2025

NAV CANADA's Climate Action and Environment Strategy

A pathway for NAV CANADA's impact on climate and environment

13 CLIMATE ACTION

Supporting Sustainable Development Goal 13:
Climate Action

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NAV CANADA

Contents

Executive Summary

NAV CANADA has committed to advancing sustainability and accountability in alignment with the United Nations Global Compact and the Sustainable Development Goals (SDGs), with a pronounced focus on **SDG 13: Climate Action**.

Our Climate Action and Environment Strategy outlines a comprehensive approach to enhancing environmental sustainability and reducing greenhouse gas (GHG) emissions across our operations and the broader aviation sector in Canada.

Our strategy is structured around several core components:

1 **Governance and Oversight**

We have established a cross-functional ESG Steering Committee and a Climate Action and Environment Task Group to guide and implement our sustainability initiatives, ensuring accountability and alignment with our strategic goals.

2 **Strategic Framework and Materiality Assessment**

The completion of our first ESG materiality assessment in 2022 has identified key environmental impact areas, guiding our focus toward high-impact sustainability initiatives. It serves as a baseline for setting strategic priorities and aligns our actions with broader global sustainability goals.

3 **Operational Initiatives Internal Actions**

We continuously aim to adopt targets for GHG reduction, extensively upgrade to energy systems in our facilities, and integrate sustainability criteria into our supply chain management. These efforts are supported by the implementation of a new software tool for precise emissions tracking and reporting.

4 **Industry Collaboration**

We are actively advancing sustainable aviation by facilitating emission reductions through improved Air Traffic Management (ATM) and operational practices under Canada's Aviation Climate Action Plan. This includes optimizing airspace design and implementing trajectory-based operations to minimize fuel consumption and emissions.

5 **Data Management and Reporting**

The deployment of advanced carbon accounting tools is used to enhance the accuracy and integrity of our GHG emissions reporting. This systematized approach allows for real-time tracking of emissions reductions and supports regulatory compliance and sustainability reporting.

6 **Stakeholder Engagement**

Active engagement with internal and external stakeholders is critical to the strategy's success. We aim to foster a culture of sustainability through ongoing education, transparent communication, and collaborative initiatives, ensuring all stakeholders are aligned with our environmental objectives.

Future direction

Our upcoming Climate Action and Environment Implementation Plan will detail specific actions, timelines, and expected outcomes of the strategy, ensuring that NAV CANADA meets its sustainability targets efficiently and effectively. This plan will adapt to new insights and stakeholder feedback to remain relevant and impactful.

1.0

Introduction

NAV CANADA joined the United Nations Global Compact in 2022, and made a commitment to a high standard of accountability and transparency in our operations in support of the UN SDGs.

Following the commitment, a significant sustainability milestone as a company was completing our first Environment, Social, and Governance (ESG) materiality assessment in 2022, which identified areas where we can make changes that will have the greatest impact. One of the identified areas, and of particular focus for the company within this strategy, is **SDG 13: Climate Action**.

1.0 Introduction

As Canada's Air Navigation Service Provider (ANSP), ***environmental sustainability*** *is essential to our stewardship of the country's skies.*

With the guidance of the UN Global Compact and SDG 13, NAV CANADA is committed to reducing the impact of our operations on the environment and collaborating with industry partners in the vision for more sustainable aviation.

This Climate Action and Environment Strategy is designed to guide us throughout this journey. Reducing our climate and environmental impact requires both coordinated and independent work across our business, and we are taking a structured approach to this work:

Implementing strong governance:
by creating a cross-functional ESG Steering committee to oversee a Climate Action and Environment Task Group.

Establishing a strategy:
to understand our current position and facilitate the tracking of our progress over time.

Setting high-level goals:
allows us to define the scope of our ambition as we imagine the future state that we would like to realize.

Measuring our impact:
to provide a real and objective understanding of our performance.

Establishing concrete targets:
to bridge the gap between our current position and our desired future as an organization.

Aligning with established frameworks:
to provide opportunities for assurance and establish leadership in aviation environmental protection.

