation

Under the *Canada Marine Act*, the Vancouver Fraser Port Authority has been delegated the authority to manage federal lands. Therefore, we conduct Aboriginal consultation on behalf of Transport Canada when operations or developments have the potential to adversely impact potential or established Aboriginal or treaty rights. This means we must meet legal requirements for Aboriginal consultation as well as our mandate requirement to consider input from neighbouring communities.

Performance overview

Respecting traditional territory and knowledge

If a proposed project on port lands or waters has the potential to adversely impact asserted or established Aboriginal or treaty rights, consultation with Aboriginal groups is required. The determination of which groups are potentially impacted begins with respect for and understanding of their traditional territories, and seeks to draw upon Aboriginal knowledge in determining what those potential impacts may be and how they can be avoided, mitigated, or otherwise accommodated.

In 2016, we assessed more than 110 projects to determine if Aboriginal consultation was required; in 2015 we considered more than 60 projects. The port authority consulted Aboriginal groups on 19 proposed projects during 2016 and 32 proposed projects in 2015. These projects range from minor works to significant infrastructure projects.

While we are able to address many issues raised through consultation with Aboriginal groups, there are also matters that require broad policy direction outside of the mandate of the port authority. This includes the potential cumulative impacts of port growth and development together with other regional development initiatives, and the desire for Aboriginal groups to have a greater role in decision-making, including obtaining their consent prior to issuing permit approvals. The port authority continues to look at ways to address these matters in line with government policy.

In 2017, we will focus on building our tenants' knowledge and understanding of Aboriginal interests and issues through briefings and workshops.

 [Learn more at portvancouver.com/aboriginal-relations](http://portvancouver.com/aboriginal-relations)

Understanding contemporary interests

Through consultation and engagement, we have the opportunity to understand areas of mutual interest to Aboriginal peoples and to the port, and then to identify opportunities to support these interests. In 2016 we worked with Aboriginal groups on several environmental and economic initiatives.

Enhancing and restoring aquatic habitat

The Vancouver Board of Parks and Recreation and the Vancouver Fraser Port Authority are working together to restore habitat in New Brighton Park. The project was developed in collaboration with the Musqueam, Squamish and Tsleil-Waututh First Nations. The continued involvement of these three Nations in the construction of the project is considered to be a key component of project delivery.

Improving Burrard Inlet water quality

The Tsleil-Waututh Nation has an interest in restoring the environmental, cultural, spiritual and economic conditions in Burrard Inlet that once supported thriving Aboriginal communities. To that end, the Nation developed the Burrard Inlet Action Plan: A Tsleil-Waututh Perspective. They are engaging stakeholders in discussions about how best to improve environmental conditions in Burrard Inlet. As part of this work, the B.C. Ministry of Environment and the Tsleil-Waututh Nation are coordinating efforts to update the ministry's 1990 Ambient Water Quality Objectives for Burrard Inlet. As part of this multi-year initiative, the port authority is participating in a roundtable and technical working group along with other sectors and stakeholders with interest in the health of Burrard Inlet.

Improving aquatic habitat

The Enhancing Cetacean Habitat and Observation (ECHO) Program, a port authority-led initiative aimed at better understanding and managing the impact of shipping activities on at-risk whales along the southern coast of British Columbia, has benefited from the participation of Aboriginal peoples who bring a traditional perspective to the program.

Improving safety on the river

Aboriginal groups have raised concerns regarding safety during their traditional fishing practices on the Fraser River. Navigation on the lower Fraser River is generally unencumbered, but during certain periods of the fishing season, extra caution by river users is required. To address this concern, we worked with Aboriginal groups to increase other river users' awareness of Aboriginal fishery openings. By directing river users to Fisheries and Oceans Canada's online fishery notices, we alerted river users to potentially high volumes of fishing vessels, and reduced potential conflict between Aboriginal fishers and commercial users. Feedback from both Aboriginal fishers and commercial users was positive; some Aboriginal fishers felt more visible and respected when fishing, while commercial users welcomed the information and the opportunity to increase safety on the water.

Community investment sponsorships

In 2016, our community investment program supported a number of initiatives of importance to Aboriginal groups including an Aboriginal-led fisheries restoration program, annual canoe races and cultural festivals, as well as Simon Fraser University's Aboriginal University Preparation Program, and a Bright New Day Reconciliation Circle.

Providing Aboriginal business opportunities

Our Aboriginal Business Directory, which has been in place since 2015, helps to identify Aboriginal entrepreneurs and organizations interested in doing business with the port authority. Our procurement team can connect registered Aboriginal businesses with potential port-related business opportunities. There are now 45 Aboriginal-owned businesses in our directory.

