

# NAV CANADA BRIEF

House of Commons Standing  
Committee on Industry, Science  
and Technology

Development and support for the  
Aerospace Sector

*Follow Up Submission to  
NAV CANADA's Appearance*

April 1, 2021



## 1.0 Introduction

NAV CANADA wishes to express its appreciation for the invitation to appear as a witness as it relates to the study being conducted by the House of Commons Standing Committee on Industry, Science and Technology (the “Committee”) on the topic of support and development of the Aerospace Sector. This document is being provided as a follow up to NAV CANADA’s appearance on March 25<sup>th</sup>, 2021 to provide additional information that we believe is relevant to the study, as well as to address topics of interest raised by Members of the Committee.

This brief provides information related to:

- NAV CANADA’s model, governance structure and service charges;
- Infrastructure and technology investments made by NAV CANADA and the future vision for Air Traffic Management (ATM);
- Recent measures to streamline the Air Navigation Service (ANS); and,
- Additional information on topics of interest to the Committee.

## 2.0 NAV CANADA’s Model and Governance Structure

### 2.1 NAV CANADA’s Model

NAV CANADA is the private, not-for-profit corporation responsible for the safe and efficient movement of aircraft in Canadian civil airspace and the North Atlantic oceanic airspace under Canada’s control.

We oversee air traffic through a sophisticated network of area control centres, air traffic control towers, flight service stations, maintenance centres, flight information centres and navigation aids across the country. NAV CANADA has in excess of 40,000 customers including airlines, business aviation and air cargo operators, air charters and air taxis, helicopter operators and general aviation pilots and owners.

As a not-for-profit corporation, we invest directly in our operations, people and infrastructure to keep Canada’s Air Navigation System safe, efficient and innovative. Our safety record reflects our ongoing focus on safety excellence and our overarching objective of being amongst the safest Air Navigation Service Providers (ANSPs) worldwide. NAV CANADA has built a company-wide safety culture that engages every single employee with an aim to maintain air travel in Canada at the highest level of safety.

NAV CANADA’s safety record is irrefutably one of the best in the world amongst ANSPs. We have achieved this record based on a rigorous decision-making approach with safety at the very core of all that we do and a regulated Safety Management System.

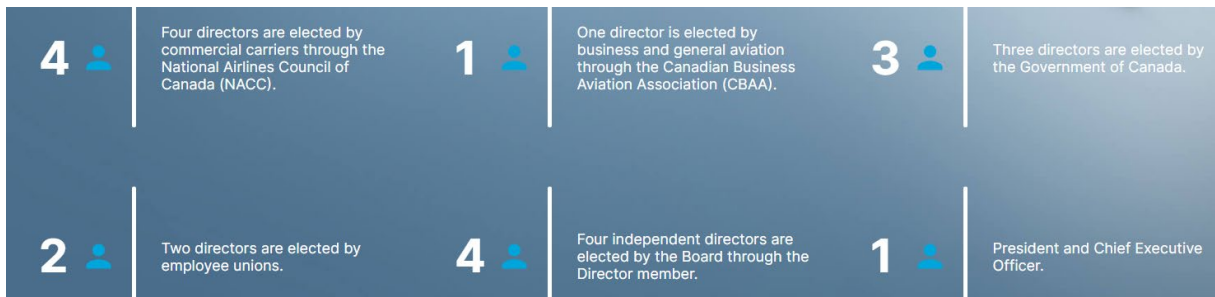
A key benchmark for safety, IFR-to-IFR losses of separation, has declined consistently through the efforts of our employees and investments in modernization since the transfer of the Air Navigation System from Government to NAV CANADA in 1996.

## 2.2 Governance

Our unique corporate governance model keeps us focused on customer service, and ensures greater independence between the country's civil aviation operator and regulator.

