CORPORATE SOCIAL RESPONSIBILITY HIGHLIGHTS 2019
# TABLE OF CONTENTS

**MESSAGE FROM THE PRESIDENT AND CEO**  
02

**FACTS AND FIGURES**  
04

**IMPACTING OUR INDUSTRY**  
06
New technologies for a more robust and adaptable system  
08
Increasing efficiency to become a global hub  
10

**IMPACTING OUR ENVIRONMENT**  
12
World’s first  
14
Six Ideas to reduce operational impacts  
16
Collaboration brings revolutionary technology to life  
18

**IMPACTING OUR COMMUNITIES**  
20
Caring and compassion  
22
Local support – global impact  
24
Developing aviation leaders of the future  
26
Unique camp experience inspires young leaders  
28
MESSAGE FROM THE PRESIDENT AND CEO
NAV CANADA continues to be a world leader in the industry in delivering safe, efficient and sustainable air navigation services. We remain committed to helping reduce the aviation industry’s carbon footprint, working closely with our customers and all industry partners. We are passionate about giving back and making a difference in the communities where we live and work.

That is why I am pleased to share these stories about our Company’s corporate social responsibility activities and their impact on our industry, our environment and our communities.

I am impressed, each and every day, by our people and their drive to make a difference both at work and in our communities.

We are continuing to innovate to make improvements that reduce the environmental impact of aviation activity in the 18M km² of airspace we manage for Canada.

The deployment of space-based ADS-B (SB ADS-B) is the beginning of a global revolution that is already showing its promise by delivering enhanced safety, efficiency and environmental benefits domestically and in the North Atlantic.

We are collaborating with our airline and airport partners to implement new procedures that allow aircraft to burn less fuel, produce fewer GHG emissions and reduce the amount of noise over our communities. Working with community members and clearly communicating proposed plans has also proven to be beneficial.

I invite you to read these highlights. Our stories include a segment on the rollout of new technologies at our major airports in support of traffic growth as well as a feature on collaborating with Toronto Pearson on its growth as a vital economic hub.

Read more about the impact of SB ADS-B and Six Ideas to address aircraft noise over local airport communities. Finally, discover how NAV CANADA employees support their neighbours and encourage our young aviation leaders of the future.

Sincerely,

Neil R. Wilson
President and CEO
FACTS AND FIGURES

Recognized as one of Canada’s Top 100 Employers for the fourth year in a row.

NAV CANADA is recognized as a Caring Company by Imagine Canada for our excellence and leadership in community investment.
WHEN COMPARED TO A CONVENTIONAL 10-MILE APPROACH, THE USE OF RNP AR LED TO THE FOLLOWING BENEFITS IN FISCAL 2019:

Savings of over 435,300 track miles
Over 2.2 million litres of fuel burn avoided
Reduction of over 6 million kg of GHG emissions

330+ registered charities and non-profit community organizations
SUPPORTED THROUGH EMPLOYEE AND COMPANY CHARITABLE CONTRIBUTIONS

$1 million+ contributed to community causes IN FISCAL 2019

126 newly licensed air traffic controllers and certified flight service specialists
IN FISCAL 2019

16 airports across Canada with Required Navigation Performance arrival procedures fully operational
IMPACTING OUR INDUSTRY
Through the provision of our services, we support the aviation industry and the flying public, helping to bring people together. Our primary responsibility is to ensure the safety of aircraft in Canadian-controlled airspace and we achieve this while improving efficiency for airlines and airports, minimizing operational impacts on surrounding communities, and helping reduce aircraft emissions. As a responsible member of the aviation community, NAV CANADA will continue to work with – and address the needs of – its stakeholders across the country.
NEW TECHNOLOGIES FOR A MORE ROBUST AND ADAPTABLE SYSTEM

The introduction of new and innovative technologies at major airports in Canada is crucial to bolstering efficiency, given the long-term growth of air traffic and its critical importance to our industry’s development. Delivering on this key requirement for our stakeholders is one of NAV CANADA’s strategic goals.
Introducing new and innovative technologies to support our customers’ operations has always been a key factor in our success at NAV CANADA. Collaboration and information sharing are critical to allow for the types of advancements needed to enhance service and improve throughput.