Celebrating Aboriginal culture

Our annual National Aboriginal Day Celebration and Canada Day at Canada Place events showcase Aboriginal artists, performers and vendors in celebration of Aboriginal peoples and culture from across Canada. Each celebration commences with a traditional welcome delivered by a member of the Musqueam Indian Band, the Squamish Nation or the Tsleil-Waututh Nation, within whose ancestral lands Canada Place rests.

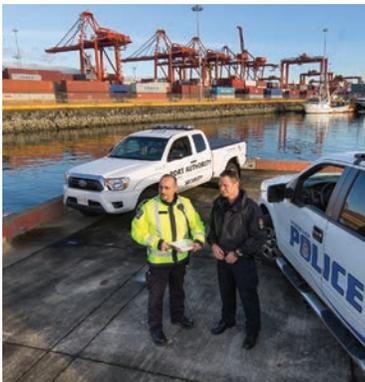
 [Learn more at canadaplace.ca/events](https://canadaplace.ca/events)

Safety and security

Keeping people safe and secure is the top priority for all port users. 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.

We work closely with a variety of safety, security and emergency response organizations to carefully coordinate our respective roles and responsibilities. Our operations team is monitoring the port for safety and security threats 24 hours a day, and we are working to continuously improve our culture of safety, security and emergency preparedness throughout our organization. This work ensures that we are focused on maintaining port safety and security, and prepared for any emergency that might arise.

Interested groups	What we've heard is important	Strategic priorities	Risks
<ul style="list-style-type: none"> Aboriginal peoples Communities Non-governmental organizations Terminal operators and tenants Government Customers and service providers 	<ul style="list-style-type: none"> Ensure vessels, especially tankers carrying crude oil, travel safely through the port Promote collaboration, coordination and training among responsible parties to ensure an effective response to emergencies Ensure port activities don't impact the safety and security of neighbouring communities 	<ul style="list-style-type: none"> Increase supply chain efficiency, transparency and optimize operational capacity to deliver enhanced customer and stakeholder value Enhance and maintain gateway environmental health Achieve broad public support for port operations and growth 	<ul style="list-style-type: none"> Environmental impact on neighbours Environmental spill in harbour or river Public liability – death/injury to members of the public Domestic and national security incidents



A SUSTAINABLE PORT

- 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



Our approach

Uphold safety and security

Practices and procedures at the Port of Vancouver are pursuant to Section 56 of the *Canada Marine Act* and are designed to promote safe and efficient navigation within the local waters of the port and to protect the marine environment. The Port Information Guide is a key tool in managing marine safety. It is the port authority's how-to manual for commercial shippers, boaters and others using the port. It contains a set of localized practices and procedures designed to promote safe and efficient navigation within the waters of the port and support efforts to protect the marine environment.

Our Operations Centre is on task 24 hours a day, seven days a week, and our office staff, harbour patrol officers and security team monitor marine and land activities within our jurisdiction to eliminate hazards to navigational safety and to prevent and mitigate environmental risk. Harbour patrol officers, who ensure that daily operations are being carried out safely, may board vessels for compliance checks.

The security of port authority employees and port infrastructure is achieved through a variety of partnerships and a collaborative approach to addressing key issues. We work closely with federal

agencies to apply security measures and standards for international recognized Marine Security (MARSEC) response levels. We collaborate with local police agencies within our jurisdiction, in addition to Canadian National Railway and Canadian Pacific Railway police services and the Canada Border Services Agency, to ensure the ongoing safety and security of the port.

Promote a culture of emergency preparedness

Following an emergency or other business interruption, our objective is to re-establish safe and efficient operations. In an emergency, we follow the Incident Command System and the British Columbia Emergency Management system, which provide a framework for standardized emergency response and recovery activities, as do all authorities and first responder agencies in the province.

We maintain procedures and have equipment and personnel in place to address a variety of incidents on both land and water. We also play a coordinating role within our jurisdiction for emergency response, which requires collaboration with multiple first responders, communities and industry stakeholders.

Performance overview

Upholding safety and security

Marine and navigation safety

We are constantly improving the safety of navigation. A current focus is enhancing safety through tools and technology, such as cameras, and fog and height sensors that provide marine pilots, captains, coast guard staff, and boaters with real-time data.

Port Information Guide

The Port Information Guide describes practices and procedures that apply to all vessels in the port, including deep-sea vessels, pleasure craft and recreational vessels, as well as to other port users, including tenants. The guide is updated semi-annually to respond to emerging shipping trends, such as larger-size vessels, and to incorporate input from the marine industry.