The strategy will establish the ongoing activities at the organization to set a defined baseline for the development of an accompanying Climate Action and Environment Implementation Plan (Implementation Plan), which will outline actionable measures to reduce NAV CANADA's climate and environmental impact.

2.0

NAV CANADA Environment, Social, Governance (ESG) Strategy

ESG strategies are a way for organizations to push for impactful change, achieve a greater good, and be held accountable for their efforts.

NAV CANADA's ESG Strategy will describe a commitment to sustainability that is actionable, measurable, and aligns with the organization's strategic direction - while contributing to a sustainable and economically relisent future for all. As Canada's ANSP, and with operations across the country, the NAV CANADA ESG strategy is focused on impacts at three levels:

1. **Within the company**
2. **On the world around us**
3. **With our industry partners**

2.0 NAV CANADA ESG Strategy

WE SUPPORT UN GLOBAL COMPACT

A key milestone of the ESG Strategy at NAV CANADA was joining the UN Global Compact in 2022. The UN Global Compact provides a high-level sustainability framework and asks that organizations align their strategies and operations with universal principles on human rights, labour, anti-corruption, and the environment. The UN Global compact emphasizes strong and transparent governance as a critical element of the implementation of sustainability principles.

We will focus on:

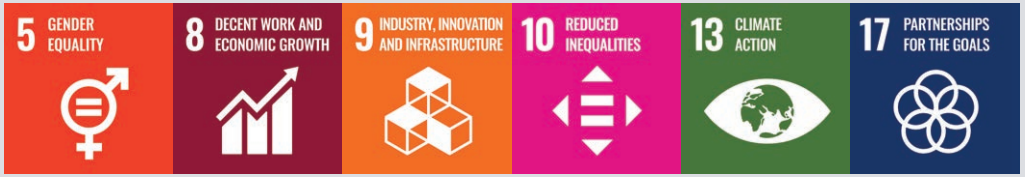
1. Continuing to build foundational ESG elements
2. Integrating ESG into NAV CANADA'S strategy, culture and day-to-day operations
3. Identified ESG priority areas

FY24 to FY28 ESG Priority Areas

E
Climate Action Strategy

S
Diversity, Equity, Inclusion and Belonging Strategy

G
Supply Chain Sustainability Strategy
ESG Risk Integration into Enterprise Risk Management



2.1 ESG Governance Framework

Using UN Global Compact guidance, one of the first activities under the ESG strategy was the establishment of an ESG governance framework to provide a vertically integrated avenue for communication on any ESG activities. The governance framework also ensures representation and involvement from across the organization on ESG-related matters.

At the core of the governance framework is an ESG Steering Committee, with representation at the director-level across NAV CANADA. The Steering Committee reports to the Executive Management Committee (EMC) who in turn communicate with the Board of Directors. Under the steering committee sit three working groups: Environment, Social, and Governance.