Leading-edge tools are being deployed to improve traffic flow, flight and airspace management, and planning around our major airports. This will result in better predictability, consistency and efficiency. Arrival Management (AMAN) technology extends the planning and sequencing horizon of traffic arriving at airports, and departure management technology defines the size and/or duration of the queue at the runway to improve ground sorting and departure planning. ONTIME will provide a comprehensive information and collaboration platform for all our stakeholders to improve planning. The advent of airport collaborative decision-making will optimize ground handling at airport aprons.

At Canada’s busiest airports where congestion is anticipated, initiatives like time-based separation (TBS) and Enhanced Wake Turbulence Separation Standards are enhancing operations. TBS, which uses time versus distance-based separation standards to improve landing rates during headwind conditions and Enhanced Wake Turbulence Separation Standards, which allows for reduced spacing on final approach, will increase airport arrival capacity while improving on-time performance.

Many of these tools are at various stages of development and implementation. AMAN technology has been installed at three major Canadian airports with testing underway. Development and adaptation of the TBS tool and a phased approach to installation of ONTIME capabilities are also proceeding. As they are deployed, each of these technologies will provide improvements to the safe and efficient flow of aircraft, and optimize throughput. Working in sync, these new technologies will further support industry growth.

“Increasing demand in the aviation industry for safe, predictable services that address capacity is driving innovation and information sharing. These new technologies will make a tremendous change to how we deliver services and open more opportunities to collaborate with our industry partners.”

Rudy Kellar  •  Executive Vice President, Service Delivery, NAV CANADA

Did you know?
NAV CANADA is in the early phases of a multi-year airspace modernization project focused on improving and sustaining the safety of aircraft operations in the Greater Vancouver Region and Southern Vancouver Island. The Vancouver Airspace Modernization Project will develop a concept of operation, in collaboration with stakeholders, in anticipation of future capacity demand and industry growth, while reducing the industry’s environmental impact.
IMPACTING OUR INDUSTRY

INCREASING EFFICIENCY TO BECOME A GLOBAL HUB

In addition to the deployment of traffic management logic tools to help improve air traffic throughput and operational resiliency, NAV CANADA is working closely with the GTAA to prepare for Toronto Pearson International Airport’s global hub development plans.
Toronto Pearson, like all our major airports, has long been a vital economic force in Canada. Last year, the airport served nearly 50 million passengers, more than any other Canadian airport. As demand for air travel increases, the airport is experiencing rapid growth—especially in international passenger volumes. This growth is expected to continue.

Toronto Pearson is well on the way to becoming one of the world’s top tier international airports. Overall, it’s forecasted that Toronto Pearson could serve some 85 million passengers by the mid-2030s. This would bring substantial economic benefit to Canada, with Toronto Pearson providing air connectivity to as much as 80 percent of the world’s economies.

In preparation for continued growth in air traffic, Toronto Pearson is working with its partners, including NAV CANADA, to adopt Airport Collaborative Decision Making (A-CDM) to improve the efficiency of operations.

A-CDM allows for common situational awareness through the sharing of data among airport partners equipped with the software.

The use of A-CDM lets all stakeholders operate proactively in a predictable environment, changing a first-come, first-served operations model to a best-planned, best-served one. With more accurate flight status updates, airport partners can anticipate arrivals, prepare for the next flight and achieve on-time departure, through the best use of their respective resources.

Each organization now has a more complete operational picture, enabling the effective and timely resolution of issues, improvements in flow control and capacity optimization of runways, terminals, gates and airspace.

“As Canada’s busiest airport, with around 1,200 daily airline movements, Toronto Pearson is a dynamic environment, with numerous entities playing a role in getting the passengers where they need to be. To do this efficiently we must work together. NAV CANADA’s collaboration on A-CDM is contributing toward the more efficient use of the airport’s resources as we move from a first come, first served operations model to a best planned, best served one.”