Movement restricted areas

More than 30 bridges and crossings exist within the Port of Vancouver, providing road and rail transportation links throughout the Lower Mainland. Various navigational safety procedures apply to these bridges and crossings, and are unique to each location. These procedures are found in the Port Information Guide. Movement restricted areas are designated areas where specific or unique navigational safety procedures are in place.

In 2016, we reviewed and updated the Second Narrows Movement Restricted Area (MRA2) procedures, which facilitate the safe navigation and efficient movement of vessels in Burrard Inlet near the Ironworkers Memorial Bridge. A key reason for this review and update was to clarify the regulations for users. The procedures were developed in consultation with marine pilots, the Canadian Coast Guard, Transport Canada and the broader marine industry. The procedures include rules for tug escort and information about ship clearances, navigation aids and transit windows. In 2017, we will update the Port Information Guide to include Movement Restricted Area 1 (MRA1, the First Narrows), which will improve clarity of regulations for navigation safety around the Lions Gate Bridge.

Safe boating guide

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. In 2016, as part of a larger safe boating campaign, we developed a safe boating guide for the Burrard Inlet to help recreational boaters understand basic rules and exercise appropriate caution in busy port areas and areas of challenging navigation. These guidelines have since been incorporated into our Port Information Guide. In 2017, we will release an additional guide focusing on the Fraser River.

 [Learn more about navigation and safety at portvancouver.com/marine-operations](http://portvancouver.com/marine-operations)

The Fraser River Improvement Initiative

Neglected vessels and structures in a river can pose a risk to wildlife, natural habitats or public safety. They can also impede navigational safety. The Fraser River Improvement Initiative is a five-year program, initiated in 2012, to clean up municipal waterways and shipping channels on the Fraser River. Of the 141 sites identified as having either derelict structures or vessels, or trespassing issues, 126 have been addressed to date, leaving us to focus on the remaining 15 in 2017.

 [Learn more at portvancouver.com/fraser-river-maintenance](http://portvancouver.com/fraser-river-maintenance)

Security

As part of ongoing security measures, the port authority administers:

- Card-only and vehicle gate access at port roadways
- Continuous video surveillance of port roadways
- 24/7 security patrols of port lands
- A master port security plan
- Perimeter security and intrusion detection on port properties
- Incident reporting program to track suspicious activity

The security of the port is achieved through numerous partnerships and collaborations. We work closely with agencies that take the lead on other items related to port security, such as crime on the waterfront.

 [Learn more about enforcement efforts at portvancouver.com/crime-on-the-waterfront](http://portvancouver.com/crime-on-the-waterfront)

 [Learn more about agency collaboration at portvancouver.com/security-partners](http://portvancouver.com/security-partners)

Security access control

Access to all port roadways, terminals and facilities is subject to Transport Canada marine security regulations and is administered through the Vancouver Fraser Port Authority's Port Pass Program. We recently improved security on port lands and infrastructure by modernizing our Port Pass system. We opened the new Marine Transportation Security Clearance enrolment office at Canada Place, strengthened the enrolment process for port passes, and reduced the number of external organizations authorized to issue port passes from 18 to three. These actions reduce security risks by allowing us to better control access to port property.

Cybersecurity

Cyber incidents resulting in theft, deletion or modification of the Vancouver Fraser Port Authority's data or property by external parties could disrupt business processes, damage the port authority's reputation or lead to financial losses. In 2016, we updated policies and protocols to improve our cybersecurity capabilities and protect port authority information and systems. We also tested our response plans by using a cybersecurity-related scenario in our 2016 business resumption tabletop exercise.

Promoting a culture of emergency preparedness

Coordinated response

Although the port authority is not a first responder in an emergency, we maintain procedures and have equipment and personnel in place to address a variety of incidents on both land and water. We also play a situational awareness and coordinating role within our jurisdiction for emergency response, which requires collaboration with multiple first responders, communities and industry stakeholders. Our 24/7 Operations Centre provides continuous monitoring and acts as a coordination hub for relaying information. In addition, the Vancouver Fraser Port Authority and Canadian Coast Guard co-chair the Marine Emergency Response Coordination Committee. Consisting of over 45 agencies, the committee's objective is to share knowledge and, through planning and practice, continuously enhance understanding of the roles and responsibilities for coordinating emergency response and recovery activities.

In 2015, under the committee's guidance, we began developing a regional marine highway concept, mapping how first responders, supplies and equipment could move around the region by water in the event that bridges and roads are structurally compromised. In 2016, the resulting Metro Vancouver Marine Highway was successfully tested during a North Shore emergency management exercise, with movement of the Vancouver Heavy Urban Search and Rescue team and their equipment by barge and vessel from the Main Street dock in Vancouver over to a landing site underneath the Ironworkers Memorial Bridge on the North Shore.