ESG Governance at NAV CANADA: Integrating Climate Action Across the Company

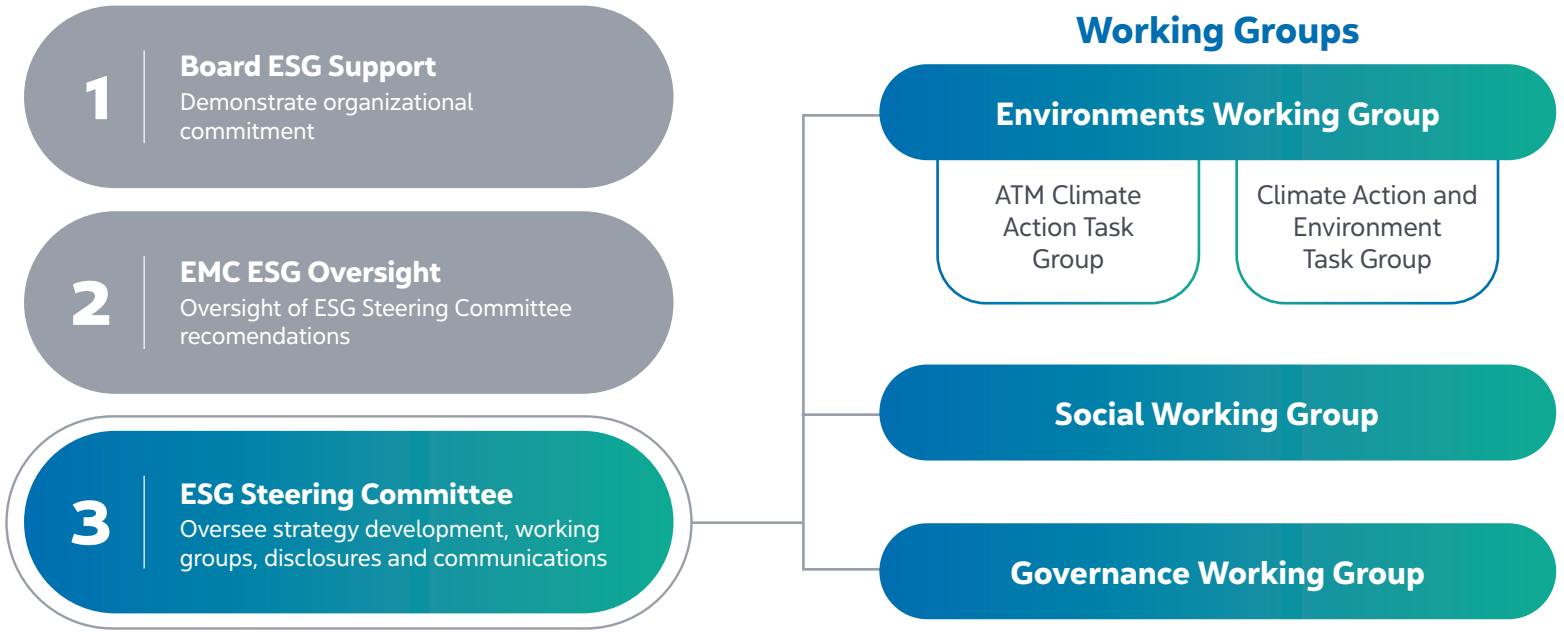


Figure 1: ESG Governance Structure

The Climate Action and Environment Task Group was established as part of the Environment Working Group. The goal of this task group is to address NAV CANADA's climate and environment impacts related to operating the company. In contrast, the focus of the Air Traffic Management (ATM) Climate and Environment Task Group is on NAV CANADA's impact on aviation emissions.

2.2 ESG Materiality Assessment

The other primary activity related to ESG strategy implementation was the completion of an ESG materiality assessment. Using guidance from the UN Global Compact, a materiality assessment of the 17 SDGs was conducted to determine focus areas for NAV CANADA's ESG Strategy.

Inputs to the materiality assessment were employee and stakeholder feedback, and a mapping exercise of the SDGs to NAV CANADA strategic priorities. The SDGs identified as most material to NAV CANADA are:

SDG 5: Gender equality

SDG 8: Decent work and economic growth

SDG 9: Industry, innovation, and infrastructure

SDG 10: Reduced inequalities

SDG 13: Climate action

SDG 17: Partnership for the goals

Two SDGs were selected as priorities by the Executive Management Committee, with an emphasis on initial development and strategy focus. The two priority SDGs are:

SDG 10:
Reduced inequalities

SDG 13:
Climate Action

Figure 2: Priority SDGs material to NAV CANADA

With climate action identified as a priority, the Climate Action and Environment Task Group started to undertake work to complete this Climate Action and Environment strategy.

3.0

Climate and Environment Strategy Approach

This strategy approach is supported by the establishment of a strong ESG governance framework outlined in section 2.1, which is being leveraged to align ongoing initiatives at NAV CANADA related to climate and environment.

The strategy approach is outlined by three main objectives:

1. **Understand the organization's current activities related to climate action and the environment.**
2. **Identify opportunities for progress; and**
3. **Outline the targets, tools, and resources required to enable an Implementation Plan.**

3.0 Climate and Environment Strategy Approach

*An Implementation Plan will detail GHG emissions targets, and an **emission reduction pathway** with detailed actions on how we plan to achieve our targets within their given timeframes.*

A Climate Action and Environment Task Group has been leading the development of this strategy and will lead the development of an Implementation Plan for NAV CANADA. The initial focus of this task group was to establish representation and collaboration across the company in the areas that directly impact our Scope 1, 2, and 3 emissions.