Craig Bradbrook  ›  Vice President, Aviation Services, Greater Toronto Airports Authority (GTAA)
IMPACTING OUR ENVIRONMENT
Protecting the environment is a responsibility shared by everyone in the aviation industry. NAV CANADA established a corporate objective to introduce initiatives that support a reduction of the industry’s environmental footprint. We assist our customers to reduce fuel consumption and greenhouse gas (GHG) emissions, and we work to address the impact of aircraft operations on communities. Balancing the demands of a growing industry, essential to our economy, while managing the industry’s impact on our environment is a challenge we accept and take seriously.
In early FY 2019, NAV CANADA became the first Air Navigation Service Provider in the world to implement the new International Civil Aviation Organization (ICAO) standard – Established on RNP AR (EoR). As a result, aircraft cleared on RNP AR approach procedures to parallel runways can safely land simultaneously without requiring the legacy separation minimum.

This new separation standard was implemented at Calgary International Airport (YYC) in November 2018, and has demonstrated the many benefits anticipated. It allows for safe simultaneous arrivals on parallel runways, improves how traffic is integrated and increases the use of quieter continuous descent operations. By building on the benefits inherent in the RNP AR procedures, our customers are able to reduce fuel burn, GHG emissions and noise impacts.
More than 40 percent of arrivals at YYC are currently equipped to use RNP AR procedures, which have been deployed at airports across the country. These procedures allow for more flexible procedure design and result in shorter flight paths and flying times, as well as highly precise and repeatable flight management and stabilized paths.

EoR is a major leap forward in terms of how we manage and integrate air traffic. Its successful development is the result of strong collaboration and cooperation with ICAO, Boeing, Transport Canada, YYC and members of the National Airlines Council of Canada, including WestJet.

“Through the efforts of the Calgary air traffic control team, WestJet is flying nearly 100 RNP approach procedures in Calgary each day,” said Scott Wilson, Vice President, Flight Operations at WestJet. “Before EoR was introduced, that number was approximately 50.

“This results in a significant reduction in unstable approach reports, GHG emissions, noise, flight time and fuel consumption.”

In the first year of EoR operations, there have been over 35,000 RNP AR approaches flown, with a reduction of over 250,000 nautical miles of power-on, low-altitude flights over the city of Calgary. This amounts to a reduction of over 4.1 million kilograms of CO₂ emissions and a reduction in flying time for customers of more than 1,400 hours.

There is growing interest in the adoption of the EoR separation standard from various major airports around the world. Calgary’s success is on full display, and now a first for NAV CANADA is becoming a major win for the environment.

“YYC Calgary International Airport was proud to partner with NAV CANADA, to become the first airport in the world to use ICAO’s EoR standard for arrivals on our parallel runways. We are excited about the significant environmental benefits of EoR, including shorter flight paths, lower emissions and quieter descents for arrivals to YYC.”

Carmelle Hunka  › General Counsel, Vice President, Risk & Compliance & Corporate Secretary, The Calgary Airport Authority
SIX IDEAS TO REDUCE OPERATIONAL IMPACTS

The Six Ideas represent a three-year, collaborative effort between NAV CANADA and the Greater Toronto Airports Authority (GTAA), with extensive input from local communities, to study and pursue new ways to provide noise mitigation for the communities affected by operations at the Toronto Pearson International Airport. As the Six Ideas had the potential to result in flight path and runway utilization changes, the Airspace Change Communications and Consultation Protocol was used to guide the associated consultation approach. There were 177 elected officials engaged in this process and 15 public meetings hosted in the Greater Toronto Area. Over 400 residents from 27 communities also took part in the consultations, offering the opportunity to learn about our proposals and participate in the dialogue.
The mitigation of noise for communities surrounding airports remains a complex issue with varied interests and impacts. The joint public consultation we undertook with the GTAA is an example of the collaboration needed to bring about improvements.

The Six Ideas consultation was launched as a three-phase plan that included community input from conception to completion. NAV CANADA was the proponent for ideas one through four, with the GTAA spearheading ideas five and six, all of which are outlined below.

The implementation of new nighttime approaches was implemented in November 2018. By leveraging satellite-based navigation technology known as RNAV, new nighttime approaches were designed to better avoid residential areas. In addition, new nighttime departures have been optimized to avoid more households than a typical departure that is flown today.

Changes to speed restrictions have been implemented on the downwind portion of the arrival flight path. This was intended to reduce noise in some areas of the city until procedures that increase continuous descent operations were implemented.