Together with our CEO, our 15-member board of directors represents the four stakeholder groups that founded NAV CANADA: The Government of Canada, commercial air carriers, the general aviation sector and unionized Air Navigation Service employees. That mix ensures all interests are brought to the table — and that no one's perspective dominates. The graphic below identifies the makeup of the Board of Directors.

Figure 1- NAV CANADA's has 15 Directors which represent a cross-section of industry stakeholders



NAV CANADA also benefits from an advisory committee of 20 aviation professionals who make recommendations on how to address key issues. These individuals are elected at the Company's Annual General Meeting.

## 2.3 Service Charges and Revenue

Contrary to taxpayer-funded models that exist in many countries, NAV CANADA recovers the cost of providing civil ANS through customer service charges. Service charges are paid by aircraft operators based on aircraft type and weight and services utilized. Movement based charges, paid by airlines, are the basis for the vast majority of NAV CANADA's revenues.

Travel restrictions and reduced demand for air travel due to COVID-19 have directly and negatively impacted NAV CANADA's revenues as a result of the significant decline in air traffic. While NAV CANADA has, to date, been able to ensure liquidity through the issuance of Obligation Notes and its debt capacity, these shortfalls represent future receivables that will need to be paid by aircraft operators.

The revenue shortfall and therefore the amount payable by customers in excess of normal service charges, as represented by the rate stabilization account, is anticipated to total approximately \$550 million by the end of fiscal year 2021 (based on fiscal year 2021 first quarter forecast).

This makes it critical that NAV CANADA accelerate its efforts to streamline and safely evolve the ANS in ways that support cost-effectiveness, increase resiliency to economic shocks and maximize value to its stakeholders, including aircraft operators and the flying public. Without this investment in transformation – including ensuring that the right services are at the right places – customers will be faced with paying the costs of a less-efficient ANS, without benefiting from technologies that will drive compensating increases in operational efficiency. This important responsibility for managing the ANS is reflected in the *Civil Air Navigation Services Commercialization Act (CANSCA)*.

## 3.0 Infrastructure Investment and the Future of ATM

### 3.1 Infrastructure Investment

Since NAV CANADA assumed responsibility for the Canadian ANS in 1996, we have invested more than \$2.7 billion to modernize our systems and our infrastructure to enhance service delivery. Many of the air traffic systems we use today were developed in-house by our skilled and innovative workforce and deployed at facilities across the country as well as internationally.

This includes an integrated controller working position suite (NAVCANsuite) that includes surveillance displays (NAVCANsitu), electronic flight strips (NAVCANstrips) and weather information (NAVCANinfo), ensuring that air traffic services professionals can spend less time managing information and more time managing traffic.

NAV CANADA also developed the Gander Automated Air Traffic System (GAATS), which is used by air traffic controllers responsible for managing the busy airspace over the North Atlantic at the crossroads of air traffic flying between the Americas and Europe. Amongst a number of situational awareness capabilities, this advanced system monitors air traffic and automatically notifies controllers of future conflicts so that they can take action well in advance. The system has been sold to and adapted for the United Kingdom's National Air Traffic Service (NATS) to support their management of the eastern portion of the North Atlantic.

We are a founding partner of Aireon, which has deployed Space-Based ADS-B on a constellation of 66 satellites to provide global surveillance coverage and thus the ability to track flights anywhere in the world and in places where historically such tracking was unavailable.

This satellite-based technology provides for radar-like coverage to places where the deployment of ground infrastructure, such as over the oceans or mountainous terrain, was not previously possible. Today, it is being used over the North Atlantic and domestically to enable more direct routings, resulting in enhanced situational awareness, significant fuel savings for operators and reductions in Greenhouse Gas Emissions. Providing a significant leap in safety, Space-Based ADS-B increases safety and supports search and rescue activities with more accurate positioning information, when minutes and second count. The potential of Space-Based ADS-B to enhance operations is just beginning to be achieved.