Exercising emergency and security plans

Regulations require the port authority to coordinate a multi-agency security exercise every 18 months, and we exceed these requirements by holding an exercise once a year. As part of this process, we develop and test emergency response plans and coordinate with external parties to prepare for major events. In 2016, we conducted a port authority-led security exercise with Marine Emergency Response Coordination Committee members in Burrard Inlet and expanded our exercise program into the Fraser River area for local stakeholders. We also conducted a business resumption plan tabletop exercise to test our business resiliency and the connectivity of our emergency response and business resumption plans.

 [Learn more at portvancouver.com/emergency-management](http://portvancouver.com/emergency-management)

The port authority's role in emergencies and spill response

The Vancouver Fraser Port Authority's primary purpose is to facilitate Canadian trade in a sustainable way and with regard for communities. As such, we are not the lead agency when it comes to emergency response, but we do provide assistance as we can. Usually, this takes the form of working with first responders and other agencies, providing information on a situation through our 24/7 Operations Centre, our security cameras, our patrol boats and even our drone.

On March 4, 2015, the port authority received reports of smoke coming from a container at the Centerm container terminal on the south shore of Burrard Inlet. The material inside was confirmed to be a hazardous organic compound (trichloroisocyanuric acid – commonly used to keep pools and hot tubs clean), a possible eye and skin irritant. Water had entered the container, causing a chemical reaction that spread smoke across the terminal and parts of the city. For this incident the Vancouver Fire and Rescue Services was in charge, assisted by many other agencies as well as the port authority. We provided assistance including the use of our Incident Command Centre. The terminal was evacuated, residents in the area were ordered to shelter-in-place by the local Fire Chief, and port operations along the south shore were suspended until the chemical reaction had ended and the smoke had dissipated.

The following month, on April 8, 2015, a grain cargo ship accidentally and unknowingly discharged 2,700 litres (about three cubic metres or 15 barrels) of bunker fuel into Vancouver's English Bay. The Canadian Coast Guard is responsible for spill response and, as such, responded. In the Lower Mainland, the Coast Guard relies on Western Canada Marine Response Corporation for cleanup. The port authority also provided assistance, including the use of our harbour patrol vessels and Incident Command Centre.

Incidents like these put the emergency response plans of all agencies to the test. Following each incident, we participated in multi-agency debriefs to discuss the incidents and how to improve responses going forward. Following the Centerm container

incident, we clarified roles and responsibilities amongst stakeholders. Following the fuel spill, a working group was convened involving all impacted stakeholders: federal, provincial and local government, the port authority, the Canadian Coast Guard, City of Vancouver, City of Burnaby, North Shore Emergency Management, First Nations, Public Safety Canada, Western Canada Marine Response Corporation, and others. This group developed a local Greater Vancouver Integrated Response Plan to deal specifically with marine pollution incidents. The plan outlines response partners, response phases and coordination, recovery, lead agencies, levels of response, and more. An emergency response subcommittee of the Marine Emergency Response Coordination Committee has been established to oversee and manage the plan, communicate it to all stakeholders, including terminals, and finalize it for distribution.

We conduct a multi-agency exercise every year to test security plans, creating an opportunity for agencies to collaborate, practice and improve on our collective ability to provide security, emergency response, and search and rescue operations. We also regularly conduct exercises to rehearse response to security, marine and natural disaster incidents, both internally and externally, including in collaboration with the inter-agency Marine Emergency Response Coordination Committee. These activities help to ensure we are ready to coordinate with first responder agencies in any emergency.

 [Learn more at portvancouver.com/emergencies-and-spill-response](http://portvancouver.com/emergencies-and-spill-response)