As we commit to and develop GHG emissions reduction targets in these areas, the task group objective will broaden to also include determining key actions to progress climate action and environment activities at NAV CANADA. Membership of the Climate Action and Environment Task Group includes representation from the following departments:

- Supply Chain
- Corporate Performance and Sustainability
- Facilities and Infrastructure
- Fleet Services
- Environment and Occupational Safety and Health (EOSH)
- Communications, Navigation, and Surveillance (CNS) Technical Services

As a UN Global Compact member, guidance from the UN Global Compact Forward Faster initiative will be incorporated into the Climate Action and Environment strategy and implementation. The UN Global Compact Forward Faster initiative includes a focus on contributing to a just transition by taking concrete actions in partnership with actors such as workers, unions, communities, and suppliers to address social impacts of climate change mitigation and adaptation.

Also highlighted is the importance of enabling an environment of support to scale action towards the SDGs. Companies can send a strong message to governments to implement enabling policies that support them in meeting the ambitious targets under the Forward Faster initiative and provide the clarity and confidence they need to catalyse further investments. We want to ensure we act on opportunities presented to engage with the Canadian government to voice our needs as we transition to a clean future and progress towards meeting our targets.

3.1 Environmental Compliance and Environmental Management System

*Since 2001, NAV CANADA's Environmental Management System (EMS) has been registered to ISO 14001:2015, making us one of the **first Air Navigation Service Providers** to be registered with this internationally recognized framework.*

Reducing the environmental impact of our own operations is assisted by NAV CANADA's EMS. It is an effective tool that helps to streamline our environment-related activities, maintain compliance with environmental legislation, and promote sustainability.

Our EMS supports environmental aspects of sustainability at NAV CANADA through:

Environmental project evaluations
These evaluations enable us to monitor, control, and reduce our environmental impact. We can evaluate the environmental consequences of our activities, including emissions, waste disposal, and land use, allowing the development of strategies to minimize that impact.

Regulatory compliance
We have processes in place to ensure we are aware of and meeting all relevant environmental legislation and regulations. This helps us avoid penalties, fines, or legal actions that may result from non-compliance.

Risk management
By identifying potential environmental risks and hazards, the EMS allows us to implement preventive measures and contingency plans. This helps us prioritize risk to ensure due diligence and protect NAV CANADA's reputation.

Stakeholder communication
We communicate and highlight our environmental commitment and objectives to stakeholders, including employees, suppliers, customers, and the wider community.

Continuous improvement
We engage in a process of continuous environmental improvement. By using a Plan-Do-Check-Act (PDCA) cycle, we are continually looking for ways to improve our environmental performance.

Since 2001, NAV CANADA's EMS has been registered to ISO 14001:2015, making us one of the first Air Navigation Service Providers to be registered with this internationally recognized framework.

The EMS is internally and externally audited on a continuous basis to ensure that it is being followed by all staff and contractors. Regular updates are also completed to confirm that the documentation meets the current legislation and corporate environmental objectives and reflects future environmental goals and objectives.

Greenhouse Gas Emissions

NAV CANADA is committed to reducing GHG emissions from the aviation sector to ensure a sustainable and viable future for the industry. This includes 1) reducing our own operational GHG emissions footprint associated with providing air navigation services and 2) facilitating emissions reductions for our customers through improved ATM, as outlined in Canada's Aviation Climate Action Plan. GHG emissions associated with our operational footprint fall into three categories:

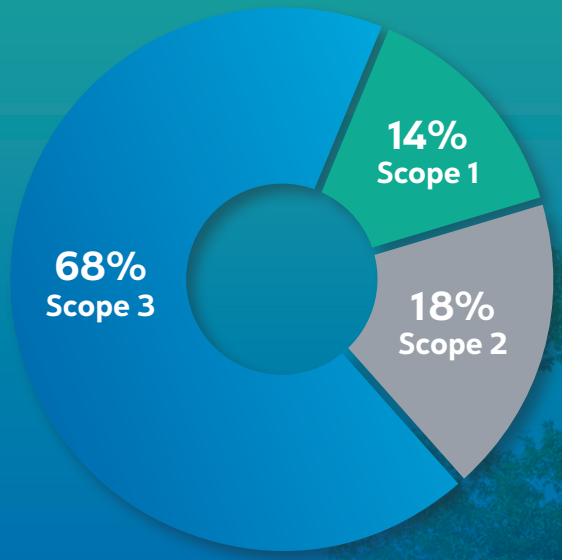
SCOPE 1
GHG emissions that we have direct control over, such as our energy consumption and power use from facilities and equipment, and our fuel use for backup generators, fleet vehicles, and inspection aircraft.

SCOPE 2
Indirect GHG emissions from purchased electricity, chilled water, and steam.

SCOPE 3
GHG emissions within our value chain including: purchased goods and services, capital goods, fuel- and energy-related activities, waste generated in operations, business travel, and investments. To help shape future GHG reduction efforts, we have measured the operational GHG emissions footprint for fiscal 2023 (Scope 1, Scope 2, and Scope 3 emissions). The FY2023 emissions inventory will be used as a baseline to guide goal and target setting regarding climate action.

To ensure compliance with any future regulations, NAV CANADA uses the widely–accepted *GHG Protocol Corporate Accounting* and *Reporting Standard* to calculate Scope 1 and Scope 2 along with the *Corporate Value Chain (Scope 3) Standard* for Scope 3 calculations. We are also working towards implementing internal controls to prepare for any assurance of metrics that may ultimately be established as a requirement. Additional consideration for third party assurance on our GHG emissions inventory and climate action metrics is currently underway.

NAV CANADA's Overall 2023 Scope 1, 2, 3 GHG Emissions



Combined Scope 1, 2, and 3 emissions total **90,594 tCO_2e**

Our biggest challenges in calculating GHG emission inventories relate to the format and storage of our relevant data, requiring extensive manual input and processing. We plan to improve data collection, processing, and reporting of GHG emissions data, to be able to report annual inventories and ultimately have regular reporting of energy consumption and emissions. NAV CANADA is currently in the process of implementing a software solution that will enable the efficient measurement and reporting of NAV CANADA's GHG emissions.

NAV CANADA has prepared its Scope 1, 2 and 3 GHG emissions in accordance with the methodology and guidelines described in the GHG Protocol, A Corporate Accounting and Reporting Standard, Revised Edition, The GHG Protocol Scope 2 Guidance, The GHG Protocol Corporate Value Chain (Scope 3) Accounting and The GHG Protocol Technical Guidance for Calculating Scope 3 Emissions. The operational approach was used to determine the organizational boundary for NAV CANADA, taking into account the quantification methodology and assumptions contained in NAV CANADA's FY23 Inventory Management Plan.

NAV CANADA's 2023 Scope 1,2, and 3 emissions were provided with limited assurance from NAV CANADA's internal audit team; no third-party assurance provided at this time.

3.3 Emissions Reduction Pathways

We have developed an initial high-level pathway that outlines the key components NAV CANADA should explore in our pursuit of achieving net-zero emissions. Many of our ongoing and planned initiatives fall into these pathway components and have been identified throughout the strategy with their corresponding icons.

Net-zero emissions means a company eliminates its absolute GHG emissions across its entire supply chain. In achieving net-zero emissions, carbon offsetting is only used as a last resort to eliminate emissions from fossil fuel dependant activities with no currently available clean energy alternatives.

This is the approach we plan to follow when developing the Implementation Plan.

Sustainable Procurement
Supplier procurement embeds sustainability into supply chain operations and will help enable the four other pathways into projects and initiatives at NAV CANADA.

Asset Optimization
Asset optimization is the practice of assessing asset utilization to ensure we get the most value and performance from our assets. Underused or redundant assets that do not contribute to added value or meet performance standards, may be identified for removal.