We have also invested in Ottawa-based Searidge Technologies' intelligent aviation camera technology that can fill line of sight gaps and which is now featured in many Canadian facilities as well in remote towers in several countries. In a current NAV CANADA trial to provide Airport Advisory Service to Fredericton, NB from Saint-John, NB, it is bringing new capabilities to air traffic services staff and has reduced the instances of runway incursions.

Any and all activities the company undertakes are in support of our core safety mandate. The technology ecosystem was relatively small when NAV CANADA took responsibility for the ANS, so it was important that we made those investments. At the time of transition from Government to private entity, there was already some ATM system development underway, though it was stagnating. As a result of our efforts, we now utilize some of the most advanced systems in the world.

The result of our investments and our employees' efforts are an ANS that:

- is a global leader in operational safety and efficiency;
- has been able to both develop and integrate emerging technologies; and,
- has helped reduce the environmental impacts of the industry.

### 3.2 Future of ATM

Since its inception, NAV CANADA has been a global leader in terms of its ability to increase safety, drive operational efficiency and develop technologies that are used across the country and around the globe.

The current COVID-19 pandemic has increased the need for NAV CANADA and the broader industry to safely accelerate initiatives that will drive operational efficiencies, increase system resiliency and therefore Canadian competitiveness in the aviation industry. The following section features key areas of focus in terms of technological development in support of NAV CANADA's future vision for Canada's Air Navigation System.

#### **Digital Facilities**

ANSPs are making important investments in service delivery methodologies that increase operational resiliency, allow for adaptive service delivery to respond to changes in demand and increase productivity.

NAV CANADA is working closely with Canadian partners, Searidge Technologies and Transport Canada, on trials that will support digital facility concepts, currently in use in several countries around the world.

Digital hub facilities will allow for the delivery of air traffic services, including airport control services and airport advisory services, from one location to meet operational requirements for multiple sites.

Remote delivery will provide for elasticity in service delivery – as changes in demand for service are observed, staff resourcing can be quickly adjusted while increases to level of service can be deployed more rapidly and cost-effectively due to the smaller on-location infrastructure requirements. Digital hub concepts will greatly reduce the cost of delivering the same or an enhanced level of service to our customers and communities and support NAV CANADA in increasing workforce productivity while ensuring equal or better safety. Furthermore, digital hubs can increase safety and provide air traffic service personnel with additional technology supports, particularly in low visibility operations. This technology may support deployment of enhanced air traffic services in regions where infrastructure costs are burdensome, such as in northern or remote locations, or may provide the opportunity to place a service hub in the North.

#### **Remotely Piloted Aircraft Systems**

The proliferation of Remotely Piloted Aircraft Systems (RPAS) is driving significant economic opportunities, touching virtually every sector and every region in Canada. The number of drones currently flying already far outstrips the Canadian manned aircraft fleet by an estimated ratio of 10 to 1.

As demand for airspace access grows to enable the transportation of goods as well as industrial, media, infrastructure monitoring, public safety and recreation applications – to name but a few – safe integration of manned and unmanned aircraft in Canadian airspace will be critical.

NAV CANADA and the RPAS industry are supporting Transport Canada in the development of appropriate regulatory infrastructure. To increase situational awareness and allow for efficient approval of operations, NAV CANADA will be launching the NAV Drone Flight Planning Application in mid-2021. (More on the NAV Drone App [available here](#)).

The release of the NAV Drone application is a first step on the path towards integration of this segment. Future development and realization of economic opportunity demand a new approach to traffic management that cannot be satisfied effectively through traditional Air Traffic Management methods.

The marketplace will require a wide range of scalable, digital capabilities including but not limited to remote identification, tactical geo-fencing, tracking (surveillance), conflict resolution and Drone aeronautical information management. As the organization responsible for the management of Canadian airspace, NAV CANADA has a lead role to play in shaping this future.

### **Trajectory Based Operations**

The Trajectory Based Operations (TBO) concept is based on a group of an air traffic management (ATM) capabilities, processes and systems working together to increase operational planning, predictability and efficiency.