Corporate performance overview

Category	Measure	Units	2014	2015	2016
Our people					
Employees	Number of employees ¹	#	321	320	337
	- Permanent employees	#	272	281	302
	- Term employees	#	49	37	35
	- Full time	#	314	311	325
	- Part time	#	7	7	12
	Voluntary employee turnover rate ²	%	3.8	4.3	3.1
	New employee hire rate ³	%	17.4	10.1	14.2
	Employees covered by collective bargaining agreements	%	72	73	73
Average education expenses per employee ⁴	\$	2,163	1,795	1,738	
Health and safety⁵	Number of deaths	#	0	0	0
	Number of disabling injuries ⁶	#	0	0	1
	Number of minor injuries ⁷	#	0	1	0
	Number of other hazardous occurrences ⁸	#	0	0	0
	Number of minor incidents ⁹	#	6	9	9
Our environmental footprint					
Energy use¹⁰	Direct energy use	GJ	7,131	6,499	5,566
	Indirect energy use	GJ	16,928	15,702	15,936
Greenhouse gas emissions¹¹	Scope 1 direct emissions – fuel consumption	tCO ₂ e	495	456	401
	Scope 2 indirect emissions – electricity and hot water consumption	tCO ₂ e	302	240	264
	Scope 3 other indirect emissions – business travel, employee commuting, paper and waste	tCO ₂ e	622	700	629
	Total greenhouse gas emissions	tCO ₂ e	1,419	1,396	1,294
	Greenhouse gas emissions offset	%	100	100	100
Sustainable commuting	Employees commuting via active transportation, transit or rideshare	%	52	43	35
Waste	Composted	kg	6,895	6,940	8,590
	Recycled	kg	13,803	18,143	19,646
	Landfill	kg	6,330	5,640	4,760
	Waste diversion rate	%	77	82	86
Our financial results					
Financial results¹²	Value generated	\$'000	222,539	239,188	235,163
	Value distributed	\$'000	125,970	130,391	133,921
	Operating costs	\$'000	71,371	73,337	74,930
	Employee wages and benefits	\$'000	35,255	37,503	38,690
	Payments to government – stipend ¹³	\$'000	6,453	6,786	6,711
	Payments to providers of capital	\$'000	5,240	5,198	5,225
	Payments to government – payments in lieu of taxes ¹⁴	\$'000	6,774	6,579	6,516
	Community investments	\$'000	977	1,048	1,143
	Other expenses (income)	\$'000	(100)	(60)	706
	Economic value retained	\$'000	96,569	108,797	101,242

Category	Measure	Units	2014	2015	2016
Our community					
Community feedback	Feedback received through community feedback line ¹⁵	#	404	261	271 
	Complaints resolved ¹⁶	%	–	74	85
Community investment	Community investment program contributions	\$'000	514	601	770
	Local channel dredging contributions	\$'000	56	42	355
	Other corporate giving and contributions	\$'000	407	405	18

 Independently assured by Ernst & Young LLP

- ¹ As of December 31, 2016, the Vancouver Fraser Port Authority employed 337 employees; 333 based in Vancouver, B.C.; two at our local community office in Delta, B.C.; one in Ottawa, Ontario; and another in our office in Shanghai, China. Of these employees, 164 were male (150 permanent and 14 term) and 173 were female (152 permanent and 21 term.). All of these employees worked full-time, with the exception of 10 females and 2 males who worked part-time.
- ² Voluntary employee turnover measures employee-initiated departures by permanent employees, excluding retirement. In 2016, 9 employees voluntarily left the port authority (7 male and 2 female). Total employee turnover for permanent and term employees, including retirements and dismissals, was 9% in 2016. Of the 29 employees, 16 were male (9 permanent and 7 term) and 13 were female (5 permanent and 8 term). We do not collect employee turnover data by age group for corporate reporting purposes.
- ³ 48 new employees were hired in 2016; of these, 18 were male and 30 were female. We do not collect the number of new employee hires by age group for corporate reporting purposes.
- ⁴ Education expenses include conferences, training, degree programs, development and travel. We allocate a percentage of our budget to employee training. Expenses vary year to year depending on the costs of courses taken, whether employees utilize their full training allocation, and the costs of travel and accommodation.
- ⁵ 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.
- ⁶ A disabling injury is an employment injury or occupational disease that involves loss of work on the subsequent day after the injury.
- ⁷ A minor injury is an employment injury or occupational disease for which medical treatment is provided; excludes a disabling injury.
- ⁸ Other hazardous occurrences are incidents that involve events such as explosion, fire, revival emergency procedures, loss of consciousness and malfunctioning of an elevating device.
- ⁹ Minor incidents include first aid, ergonomic assessment or short disruption of work but no loss of work time.
- ¹⁰ 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 natural gas used to produce hot water procured by the Vancouver Fraser Port Authority.
- ¹¹ Our greenhouse gas emissions were calculated in accordance with ISO 14064—Part 1, using the control approach for establishing operational boundaries. Annual activity has been captured through the use of direct invoice data, internal data tracking, human resources information (i.e., postal codes, shift schedules and work locations) and employee surveys for commuting. Greenhouse gas emissions from commuting for 2015 and 2016 were estimated using a different methodology than in 2014. Emission factors were referenced from the 2016/17 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions, Ministry of Environment, May 2016, and Environment Canada's National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada, UN Framework Convention, Parts 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 the Renewable and Low Carbon Fuel Requirements Regulation, a biogenic emission component (BioCO₂e) is included, which represents about 2% of total emissions. The greenhouse gas emission factor intensity for electricity is 10.67 tCO₂e/GWh (2012–14 average). Air travel booked through our corporate travel agent, booked using flight passes, and purchased on corporate credit cards have been included. Flights booked directly by employees on personal credit cards have not been captured. Data on composted waste, recycled plastics, glass and metals, and landfill waste is provided by the port authority's waste service provider on a monthly basis. An estimate of confidential waste paper recycling is supplied by the port authority's confidential waste service provider, based on the number of waste collections and volume of confidential waste bins. The port authority maintains its corporate operations as carbon neutral through the purchase of carbon offsets. 2016 corporate greenhouse gas emissions were offset through the purchase of carbon offsets from Taking Root, which are verified under the Plan Vivo standard. Our base year for greenhouse gas emissions is 2010 (1,080 tCO₂e).
- ¹² Our audited financial statements and the summary of direct economic value generated and distributed are prepared in accordance with International Financial Reporting Standards (IFRS). Within this table, investment income, gain on disposal of structures and equipment, and gain (loss) from investment in joint ventures are included within other expenses (income).
- ¹³ Under the *Canada Marine Act*, Vancouver Fraser Port Authority is obligated to pay an annual stipend to the minister of transport to maintain its Letters Patent in good standing.
- ¹⁴ Under the *Payment in Lieu of Taxes Act* (PILT), Vancouver Fraser Port Authority is obligated to make payments in lieu of municipal taxes on its unleased properties.
- ¹⁵ Includes port operations feedback received through email, webform, telephone, PortTalk and letter, either direct from the public or through a port authority employee. Project-related feedback is not included.
- ¹⁶ A complaint is resolved when a community member is satisfied with actions to mitigate issue or, if no mitigation possible due to operational or safety requirements, then the community member is satisfied with the information provided.