RNAV is also being used to design new transitions to the final approach that provides for continuous descent. In some cases, this will enable “shortcuts” in the final approach to the runway, reducing the use of the downwind portion of the existing flight path.

Ideas five and six include a summer weekend runway alternation trial program to offer predictable respite from noise for residents, as well as a review of the nighttime preferential runway system implemented in the 1970s.

Challenging the existing way of doing things has been a big part of this process and we will continue to look for opportunities to reduce operational impacts on surrounding communities.

“Toronto Pearson is Canada’s largest airport and a strong driver of both the regional and national economies, but we’re also a part of the communities we serve and we understand the impact our operations have on our neighbours. The Six Ideas, undertaken in partnership with NAV CANADA, are representative of our commitment to exploring opportunities to reduce impacts for our communities.”

Hillary Marshall  
Vice President, Stakeholder Relations & Communications, Greater Toronto Airports Authority
COLLABORATION BRINGS REVOLUTIONARY TECHNOLOGY TO LIFE

The successful collaboration of Aireon, NATS, UK’s air navigation service provider and NAV CANADA ushers in a new era of safety, predictability and efficiency within the North Atlantic, the world’s busiest oceanic airspace. With the deployment of Aireon’s space-based Automatic Dependent Surveillance Broadcast (SB ADS-B) system, NAV CANADA and NATS are setting the standard for implementation around the world.

The deployment of SB ADS-B is an indisputable game-changer within the aviation industry. The ability to discern the position, speed and altitude of every ADS-B equipped aircraft, in real time, is a transformational change to how oceanic controllers have historically managed air traffic.

Traditional ground-based surveillance covered 30 percent of the globe. Controllers relied on position updates from aircraft every 10 to 14 minutes to track aircraft outside of radar coverage. With SB ADS-B, any equipped aircraft can be tracked anywhere on earth, all day, every day, offering travel that is safer, more predictable and more efficient as aircraft can fly optimal routes, speeds and levels.

In the North Atlantic (NAT) airspace, traffic has increased some 26 percent since 2010 and continues to grow on average 4 percent per year. SB ADS-B brings us a new tool to manage the increasing traffic in this busy and important airspace.

The results of the NAT trials using SB ADS-B have been impressive with the Aireon system exceeding industry standards for service provision, with clear improvements in safety performance and with more flights receiving requested flight levels, speed and routes.

A joint analysis by NAV CANADA and NATS had estimated a 76 percent reduction in overall safety risk in the NAT through the use of SB ADS-B. Looking ahead, the results are well on track to exceed this estimate.

Also, carbon dioxide emissions are estimated to be reduced by approximately two tonnes per oceanic flight, based on a study conducted by NATS and ICAO.

With an eye to the future, opportunities for comprehensive and continued benefits for the aviation industry as a whole are at hand. According to Don Thoma, Aireon Chief Executive Officer, the data received from SB ADS-B will create innovations that have not yet been imagined.
An award-winning achievement in collaboration

Aireon, NATS, and NAV CANADA are honoured to be the recipients of the inaugural Civil Air Navigation Services Organisation Award of Excellence in ATM for 2019. This award, for the deployment of SB ADS-B in the NAT, acknowledges the innovation and quantifiable benefits of this endeavour, as well as the collaboration so vital to its success. This joint achievement was also recognized by the Air Traffic Control Association with their Annual Industry Award, which is presented for outstanding achievement or contribution adding to the quality, safety, or efficiency of air traffic control.

“Aireon services are already delivering real safety and operational benefits for our customers, with more to come as we implement further reductions in separation standards and remove speed and route restrictions in the coming months.”

Martin Rolfe › NATS Chief Executive Officer
IMPACTING OUR COMMUNITIES
NAV CANADA has an important role to play, both as an employer and a member of the communities in which it operates. That’s why the Company encourages and assists employees on the job and in their neighbourhoods, with support programs and charitable activities. Through these initiatives, NAV CANADA strives to demonstrate its commitment to social responsibility and to foster pride in the Company.
Providing assistance for local, national and international causes has always been a fundamental part of “who we are” as a Company. That’s why we were proud to launch NAV CANADA Cares in fiscal 2019. Whether supporting a build with Habitat for Humanity in Cornwall or Canadian veterans and their families through True Patriot Love in Edmonton, NAV CANADA Cares responds directly to the causes that matter to our employees.
It’s been said that community spirit, inclusiveness and the intrinsic desire to give back is in our collective DNA at NAV CANADA. This has been well demonstrated throughout our 23-year history. The volunteer efforts of our employees have been extraordinary. Their support for community well-being, health and the environment – not to mention aid for those made vulnerable in the aftermath of natural disasters – has been unwavering.

