

**VANCOUVER AIRPORT AUTHORITY
2015-2019
ENVIRONMENTAL MANAGEMENT PLAN**



CONTENTS

3	Introduction
6	Vancouver International Airport
11	Essentials to Environmental Excellence
14	Sustainability & Strategic Priorities
16	Strategic Priority 1: Reduce Greenhouse Gas Emissions
17	Strategic Priority 2: Reduce Waste
18	Strategic Priority 3: Reduce Portable Water Consumption
29	Strategic Priority 4: Improve Ecosystem Health



MESSAGE

YVR is committed to being a leader in sustainability and in sound environmental management. The purpose of this document is to articulate the Airport Authority's commitment to environmental management, to provide guidance to decision makers and to establish goals and targets that are in alignment with our mission and vision. The 2015-2019 Environmental Management Plan is an important mechanism to facilitate delivery of YVR's strategic commitment to world-class sustainable leadership and through our use of the plan to guide our decisions over the next 5 years. Our corporate approach to environmental management is the embodiment of our values of safety, teamwork, accountability and innovation. Supporting a culture of engagement and connectivity, our Environmental Management Plan commitments will be integrated into our planning, decisions, undertakings and embedded into our processes. Our environmental goals and targets are intended to satisfy regulatory requirements and industry standards and propel us beyond, into a place of true innovation and leadership. Working together while generating positive returns on economic, social and governance ledgers, our environmental successes will help define sustainability in how we do business.

Craig Richmond
President & CEO
Vancouver Airport Authority

INTRODUCTION

Vancouver International Airport (YVR) is Canada's second busiest airport and an important economic generator for the province of British Columbia. It is managed by Vancouver Airport Authority, a community-based, not-for-profit organization. The Airport Authority is committed to being a global leader in sustainability. Our drive for environmental excellence is built upon regulatory compliance combined with a culture of continuous improvement and innovation. With operations designed to minimize negative impacts to the environment while maximizing opportunities to create benefits, our philosophy is to go beyond, every day.

Set on the shores of the mighty Fraser River, surrounded by the City of Richmond and City of Vancouver, YVR is located in a unique environment that balances the appetite of a growing region and the need to protect a sensitive ecological habitat. We are surrounded by local and regional successes that redefine sustainability and a progressive western seaboard attitude that supports innovative future building. The Airport Authority is a proud community member and we believe much of our success as an award-winning airport operator is derived from our commitment, accountability and responsibility to our neighbours and customers. We understand the importance of the integrated management of our financial performance, environmental stewardship, community-based governance and social responsibility in our business practices for the benefit of present and future generations of British Columbians.

Building on our prior successes, the 2015-2019 Environmental Management Plan articulates the Airport Authority's drive toward environmental excellence and identifies the programs and initiatives that will embed environmental sustainability into YVR's activities and corporate culture. It sets:

- The framework to guide sustainable environmental management of the airport;
- The key strategic environmental priorities that will further influence sustainable growth and development of YVR; and
- The goals, targets and associated actions that will advance environmental performance and ecosystem health.

OUR VISION

Proudly connecting British Columbia to the world, the Airport Authority's vision is to be a world-class sustainable gateway airport between Asia and the Americas. This means providing connectivity, creating jobs, promoting tourism and travel, and driving economic development to support a region with aspirations to be a vibrant, economically diverse and sustainable community. In addition to our role as a perceptive hub airport, YVR is set to be:

- **World-class** - Hyper-efficient, friendly, fast and reliable for airlines and passengers, providing a sense of place that reflects who we are and celebrates the best of British Columbia; and

- **Sustainable** - Generating positive returns on the economic, environmental, social and governance ledgers, because it not only makes us a better run business but aligns us with the expectations of the community.

The Airport Authority is committed to creating an airport that British Columbia can be proud of: a world class sustainable gateway between Asia and the Americas.