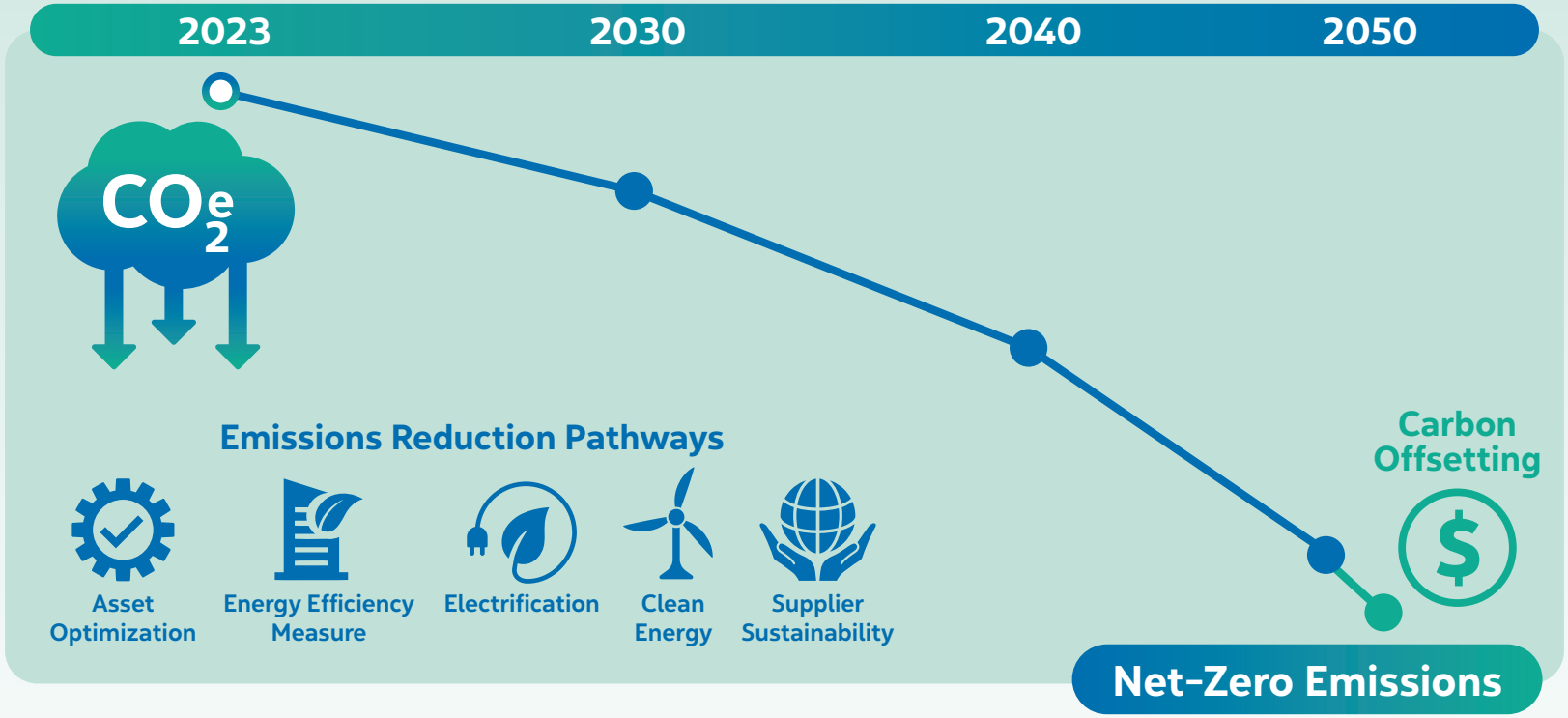
Energy Efficiency Measures
Energy efficiency is the practice of using less energy to provide the same amount of output from a service (such as lighting, heating hot water, etc.) Most efficiency measures will result in cost savings along with emissions reductions.

Electrification
Process of powering by electricity and changing over from the current fossil fuel driven energy source to electricity.

Clean Energy
Energy produced from renewable sources such as solar, wind, geothermal, hydroelectric power etc. This can include purchased clean energy as well as on-site renewable energy generation.