About this report

Scope

This report provides information on key sustainability topics for the Vancouver Fraser Port Authority and the Port of Vancouver. When relevant, information for Canada Place Corporation, a subsidiary of the Port of Vancouver, is included. Our other four subsidiaries are excluded from this report due to their limited social and environmental impacts, with the exception of corporate financial data, which is based on consolidated financial statements. Our Financial Report 2016 provides further details on these subsidiaries as well as additional financial and operational information.

As our previous sustainability report was issued in 2014, this report covers both the 2015 and 2016 calendar years, with a focus on 2016 performance.

Guidelines

We prepared this report in accordance with the Global Reporting Initiative's G4 Sustainability Reporting Guidelines, Core. These guidelines provide

a globally recognized framework for sustainability reporting and help define our report content and quality. The Global Reporting Initiative content index can be found on pages 73 to 75 of this report.

Material topics and boundary

This report covers topics that may affect the long-term success of our business, including our most significant economic, environmental and community impacts and opportunities, and as well as topics of particular importance to our stakeholders. Our sustainable port definition encompasses 10 focus areas, which 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 our materiality process, we identified additional report content within each focus area. Our process to identify priority topics is informed by the Global Reporting Initiative's G4 Principles for Defining Report Content.

Materiality process

Step	Description
<p>Identification of topics</p>	<p>We engage stakeholders to help us understand their key areas of interest. Feedback is received through:</p> <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 <hr/> <p>We engage stakeholders in envisioning the future of the port through strategic initiatives including:</p> <ul style="list-style-type: none"> · Port 2050 · Sustainable port definition <p>We identify additional issues and trends through:</p> <ul style="list-style-type: none"> · Supplemental research · Media scans · Industry reports <hr/> <p>We identify our strategic priorities and key risks through our business planning process.</p>
<p>Analysis and prioritization</p>	<p>Internal experts representing our 10 focus areas help to review and refine a list of topics, and identify the priority topics that are covered in our report. We rely on these experts to incorporate their knowledge of stakeholder interests into their recommendations.</p> <p>In early 2015, we convened two sustainability report review panels, one internal and one external, to help us refine our priority topics. The outputs from these panels inform this report.</p> <p> Learn more about the panel recommendations at portvancouver.com/reporting</p>
<p>Validation</p>	<p>Priority topics are validated by our sustainability report steering committee, consisting of senior management.</p>

Our most significant impacts on sustainability are outside our organization, and often beyond our direct operational control. We therefore report using a port-wide boundary.

Data

Data referring to issues within our direct operational control is detailed within the corporate performance table on pages 68-69. Where appropriate, this data includes Canada Place Corporation. We provide a performance data trend wherever possible. Data is reported in a format corresponding to our internal or

external corporate reporting requirements. Currently, we do not collect data from port tenants, except in relation to energy and emissions. All data is reported using the metric system and Canadian dollars, unless otherwise stated.

Independent assurance

Ernst & Young LLP has provided independent assurance on select performance information within this report and our application of the Global Reporting Initiative's G4 guidelines. Ernst & Young's independent assurance statement is on pages 71-72.