The goal of TBO is to expedite aircraft movement between origin and destination airports through improved strategic planning, use of modern flight procedures and effective management of traffic flows, thereby reducing reactive decision-making and reducing the need for restrictive air traffic management tactics, such as the use of airborne delays, unnecessary speed controls or vectoring techniques based on a limited operational planning horizon.

Key tools include investments in Arrival and Departure Management (AMAN/DMAN) systems, Time Based Separation (TBS), and Collaborative Decision Making (CDM) and Airport Demand/Capacity platforms that will move Canada towards a gate-to-gate operational planning environment.

Defined in four dimensions - latitude, longitude, altitude and time - the planned trajectory associated with the TBO concept results in a common reference for both air traffic management and flight operations. Stakeholders will have a common view for where an aircraft is expected to be - and when - at points along its route. The trajectory is defined prior to departure, updated in response to emerging conditions (such as weather conditions and airport constraints) and operator inputs, and shared between industry stakeholders and systems.

TBO will help deliver more direct routings and reduce delays in terminal airspace while increasing capacity for the long term. This will result in reductions to operator fuel burn while generating significant Greenhouse Gas Emissions reductions that are necessary to meet Canada's environmental commitments. (More on TBO is available on International Civil Aviation Organization (ICAO) website [here](#).)

### **Summary**

NAV CANADA intends to continue to make investments in infrastructure and technologies that support our customers' operations, enhance safety, increase cost-effectiveness, increase resiliency to future shocks and reduce greenhouse gas emissions. As we look at our services, it will be critical that we continue to modernize services in lockstep with the global aviation community. This includes investment in digital facility concepts that allow NAV CANADA to deliver services more flexibly and to respond to change in demand more responsively. It also includes continuing to prepare for new airspace users, such as Remotely Piloted Aircraft Systems (or drones) in a way that ensures continued safety for manned aviation, but also fully enables the economic potential of this growing segment of airspace users. Finally, NAV CANADA must ensure that operational staff have the best-in-

class tools at their disposal to support aircraft operators with more efficient routings that reduce fuel burn and reduce greenhouse gas emissions.

## 4.0 Recent Measures to Streamline the ANS

NAV CANADA took action early in the pandemic to significantly reduce operating costs and capital spending while continuing to ensure that essential air navigation services remained available to support our customers and their critical operations.

We had to make the difficult decision to increase service charges for our fiscal year 2021 after exhausting all available options. In doing so, we worked to minimize the impact of a rate change by using our debt capacity and our liquidity to support our customers by deferring the payment of the increase, interest free over a five-year period.

Like many in the industry, NAV CANADA also had to make the very difficult decision to reduce the size of its workforce, eliminating more than 720 positions, or 14 per cent of our pre-COVID workforce through implementation of voluntary retirement and departure incentive programs followed by involuntary reductions in staffing of temporary and permanent positions, impacting all areas of our business.

NAV CANADA recently launched numerous Aeronautical Studies to safely streamline operations at airport locations where we provide air traffic services. While our studies are still underway, it is important to note that any changes to our Level of Service will only be made after careful assessment of all safety factors, following stakeholder consultation and following concurrence from our safety regulator, Transport Canada.

The current financial operating environment provides impetus to ensure that we are offering the right services at the right places. Similar to an road intersection, there can be different tools to manage a safe and expeditious flow of road traffic, be it a stop sign, roundabout or intersection lights; in the same way a municipality should not install lights when a stop sign is appropriate and vice-versa, NAV CANADA must assess the appropriate Level of Service to ensure safety and accessibility.

It is important to note that NAV CANADA looked at traffic levels prior to the current pandemic to determine if Aeronautical Studies were warranted. In conducting an aeronautical study, NAV CANADA assesses what is required to maintain safety and airport accessibility so that all the economic and social benefits associated with air service can continue to occur. If our assessments find that a Level of Service should be maintained, then that will be reflected in our recommendations.