NAV CANADA's Emissions Reduction Pathways

Identified pathways provide a focus for iterative planning



3.4 NAV CANADA's Current Climate and Environment Portfolio

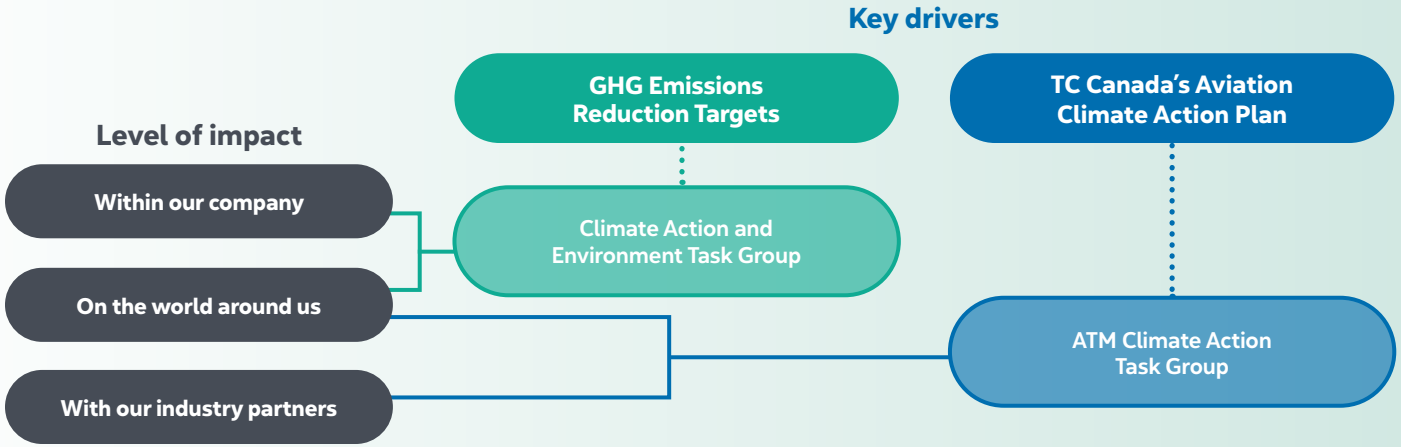


Figure 3: key drivers of the work undertaken by the *Climate Action and Environment Task Group* and *ATM Climate Action Task Group*

As outlined in section 2.0, our actions, and thus the climate action and environmental efforts we are pursuing as an organization, have an impact in three major areas:

- Within our company
- On the world around us
- With our industry partners

Understanding the activities that will have an impact, to what degree, and on which stakeholders, will be imperative to progressing and leading climate action and environmental efforts in the aviation sector.

Taking a leadership role with respect to climate and environment requires commitment. Our approach involves the use of the UN Global Compact as a high-level ESG framework and operationalizing action through the UN SDGs. NAV CANADA's Climate Action and Environment Strategy is being developed as part of our support of SDG 13: Climate Action, with a focus on emissions reductions (SDG 13 indicator 13.2.2). Two key focus areas define the scope of our Climate Action and Environment impact areas:

1. Setting goals and targets to reduce Scope 1, 2 and 3 emissions.
2. Support of Transport Canada's Aviation Climate Action Plan.

Our support of the TC Action Plan will affect airline customers via Improved ATM, covered briefly in section 3.1.

A second task group, the ATM Climate Action Task Group, will focus on identifying how NAV CANADA can measure environmental performance and enable emissions reductions for our customers and across the industry. Either a future version of this strategy, or a separate strategy, will address the ATM climate and environment impacts.

The scope of this strategy highlights the various ongoing activities and initiatives at NAV CANADA from the lens of impact within our company and on the world around us. A cornerstone of the strategy is defining the current initiatives and understanding how they can support and complement future efforts, particularly with respect to the reduction of GHG emissions from NAV CANADA operations.

This strategy provides a high-level overview of the areas of impact NAV CANADA has on climate action within the organization, to inform areas where the organization can focus efforts.