VANCOUVER INTERNATIONAL AIRPORT

OUR UNIQUE SETTING

Vancouver International Airport is located on the southwest coast of the Province of British Columbia, surrounded by land, sea and sky. The airport itself is situated on Sea Island and is part of a vibrant natural setting at the mouth of the Fraser River where it meets the Salish Sea. The Fraser River supports one of the world’s largest salmon runs and its estuary provides a major staging area for migratory birds on the Pacific Flyway. Sea Island, and its immediate surroundings, includes five designated protected habitat areas: Sea Island Conservation Area, McDonald Beach Park, Sturgeon Bank Wildlife Management Area, Iona Beach Regional Park and Swishwash Island. YVR occupies approximately 1,340 hectares of federal property within the City of Richmond. Located across the Fraser River from the City of Vancouver, YVR is only 15 kilometres to Vancouver’s downtown. YVR’s juxtaposition between urban living and nature creates unique environmental challenges.

ENVIRONMENTAL MANAGEMENT

There are risks and responsibilities associated with aviation safety, security, occupational health and safety, and environment that are inherent in operating an international airport. To effectively manage and mitigate these risks, YVR maintains robust policies, procedures and management systems aligned with our regulatory obligations. Established environmental systems and programs are in place at YVR to support safe operations, including a Safety, Security and Environmental Policy and an Environmental, Health and Safety Management System.

REGULATORY CONTEXT

Airports are regulated by Transport Canada and governed by a number of laws and regulations to ensure airports are safe and efficient while protecting the environment. Federal regulations and standards are used as the foundation for environmental programming and performance. In the interest of responsible and sustainable environmental management, YVR works to meet or exceed additional self-imposed standards, including the adoption of applicable provincial and municipal regulations. This means that if provincial, regional or municipal regulations or bylaws provide pertinent standards, YVR will endeavour to meet those standards. Tenants at YVR are also required to uphold the same standards.

SAFETY, SECURITY & ENVIRONMENTAL POLICY

In 2008, YVR adopted the Safety, Security and Environmental Policy which identifies excellence in management of these risk areas. The policy states:

YVR is committed to excellence in safety, security, and environmental management. Our primary objective is to build, operate and maintain a safe, secure and sustainable airport for our employees and customers alike. Our commitment is delivered through a collaborative approach with continuous review and improvement of our operating performance. Our safety, security and environmental programs are driven and supported by our Executive team working together with our innovative and professional employees.

The Executive Committee will lead our efforts to:

- Meet all applicable safety, security and environment laws and regulations;
- Train and educate our employees in support of safety, security and environmental excellence;
- Set specific measureable goals for safety, security and environmental performance and regularly report on these results; and,
- Promote a culture whereby employees:
 - Voluntarily self-report any acts, deficiencies, hazards or occurrences that threaten safety, security or the environment and,
 - Actively identify, seek out, report and rectify hazards in order to maintain a safe, secure and environmentally sustainable airport.

A SYSTEMS APPROACH

To ensure that we continually improve our environmental performance, the Airport Authority has an Environmental, Health and Safety Management System (EHSMS) that aligns to principles laid out in ISO 14001 and OHSAS 18001. Both ISO 14001 and OHSAS 18001 are internationally recognized standards that outline the structure of an Environmental Management System and Occupational Safety and Health Management System, respectively. The EHSMS sets out the framework for ensuring accountability for implementation and operation at the departmental level along with a program of auditing to support a *Plan-Do-Check-Act* approach to environmental management.

PLAN-DO-CHECK ACT

To ensure continuous improvement, the Environmental Management Plan is reviewed and updated regularly, with process reported in an Annual Sustainability Report. The Environment Department, under the direction of the Vice President of Strategic Planning, Legal Services & Environment, leads the review and identifies recommended enhancements through consultation with the Airport Authority organization and management team and the Environmental Affairs Committee. Reviews are informed by annual analyses of performance against targets. The results are reviewed by the Airport Authority's Executive Committee and the Board of Directors.

ENVIRONMENTAL RISK ASSESSMENT

Environmental risk assessments frequently provide greater understanding of an environmental issue and aim to identify the aspects that contribute most to the risk. The aim of risk assessment is to evaluate the significance of risk by reference to science, regulation and/or stakeholder views on its acceptability, in order to make organizational arrangements for its active management.

The active nature of an airport presents environmental risk arising from a range of operational activities. The goal of the Airport Authority's environmental management program is to develop and continuously assess our policies, programs, practices and materials to avoid, mitigate or minimize impact and associated risk to the environment. A detailed risk assessment of our operations was conducted prior to the development of the 2015-2019 Environmental Management Plan to inform planning, ratify our core environmental program areas and develop strategic priorities.