Send us your feedback

We welcome and value your feedback on our sustainability report. Please send comments or questions to info@portvancouver.com.

Independent assurance statement

To the Board Members and Management of
Vancouver Fraser Port Authority

Scope of our engagement

We have been engaged to provide limited assurance on the selected assertions and selected performance information below included in the Vancouver Fraser Port Authority Sustainability Report for the year ended 31 December 2016 (the "Report"). Our limited assurance engagement was performed in accordance with the International Standard on Assurance Engagements 3000, *Assurance Engagements other than Audits or Reviews of Historical Financial Information* ("ISAE 3000") and the International Standard on Assurance Engagements 3410, *Assurance Engagements on Greenhouse Gas Statements 3410* ("ISAE 3410"). This engagement was conducted by a multidisciplinary team including assurance practitioners and environmental scientists.

Selected assertions

Subject matter 1: The Vancouver Fraser Port Authority's assertion regarding the following Specified Performance Indicators as defined by the *Global Reporting Initiative G4 Sustainability Reporting Guidelines* ("GRI G4 Guidelines"):

1. EC1: Direct Economic value generated and distributed
2. EN11: Operational sites in protected areas with high biodiversity value
3. EN12: Significant impacts of activities, products and services on biodiversity in protected areas
4. EN15: Direct GHG emissions (Scope 1)
5. EN16: Energy indirect GHG emissions (Scope 2)
6. EN17: Other indirect GHG emissions (Scope 3)
7. LA1: Engagement, development and retention
8. SO2: Operations with significant actual and potential negative impacts on local communities

Subject matter 2: The Vancouver Fraser Port Authority's assertion regarding the following Specified Internal Performance Indicators:

1. The assertion that the Scope 1, 2 and 3 GHG emissions reported for indicators EN15, EN16, and EN17 have been offset with carbon offsets as presented in the Report (the "Carbon Neutral Assertion")
2. The number of habitat credits in m₂ available to the Vancouver Fraser Port Authority in the habitat bank

3. The vessel on-time, average container dwell time, and average truck turn time performance data ("Gateway Efficiency Assertions")
4. Annual Hazardous Incidents and Occurrences

Subject matter 3: The Vancouver Fraser Port Authority's assertion regarding the Report being in accordance with the core option of the GRI G4 Guidelines.

Criteria

Subject matter 1: GRI G4 Guidelines, as well as ISO 14064-1 - Part 1: *Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*.

Subject matter 2: Criteria internally developed by Management as defined in the Report.

Subject matter 3: GRI G4 Guidelines.

Vancouver Fraser Port Authority Board and Management's Responsibilities

The Report was prepared by the management of the Vancouver Fraser Port Authority, who is responsible for the integrity of the assertions, statements, and claims made therein (including the Specified Performance Indicators and Specified Internal Performance Indicators over which we have been engaged to provide limited assurance), the collection, quantification and presentation of the Specified Performance Indicators and the Specified Internal Performance Indicators, and the selection of, and adherence to, the stated criteria. In addition, the Vancouver Fraser Port Authority management is responsible for the identification of stakeholders and the determination and prioritization of material topics based on its review of the business and the views and expectations of its stakeholders.

The Vancouver Fraser Port Authority management is responsible for maintaining adequate records and internal controls that are designed to support the reporting process and ensure that the Report is free from material misstatement whether due to fraud or error.

The Audit Committee of the Board is responsible for reviewing the Report, providing advice to management and making recommendations, as appropriate, to the Board.

Our Independence and Quality Control

In accordance with Canadian Standard on Quality Control 1, EY 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.

We have complied with the independence and ethical requirements of the Code of Professional Conduct of the Chartered Professional Accountants of British Columbia, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Limitations

Our scope of work did not include providing conclusions in relation to:

- The completeness or accuracy of information in the Report relating to areas other than the subject matters.
- Information reported by the Vancouver Fraser Port Authority other than in its Report, such as information contained on its website.
- Management's forward-looking statements.
- Any comparisons made by Vancouver Fraser Port Authority against historical data.
- The appropriateness of definitions for internally developed criteria applied to the Carbon Neutral Assertion, Gateway Efficiency Assertions, Habitat Bank Balance Assertion and Annual Hazardous Incidents and Occurrences Assertions.

Level of assurance (limited vs. reasonable)

The procedures performed in a limited level assurance engagement vary in nature and timing from and are less in extent than those in a reasonable level assurance engagement. Consequently, the level of assurance obtained in a limited level assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable level assurance engagement. Accordingly, we do not express a reasonable assurance opinion that the Specified Performance Indicators and the Specified Internal Performance Indicators in the Report have been fairly presented, in all material respects, in accordance with the criteria.