We believe that part of what defines a company is the dedication and compassion it brings to the communities it shares as a neighbour, and the greater global community. So, after a full review of our existing charitable contributions program, research into best corporate practices and consultation with each of our regions, we launched NAV CANADA Cares in fiscal 2019.

Our goal is to make a greater impact on the communities in which we live and work and take our involvement to the next level. The purpose of the original program remains, but there are now more funding options. Designated funds are earmarked for Giving, Fundraising, Supporting and Partnerships. This categorizes our support efforts and the focus of those efforts in distinct groupings that better reflect our values.

Through the volunteerism of our employees we concentrate on the improvement of local communities; diversity and inclusion; protection of the environment; promotion of physical and mental health and crisis aid around the globe.

Our employees continue to be the main drivers of our philanthropic and humanitarian work – the cornerstone of the overall program. They spearhead all of these charitable activities and in doing so, they contribute to our social responsibility commitment.

We take pride in the NAV CANADA Cares program and we are very pleased that we continue to be recognized as a Caring Company by Imagine Canada. This important designation recognizes the impact of our program, and the tireless efforts of countless employees, on our communities.

“We have never had a company so invested in helping its employees fundraise. Hopefully the generosity demonstrated by NAV CANADA will lead to more companies following your example.”

Joanne Mohamed  ●  Build Projects & Finance Coordinator, Habitat for Humanity / Cornwall & The Counties
LOCAL SUPPORT – GLOBAL IMPACT

The importance of cancer research can’t be overstated, especially when you consider the statistics related to this devastating disease. Few among us have not been touched, in some way, by the effects of the disease and our local support of The Ottawa Hospital is reaping global results in the fight against cancer.
When NAV CANADA and its employees decided to support The Ottawa Hospital (TOH) Foundation back in 2008, they soon realized that the impact of this partnership went far beyond the National Capital Region. In focusing our fundraising efforts on the hospital’s ground-breaking cancer care and research, we learned that they were part of a worldwide effort to stamp out cancer.

According to 2018 statistics from the Canadian Cancer Society, one in two Canadians will develop cancer in their lifetime and one in four will die from the disease. And the projected figures for 2019 are alarming – 196,900 Canadians will be diagnosed with cancer and 85,000 will succumb to the illness.

Over the years, our support for Dr. John Bell and his research team has helped to advance his work with oncolytic viruses, which have been manipulated to kill cancer cells. The team has made great progress in using these viruses to treat several different types of cancer.

Our fundraising efforts in 2019 were directed to the work of Dr. Carolina Ilkow, who also specializes in oncolytic virus therapy. Through her research, she discovered there are cancerous cells that maintain an ancient antiviral defense mechanism called RNA interference that evade destruction by oncolytic viruses.

As a result of this discovery, she and her team have created a new type of oncolytic virus that can block RNA interference in cancer cells, and work to destroy them more effectively, while also leaving nearby healthy cells intact. They hope to be able to use this virus in treatment, to develop more effective oncolytic viruses, and establish biomarkers to figure out which cancers might react positively to treatment.

We’re pleased and privileged to collaborate with TOH in this important fight and excited by the tangible progress being made for the people of Canada and the world.

“Support from community members like NAV CANADA and its employees, for the research teams at The Ottawa Hospital, brings hope for better treatments and cures to thousands of patients here, and around the world.”

Dr. Carolina Ilkow • Scientist, Cancer Therapeutics Program / Ottawa Hospital Research Institute
> IMPACTING OUR COMMUNITIES

**DEVELOPING AVIATION LEADERS OF THE FUTURE**

To expand on our efforts to help develop the next generation of aviation leaders, NAV CANADA has entered into a multi-year partnership with the Canada Aviation and Space Museum (CASM). The goal: to inspire youth from all walks of life to consider careers in aviation.