CORE ENVIRONMENTAL PROGRAM AREAS

Aeronautical Noise	The Aeronautical Noise Management Program manages disturbance to those living in communities in the vicinity of the airport while recognizing the need for continued safe and efficient airport operations.
Air Quality and Climate Change	The Air Quality and Climate Change Program addresses airport and airport-related activities that could impact local, regional and global air quality through the production of pollutants, including greenhouse gases and ozone-depleting substances.
Water Quality	The Water Quality Program protects the Fraser River and Strait of Georgia from airport activities by preventing the contamination of surface water runoff on Sea Island.
Natural Habitat	The Natural Habitat Management Program protects environmentally sensitive features (e.g., Sea Island Conservation Area) from impacts of airport operations.
Hazardous Materials	The Hazardous Materials Program reduces risk by meeting or exceeding the regulatory requirements for life cycle management, safe handling of hazardous materials, and spill preparation and prevention.
Contaminated Sites	The Contaminated Sites Program enables the Airport Authority and its tenants, in conjunction with Transport Canada, to manage contaminated sites at YVR and reduce any potential risks and long-term liabilities.
Environmental Assessment & Sustainable Building Design	The Environmental Assessment Program ensures that environmental impacts are identified, avoided or mitigated by integrating environmental management into planning, design, construction and operation of all new projects. Sustainable Building Design supports YVR's intention to minimize the environmental footprint of our built infrastructure.
Energy and Resources	The Energy and Resources Program promotes the importance of resource-efficient operations and identifies ways to reduce consumption of natural gas, diesel, gasoline, water and electricity at the airport.
Waste and Recycling	The Waste Management Program reduces waste and promotes recycling to Airport Authority employees, airport tenants and passengers.



ESSENTIALS TO ENVIRONMENTAL EXCELLENCE

IN PURSUIT OF ENVIRONMENTAL EXCELLENCE

The following key elements that underlie the Environmental Management Plan, our systems and YVR's programs are essential to sustaining environmental excellence.

OUR COMMITMENT AND ACCOUNTABILITY

The President and Chief Executive Officer oversees compliance to the Airport Authority's environmental, health and safety policies and practices. YVR's Vice President of Strategic Planning, Legal Services & Environment, provides leadership, direction and management for on-going environmental concerns at YVR. The Environment Department plays a critical role advising, facilitating and supporting Airport Authority departments and external partners to identify and champion key environmental initiatives. All employees are held accountable for environmental responsibility through the Airport Authority's Safety, Security & Environmental Policy. Airport tenants are also required to adhere to the environmental requirements of their leases. Like airport tenants, contractors and suppliers are required to conduct their business in a manner that meets the objectives of the Environmental Policy.

OUR CROSS DEPARTMENTAL TEAMS

A key focus of developing a culture of sustainability is to empower cross-departmental teams with the ability and responsibility to create positive change through innovative solutions. The value of these teams is their cross-functional nature and collective accountability to move forward on action plans and initiatives. These teams coordinate the core knowledge and expertise that exists within various Airport Authority departments with a focus on developing new best management practices.

STAKEHOLDER ENGAGEMENT

As a community-based organization, we value the relationships we build with our business partners and surrounding communities. Our external stakeholder groups enable our community to give us direct feedback. The committees also allow the Airport Authority to engage and consult members to ensure open and honest communications for improved and more effective environmental management at YVR.

The Environmental Advisory Committee provides input and suggestions on the Airport Authority's environmental practices and programs and consists of representatives from community and environmental groups, industry, citizens, and government, including the Musqueam Indian Band.

The Aeronautical Noise Management Committee provides a forum to discuss mitigation programs and to solicit input on noise management initiatives. The Committee meets quarterly

and members are independently appointed by their respective stakeholder groups that include citizen representatives, municipal governments, the Musqueam Indian Band, airlines, NAV CANADA, industry associations, Transport Canada and the Airport Authority.

YVR's Environment Department engages the community in the development of its five-year Noise Management Plan to document the current state of the noise program, identify initiatives to address community issues and to improve airport associated noise. These initiatives are developed through input received from YVR's Aeronautical Noise Management Committee and the community. This report is available at www.yvr.ca/noise.

In addition to the work with the aforementioned stakeholders, YVR carries out a wide range of public communications and outreach initiatives ranging from annual public meetings and annual report to municipal council presentations and having a presence at community festivals.