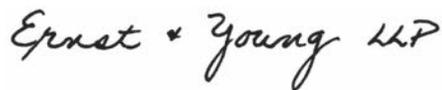
Assurance procedures

Our assurance procedures for the Subject Matters included but were not limited to:

- Interviewing selected personnel to understand the reporting process and organizational boundary.
- Interviewing selected personnel responsible for the Specified Performance Indicators and the Specified Internal Performance Indicators, to understand the collation and reporting processes.
- Where relevant, performing walkthroughs of systems and processes for data aggregation and reporting.
- Undertaking analytical procedures and testing on a limited sample basis over the Specified Performance Indicators and Specified Internal Performance Indicators.
- Reviewing the Report to determine whether (1) the description of the stakeholder engagement process is consistent with our understanding of the process based on the procedures we performed; (2) the material topics identified during our procedures have been adequately disclosed; and, (3) performance indicators exist for every material topic identified.
- Assessing whether data and statements had been correctly transcribed from corporate systems and/or supporting evidence into the Report.
- Assessing key assumptions and the evidence to support the Specified Performance Indicators and the Specified Internal Performance Indicators.

Our conclusion

Subject to the section on limitations above and on the basis of our procedures for this limited assurance engagement, we conclude that nothing has come to our attention that causes us to believe that the three subject matters are not, in all material respects, fairly presented in accordance with the stated criteria.



Chartered Professional Accountants
Vancouver, Canada
March 24, 2017

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 Independently assured
 VFPA-specific: These indicators are specific to the Vancouver Fraser Port Authority.

¹ G4-13: There were no significant changes in size, structure or ownership of the organization, or its supply chain, during the reporting period.

² G4-14: 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. This principle is also reflected in our approach to risk management.

³ G4-15: We follow the International Association of Public Participation (IAP2) core values and principles in our engagements with communities. The GRI G4 Sustainability Reporting principles helps define our report content and quality. We follow ISO 14064 specification and guidance for quantification and reporting of our greenhouse gas emissions. Our participation in Green Marine environmental certification helps us align our practices with marine industry best practices.

⁴ G4-16: We are members of a number of associations, including the Aboriginal Skills Group, the American Association of Port Authorities, the Association of Canadian Port Authorities, the Business Council of British Columbia, Business for Social Responsibility, the Canadian Chamber of Commerce, the Canadian Council for Aboriginal Business, the Chamber of Shipping of British Columbia, the Cruise Industry Association of B.C., Green Marine, the Industry Council for Aboriginal Business, the International Association for Public Participation, the International Association of Business Communicators, the Vancouver Board of Trade, and the Vancouver Maritime Museum.

⁵ G4-22: The number of protected areas in 2014 has been restated to encompass all seven designated national and provincial wildlife areas and three rockfish conservation areas within or bordering our navigational jurisdiction. We take protected areas into consideration as part of our project and environmental reviews. Find out more about these areas at www.portvancouver.com/environment/water-land-wildlife/

⁶ G4-23: There were no significant changes from previous reporting periods in scope and aspect boundaries.

⁷ G4-30: We have published an annual sustainability report since 2011. In 2016, we decided to focus resource on internal alignment with our new vision, and did not publish a sustainability report. This report, therefore, covers both the 2015 and 2016 calendar years, with a focus on 2016 performance. We plan to continue to report our sustainability performance on an annual basis in future years.

⁸ G4-56: All new employees are required to certify as having read and understood the Vancouver Fraser Port Authority Code of Ethical Conduct Policy. The policy requires employees to review their obligations under this Code on a regular basis and will participate in periodic Ethical Conduct education programs offered by the port authority. Port authority executives and directors provide to internal audit an annual written acknowledgement of compliance with the Code.

⁹ G4-LA9: This indicator is only partially reported in accordance with the Global Reporting Initiative's G4 guidelines, as information about the total number of hours spent on training by gender, employment contract and employment type is not available.

¹⁰ We have not included an indicator for the responsible practices focus area. We are exploring the most appropriate way to measure performance in this area as part of our initiative to develop sustainability metrics to measure progress towards our vision.

¹¹ G4-EN12: We report on the port-related activities that can have an impact on ecosystem health and biodiversity on page 31. We do not currently report on the duration and reversibility of impacts.

¹² We have not included indicators for the Aboriginal relationships and safety and security focus areas. We are exploring the most appropriate way to measure performance in these areas as part of our initiative to develop sustainability metrics to measure progress towards our vision.

¹³ We conduct project and environmental reviews and engage with communities across our entire jurisdiction.

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.

Our definition of a sustainable port

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

Vancouver Fraser Port Authority

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