As an organization with a high degree of fixed costs, and the greatest expenditure being labour cost, changing the organization is a slow and regulated process that ensures safety. From the outset of the pandemic, all of our decisions have been made in view of preserving the integrity of the ANS and ensuring safe aircraft operations now and into the future.

## 5.0 Topics of Interest to the Committee

This section of the brief intends to provide NAV CANADA's perspective on specific topics of interest raised by the Committee or Witnesses.

### **NAV CANADA will be appropriately staffed to support the recovery**

NAV CANADA's workforce decisions reflect forecasts, enhanced scheduling practices and the changing working environment for employees, including air traffic controllers and flight service specialists. It is not possible to utilize a straight percentage to characterize staffing levels across the company as they vary by location and specialty.

NAV CANADA determines and reviews staffing levels in all operational units based on sophisticated methods founded on data. Our processes, tools, and cyclical monitoring ensure we have the right number of employees in a unit at the right time to ensure safe and efficient service to our customers, now and in the future.

Previously, air traffic controller schedule rotations resulted in significant downtime in excess of what is required by regulations. This staffing approach resulted in unnecessary periods away from a working position for periods as. Similar inefficiencies existed in-shift, whereby an air traffic controller may have only been in position for approximately 50 per cent of the working day; staff will now be in position from 66 to 75 per cent of the day. These changes are in line with the international community and guidance provided by the International Civil Aviation Organization (ICAO).

While it is important for air traffic controllers to have adequate rest periods over the course of the day, some specialties have been staffed in a manner that has resulted in work schedules that significantly limited work hours. When calibrated against a more appropriate schedule and standardization of time-in-position, these locations are no longer short staffed and, in some cases, have staffing that exceed requirements.

NAV CANADA's staffing plan is aligned with future projected traffic over several years. Staffing plans are cognizant of likely future attrition and mindful of the organization's capacity to successfully train new employees (success rates, training length, system capacity, etc.). The organization is monitoring traffic forecasts and its impact on staffing on a recurring basis which allows us to ensure that our plans remain appropriate for the recovery.

Even the most optimistic industry forecasts show that it will take several years to return to 2019 traffic levels. In addition, NAV CANADA maintains the ability to recall some of its staff should this be required as well as initiate training in the future. It is important to note that staffing changes will only be made to units where we are confident that we will have the necessary resources to meet current needs and support the recovery.

### **Fatigue and stress management are important areas of focus for NAV CANADA**

It's a stressful time for the entire sector and we understand that our employees may be feeling added pressure. As an organization, we pay close attention to our working conditions to ensure that they meet all standards and that our employees are well supported through a number of employee assistance programs and by management. All safety benchmark data shows that safety is being maintained.



Like other professionals working in aviation, fatigue management is a highly regulated aspect of working as an air traffic controller and staff are required to show up to work well-rested and are provided with the appropriate time to rest between shifts as well as over the course of their work-day.

NAV CANADA values the perspectives of its workforce and, in response to a recent survey by one of its labour unions, we have launched a series of safety focussed forums to delve into the safety concerns expressed in said survey.

**NAV CANADA has a well-established training program.**

NAV CANADA's recruitment process seeks our candidates with known cognitive skill sets (such as spatial reasoning and accurate information processing abilities). While training is very demanding and can take between eight months and two years (depending on the facility type and type of position), our highly regulated process and methodologies are part of a well-established program that includes classroom, simulator and site/specialty-specific on-the-job training (which requires the support of frontline staff) so that every successful candidate has all the tools necessary to safely manage traffic in Canadian airspace. NAV CANADA is always looking at its regulated training program and has been increasing standardization across its units and deploying training-support technologies to improve qualification rates.