STAKING OUT LEADERSHIP

The Airport Authority is committed to growing the airport while protecting the environment and neighbouring communities from operations. For YVR, sustainability means operating the airport in a way that improves the quality of life of our employees, passengers and customers while integrating and co-existing with the natural environment. In a highly competitive market, YVR has set the bar high for successful environmental management through a corporate commitment to, and implementation of, a variety of sustainable initiatives. This plan takes effect in a time of increasing public and corporate expectation in environmental stewardship and sustainability – and this expectation will only grow with time.

The Airport Authority's environmental targets and implementation strategies will guide environmental management decisions at the airport through 2015 and beyond. YVR will lead the industry by researching best practices, benchmarking performance against others and advancing initiatives that support world-class and leading-edge environmental stewardship. Setting clear environmental targets and integrating them with financial strength, customer satisfaction and a sound place within the community, ensures YVR will innovate, lead and embed sustainability into our everyday business.

YVR has four primary pillars to sustainability: economic, environmental, social and governance. YVR will develop new and improved frameworks for decision-making that support balance and multiple successes across these pillars. The Environmental Management Plan will inform integrated planning, sound decision-making and it is expected to support a continued cultural shift towards more sustainable, shared and responsible behaviour.



SUSTAINABILITY & STRATEGIC PRIORITIES

ENVIRONMENTAL PRIORITIES

This Plan is forward looking and sets out a framework to manage our environmental footprint. Areas of opportunity for improvement have been identified from both within the organization and from external sources and have been incorporated into strategic priorities. Our attention to the quality of our air, water and land will continue, with core environmental programs designed to effectively manage environmental risks and move YVR beyond compliance with environmental laws and regulations, by incorporating leading environmental practices into our work. In addition to operations under the control of the Authority, YVR is also explicitly exploring ways to support our Sea Island business partners as they strive to reduce their environmental footprint within a sustainability context. While this is an area where YVR may only be able to influence behaviour, the Plan embraces the challenge and establishes goals and identifies potential initiatives that we hope will connect the Authority’s strategies to others on Sea Island.

YVR will build on our excellent record of compliance and continue to focus efforts to improve and enhance our foundational core environmental programs. Looking ahead, the Plan establishes four priority areas, in alignment with our corporate Strategic Plan, to support the implementation of environmental programs at YVR that minimize negative impacts on the environment and contribute to achieving our goals. The Airport Authority consulted broadly; with neighbours, employees and business partners, airport tenants, regulators, government, other airports, the Airport Noise Management and Environmental Advisory Committees, and others, to identify a set of strategic priorities. Goals to reduce carbon emissions, waste and water use as well as improving ecological health reflect the airport’s environmental setting, regional context and prevailing opportunities and challenges within the aviation industry. These priorities coalesce interests across departmental boundaries and generally mirror local, regional, and provincial targets in four important environmental areas. In striving to achieve these goals, we will improve our environmental benchmark on a global airport scale.

The targeted environmental priority areas YVR will focus on reducing:

- Greenhouse gas emissions
- Waste
- Potable water consumption
- Impact on Sea Island ecology

The following section describes these strategic priority areas and their associated initiatives.

STRATEGIC PRIORITY 1: REDUCE GREENHOUSE GAS EMISSIONS

Goal:

- Reduce greenhouse gas emissions

Targets:

- Reduce Airport Authority tonnes of emissions by 33% over 2012 levels by 2020
- Reduce Sea Island tonnes of emissions by 33% over 2012 levels by 2020

Minimizing greenhouse gases (GHGs) is a global imperative. Local air quality can be seriously affected through the release of criteria air contaminants such as volatile organic compounds and nitrogen oxides, so by minimizing emissions associated with GHGs other improvements to air quality can be made. Emissions are generated from building operations, airport operations including vehicle access by passengers, employees and freight, by air-carrier ground operations and the landing and take-off phase of flights. The efficient use of energy is essential for a sustainable airport. Energy is consumed at YVR by interior and exterior lighting, baggage systems, electronics and computers, moving walkways and elevators, heating, ventilation and air conditioning systems and ground power units. Under this strategic priority, the Vancouver Airport Authority would continue to work to manage emissions and energy use from Airport Authority sources. The Airport Authority would also work with airlines, tenants and stakeholders to manage emissions and energy use under their control.