It was a natural fit to combine NAV CANADA’s efforts with the knowledge and resources available through CASM to inspire and develop the aviation leaders of the future. “Our number one national asset is our youth,” says Christopher Kitzan, Director General at CASM.

Our partnership with CASM provides us with an opportunity to expose more Canadians to NAV CANADA’s unique role within the aviation sector. Through the development of a permanent exhibit at CASM, a travelling exhibition and educational programming and materials, this long-term partnership promises to raise public awareness about Canada’s dynamic aviation and space industry.

Currently under development, the interactive exhibit at CASM will engage visitors, showcase the history of air traffic control and our advanced technology, and present the many faces behind Canada’s air navigation system. The travelling exhibition, featuring similar artifacts and information, will take a cross-country tour to other museums and public venues throughout Canada. Both exhibits are scheduled to be unveiled in 2020.

Our hope is that these new exhibits, that honour the men and women who make Canada’s air navigation service one of the safest in the world, will also inspire others to become part of Canada’s ongoing aviation story.

Fly into the Future, a two-day aviation and space career exploration fair, was held in February 2019 to mark the launch of the partnership. It offered the opportunity to meet with exhibitors representing an array of careers in the aviation and aerospace sectors. To foster the next generation of industry leaders and innovators, the museum and NAV CANADA are also working together with our aviation and academic partners and government to engage directly with youth through various special events.
The importance of inspiring young leaders
To advance our work and continue to keep Canada’s skies safe, we need new talent to design, develop, deploy, and maintain sophisticated air traffic management technologies. With the continued increase of air traffic in Canada, there is a growing demand for skilled professionals. Given the rewarding jobs available within the aviation sector, helping people of all ages and backgrounds to learn about these careers will bring tremendous benefits to the future of air travel.

“NAV CANADA has been fantastic in trying to find new ways to leverage the network and partners we’ve assembled, in order to develop programs that will engage and inspire youth to consider a profession in aviation.”

Christopher Kitzan › Director General, Canada Aviation and Space Museum

NAV CANADA at the CASM career fair
UNIQUE CAMP EXPERIENCE INSPIRES YOUNG LEADERS

Propelled by the success of our first Explore Aviation Summer Camp for teens in 2018, NAV CANADA held two more sessions this past summer, with the aim of encouraging and inspiring our next generation of young leaders. Given the feedback we received from our campers, it’s fair to say it was another huge success.

Our 2019 Explore Aviation Summer Camp garnered numerous submissions from interested teens across Canada. As with the 2018 camp, we asked our candidates to submit essays explaining why they wanted to attend this unique camp, along with a letter of recommendation from a teacher or community leader. From all of the submissions received, a panel of NAV CANADA professionals selected 48 participants for this all-expenses-paid experience. The 24 young women and 24 young men were offered the chance to explore the career paths of air traffic controllers, flight service specialists, electronics technologists, engineers and more.

Our camp instructors, who are all NAV CANADA employees, used hands-on learning throughout the one-week sessions to help our eager participants see the potential of a technical or a science education, and how they could achieve success in these fields.

We were pleased to have travel support for the camp from several of the Company’s airline stakeholders, including First Air, who transported our northern participants.

Aaron Speer, First Air Vice President, Flight Operations, explained, “It’s important to help promote aviation, in all of the various streams, as a potential career path because across the entire industry there is a marked shortage.”

Speer went on to remark that advancing the exciting world of aviation careers should begin early. Young adults entering the workforce now have a phenomenal number of options available to them and many industries are vying to attract the same talent. Recruiting has become a more long-term process and the camp offers a meaningful and motivational step along the way. Said Speer, “I am confident that events like this are part of a long-term solution to ensure a good source of candidates for aviation-related careers.”

The NAV CANADA management team believes in the power and importance of these camps as a means to inform young Canadians about the careers available, and to support the aviation industry as a whole.
"It was a huge opportunity. I think there should be more opportunities like this where people can see different jobs and figure out if this is what they want to do."

Rebecca Livingston › camp participant

"I got a lot of new friends, and a lot of information about all the different technologies and jobs. It’s quite interesting to see how influential NAV CANADA is in the international world of aviation."

Julian Van Lersel › camp participant
Serving a world in motion
navcanada.ca