Advanced decision support tools have also significantly changed the working environment over time. In the past, air traffic controllers needed to spend more time calculating and anticipating the operational picture; today, this activity is increasingly supported by flight data processing systems, shifting some of the focus on monitoring activities. In addition, systems support the seamless transfer of data from one operational position to another, reducing time spent on conventional voice communications. This is not to discount the important skill set air traffic services professionals have but rather reflects the changing nature of air traffic control and flight information services work methodologies and Air Traffic Management systems, which will support increased controller qualifications in the future.

**NAV CANADA offers competitive compensation and great employee programs.**

NAV CANADA provides very competitive wages to our operational staff, including rewarding wages, health insurance, and a defined benefit pension plan. NAV CANADA also offers award-winning employee health programs and has been named one of Canada's top 100 employers several times over recent years.

**NAV CANADA accepts and encourages safety reporting from staff.**

Our well-established and regulated Safety Management System provides various avenues to report any safety concerns directly to NAV CANADA. All safety reports are taken very seriously and actioned, as appropriate, to ensure a safe system.

**NAV CANADA's safety culture permeates all of our teams at all levels of the organization.**

NAV CANADA's safety record is irrefutably one of the best in the world amongst ANSPs. We have achieved this record based on a rigorous decision-making approach with safety at the very core of all that we do and a regulated Safety Management System.

Our safety culture is something that permeates not only our air traffic controller employees, but all of our teams at all levels of the organization. This is not new or something we would suddenly sacrifice due to the pandemic. Furthermore, our core safety mandate is regulated with oversight by Transport Canada.

We continue to implement this safety-focused decision-making as we look to streamline operations. The safety of Canada's skies will never be compromised. We know that the professionalism and commitment of all NAV CANADA employees to Canadians will shine through during these challenging times.

**NAV CANADA welcomes input from its labour unions.**

NAV CANADA and its labour unions have regular interactions and open lines of communication to address safety and staffing topics. We acknowledge that this is a challenging time for all of our labour groups. NAV CANADA remains open to solutions with and from its labour unions that protects jobs where possible but helps us collectively weather this challenging period. NAV CANADA, in doing so, has a responsibility to ensure safety and overall sustainability of the ANS.

**The Air Navigation System is regulated by Transport Canada.**

Like the broader aviation industry, we are regulated by Transport Canada on all safety matters, including our company-wide Safety Management System. Our model ensures a great degree of separation between the operator of the Air Navigation System and its regulator, Transport Canada.

Changes to Level of Service require Transport Canada to review safety recommendations and issue a concurrence prior to implementation. NAV CANADA does not view proposals to encourage the Minister to intervene prior to the conduct of a study as beneficial to operators or the public interest.

It should be noted that the aeronautical study process is the approach used to also adjust Levels of Service towards air traffic control, as has been done recently at Mirabel in 2019 and Red Deer in 2020. It is important that NAV CANADA maintain the ability to assess all unique operational factors – including traffic volumes and mix, airspace complexity, runway configuration, weather phenomena and more – at any location in order to ensure the appropriate services are in place.

**NAV CANADA believes that the Government is well positioned to take account of the current industry situation.**

We have heard the feedback from our internal and external stakeholders as we engaged them on a wide range of issues. A consistent theme we have heard is the desire for cooperation with the Federal Government on solutions that will not only help the industry weather and recover from the current crisis, but also position the industry to build a pathway to future economic growth.

We believe that the Federal Government is well positioned to take account of this broad and complex situation and deliver a balanced set of supports that can help enable the economic potential of the industry.

NAV CANADA is supportive of science-backed policies that reduce some of the current barriers to travel while maintaining low risk levels from a public health perspective in the near term. Mechanisms that support a safe return of travel will have the greatest positive effect on the entire sector.

Financial assistance should take in to account the industry as a whole – including airlines, airports, the air navigation system and the broader supply chain – to ensure that the ecosystem is ready to respond to the needs of our communities while minimizing future burden on sectoral competitiveness and air travellers. Investment by government in emerging technologies will help accelerate innovation, realize operational safety and efficiency enhancements, and increase resiliency to future shocks.