Potential 2015 – 2019 Greenhouse Gas Reduction Strategies:

<p>Develop climate friendly policies/guidelines to guide Airport Authority operations</p>	<ul style="list-style-type: none"> ▪ Develop a Fleet Management Plan to support the replacement of aging vehicles with low carbon alternatives. ▪ Develop alternative & district energy systems for onsite generation and distribution of electricity and heat. ▪ Pursue retrofits of Airport Authority buildings and utilities
<p>Work with airlines, tenants and stakeholders to develop climate friendly policies/guidelines</p>	<ul style="list-style-type: none"> ▪ Support and encourage tenants to reduce emissions under their control by developing a retrofit program. ▪ Support replacement of ground support equipment to low or no emission vehicles. ▪ Reduce emissions from airline auxiliary power units by providing increased gate infrastructure such as ground power units and pre-conditioned air units. ▪ Connect tenants to low-carbon district energy systems as developed ▪ Promote sustainable ground access options

STRATEGIC PRIORITY 2: REDUCE WASTE

Goal:

- Reduce waste generation and increase recycling

Targets:

- Terminal operations: 50% kilograms total waste diverted from landfill by 2020.
- Greater Sea Island (off terminal): establish baseline in 2015 and reduce over 5 years.

We will continue to work to reduce waste from Airport Authority sources and from terminal operations. The Airport Authority will work with tenants and stakeholders to influence waste and recycling practices. An average of 38% of terminal waste is already diverted. Construction waste diversion achieves a high success rate with 98-99% by weight diverted, mainly through concrete recycling and reuse. Recent waste audits reveal that organics constitute over 50% of terminal waste, and the focus for the next five years is to specifically target this waste stream, driven by Metro Vancouver’s regional organics waste ban coming into effect in 2015. Identifying areas for centralized waste collection and hauling across Sea Island will also be key to reduce island-wide waste. Success will require working with terminal and Sea Island land tenants to educate, inspire, and develop common approaches to target setting, diversion and waste hauling. YVR’s job will be to create a waste-aware culture at the airport to shift our idea of what waste is and we manage it.

Potential 2015 – 2019 Waste Reduction & Diversion Strategies:

<p>Airport Authority waste reduction and diversion from landfill</p>	<ul style="list-style-type: none"> ▪ Organics collection program for the terminal buildings, both behind the counter of food and beverage tenants and in public food courts. ▪ Improved labeling of recycling containers to maximize uptake and minimize cross-contamination of recycling streams ▪ Explore incentives for discontinuation of plastic bags and use of compostable tableware in airport food courts ▪ Continued use of waste audits to measure and improve progress ▪ Tenant education, outreach, and engagement ▪ Supply chain management: reducing waste before it is waste
<p>Sea Island waste reduction and diversion from landfill</p>	<ul style="list-style-type: none"> ▪ Investigate feasibility of Sea Island-wide centralized waste management ▪ Waste “re-use-it” central hub / goods exchange

STRATEGIC PRIORITY 3: REDUCE POTABLE WATER CONSUMPTION

Goal:

- Reduce potable water consumption

Targets:

- Reduce Sea Island cubic metres of potable water consumption by 30% over 2012 levels by 2020

Water conservation is gaining increased global attention as factors such as climate change and population growth place further pressure on this resource. Locally, potable water prices are expected to rise in the near future in order to correct historic underpricing and drive more sustainable use. The Authority directly consumes potable water through such things as terminal building operations, infrastructure maintenance and landscape irrigation. Sea Island tenants and other stakeholders consume potable through a variety of uses including kitchen and hotel operations, hydrant flushing and construction activities. Under this strategic priority, the Vancouver Airport Authority would work to reduce potable water consumption from Airport Authority sources, as well as collaborate with airlines, tenants and other stakeholders to reduce water use under their control.

Potential 2015 – 2019 Potable Water Use Reduction Strategies:

Reduce Airport Authority potable water consumption	<ul style="list-style-type: none"> ▪ Review of existing metering system to assess adequacy and confirm baseline data assumptions ▪ Examine the potential for rain water capture and grey water re-use both for existing systems and future expansion ▪ Develop a water distribution system leak detection program with a goal of replacing ageing pipes and assessing current losses ▪ Support retrofits and sustainable design standards for the terminal ▪ Review existing maintenance practices for opportunity to reduce use of potable water ▪ Review landscape irrigation for opportunities to reduce use through drip irrigation and drought-resistant plant species
Work with airlines, tenants and other stakeholders to reduce potable water consumption	<ul style="list-style-type: none"> ▪ Pricing review of metering and tenant billing system ▪ Assess the potential for eliminating unnecessary hydrant flushing in consultation with City of Richmond ▪ Assess potential for requiring contractors to meter and report on potable water consumption ▪ Support retrofits and sustainable design standards for the terminal and Sea Island tenants

STRATEGIC PRIORITY 4: IMPROVE ECOSYSTEM HEALTH

Goal:

- Meet or beat Provincial and Federal air and water quality standards.
- Maintain or improve the amount of protected habitat on Sea Island while minimizing wildlife hazards to aviation safety and leverage partnerships to improve area riparian areas
- Coordinate invasive species management, integrated pesticide management

Targets:

- Stormwater samples with Glycol exceeding 100mg/L of glycol: 0
- Become Salmon Safe¹ certified

Managing wildlife hazards for aviation safety is a major focus of the Airport Authority. The Airport Authority strives to protect important ecosystem values and functions while proactively managing the hazards associated with birds and other wildlife to aviation. This is done through the implementation of a comprehensive wildlife control plan that employs adaptive management.

As one of the largest estuaries along the west coast of North America, the Fraser River estuary is a globally significant ecosystem. The estuary contains habitats for many species of salmon, other fish and wildlife and is an important staging area on the Pacific flyway migration route for many migratory birds. Neighbours of the airport include the Sea Island Conservation Area, which covers 147 hectares at the north end of the island, and to the west, the Surgeon Bank Wildlife Management Area; a marine preserve made up of intertidal and sub tidal waters.

Introducing a strategic priority to support the protection and enhancement of our natural environment is the first step in working towards a long-term goal of net positive biodiversity impacts of operations and development projects. YVR will continue to advance the removal of invasive species and reduced use of pesticides through integrated pest management, supporting the use of native species in landscaping to also reduce water use.

¹ Salmon-Safe is a certification program unique to the Pacific Northwest bio-region that certifies progressive land management and development practices that enhance water quality, terrestrial and aquatic habitat and are ultimately beneficial to wild Pacific Salmon

Potential 2015 – 2019 Improving Ecosystem Health Strategies:

<p>Minimize the impacts of airport operations on water, air and soil quality.</p>	<ul style="list-style-type: none"> ▪ Continue to monitor and maintain water quality of runoff and local air quality conditions. ▪ Continued use of centralized de-icing facilities and service contract. Improve glycol containment and recovery strategies. ▪ Remediate contaminated sites through proactive risk based strategies and ongoing development projects. ▪ Conduct environmental reviews of airport development projects. ▪ Adopt Best Management Practices for land development and construction activities.
<p>Increase areas of native plants and biodiversity without creating hazard to aviation safety.</p>	<ul style="list-style-type: none"> ▪ Explore strategies to identify and remove invasive plant species that may degrade habitat and the resiliency of airport lands. ▪ Work with stakeholders and non-profits to protect and manage natural areas on or adjacent to the airport. ▪ Leverage community partnerships with community groups for riparian area clean up. ▪ Develop new landscaping standards with requirements for use of native species and drought tolerant species. ▪ Reduce use of chemical herbicide and pesticide products. ▪ Explore Salmon Safe certification
<p>Proactively manage wildlife hazards to aviation safety.</p>	<ul style="list-style-type: none"> ▪ Explore opportunities for habitat management through safe habitat modifications. ▪ Continue program of raptor trapping, tagging and relocation. ▪ Review effectiveness of airfield drainage modifications as a wildlife management tool.

CONCLUSION

The 2015-2019 Environmental Management Plan is not a business as usual strategy. The commitments, goals and initiatives will be challenging and costly to plan, launch and deliver. The targets are difficult but we believe they are realistic. This plan is visionary and will take concerted investment, coordination and changes in culture to achieve but it supports and is supported by the Vancouver Airport Authority’s Mission, Vision, Values and Strategic Plan. YVR will monitor and report annually on progress against our goals and the lessons learned and will seek regular feedback and input in how to do better.