*Engagement of the **entire company** will be leveraged to help achieve and support the targets.*

Climate Action Focus Areas

NAV CANADA is committed to setting targets under SDG 13: Climate Action. The primary indicator under this goal is a reduction in GHG emissions, and therefore NAV CANADA is developing targets that aim to reduce our Scope 1, Scope 2, and Scope 3 emissions.

We plan to set a net-zero by 2050 target, along with a short-term target based on our 2023 baseline. A short-term target will inform immediate action and integrate existing initiatives into the net-zero vision.

The goal is to develop interim targets under our higher level emissions reduction targets in order to track annual progress. Interim targets will in turn be used to inform the Implementation Plan, which will complement this Stratgey with a GHG emissions reduction plan.

This strategy focuses on reducing climate and environmental impacts within our company; therefore, we are focusing on our organizational boundary that contains the assets and activities that directly contribute our company emissions. This includes:

- Environmental sustainability in supply chain
  - Purchased goods and services
  - Capital goods
- Staffed facilities
- CNS equipment
- Ground vehicle fleet
- Inspection aircraft
- Other activities
  - Fuel and energy-related activities
  - Waste generated in operations
  - Business travel
  - Investments

The sections that follow will highlight existing and planned policies, initiatives, and projects related to these assets and activities that are expected to contribute to environmental stewardship and reductions of NAV CANADA's emissions portfolio.

Environmental Sustainability in Supply Chain

The behaviours and business practices of our suppliers are a key component of NAV CANADA's operational impact on the environment – so responsible supply chain management is critical in our commitment and desire to create long-term value by embedding sustainability into supply chain operations.

NAV CANADA suppliers represent a diverse group of companies providing product and service-based offerings needed to support operations. As of January 2024:

*The total GHG emissions from supply-chain related activities in 2023 were **36,326 tonnes** of CO_2 equivalent.*

2,705
Total number of active suppliers

2,516
Total number of active Canadian suppliers

189
Total number of active international suppliers

34
Total number of critical and strategic suppliers

Emissions attributed to NAV CANADA's supply chain fall under the Scope 3 categories of *Purchased Goods and Services*, and *Capital Goods*. In 2023, GHG emissions from Purchased Goods and Services were 25,779 tonnes of CO_2 equivalent and GHG emissions from Capital Goods were 10,547 tonnes of CO_2 equivalent.

Collaboration with suppliers is integral to helping NAV CANADA achieve its sustainability goals. A Supply Chain ESG Roadmap is currently in development to enable climate change adaptation and resiliency through sustainable sourcing practices.

Current Actions:

Environmental criteria and standards are being incorporated into sourcing initiatives and evaluation processes. This will help assess the environmental impact of purchased goods and services and to effectively evaluate suppliers' approaches to minimizing these environmental impacts. Also being explored are new tools, technologies, and best practices to provide visibility, tracking and accountability to the overall ESG performance within our supply base. As part of our responsible sourcing strategy, NAV CANADA is committed to working with our suppliers to set clear expectations of their conduct in our Supplier Code of Conduct. For example, suppliers are to demonstrate good stewardship of the environment while working to reduce the environmental impacts of their operations.

By providing goods and/or services to NAV CANADA, the supplier thereby confirms compliance with this Code, as well as compliance with all applicable laws in the country or countries in which they conduct their business.

To support NAV CANADA's corporate ESG Strategy, the Supply Chain team has initiated an ESG Supply Chain Strategy initiative to identify focus areas and objectives and enhance our procurement function.

Future Considerations:

- Collecting emissions data directly from suppliers to measure and report more precise Scope 3 emissions.
- Assess suppliers' level of maturity, resilience, and preparedness to address climate-related risks and opportunities, including how this aligns with and supports NAV CANADA's own climate commitments and objectives under its Climate Action Strategy.
- Understand the percentage of suppliers currently reporting on ESG metrics. This will provide NAV CANADA with an understanding of which suppliers may have ESG strategies in place and their overall level of maturity.
- Understand the share of suppliers that have set GHG emissions reduction targets. This data can support NAV CANADA should we set a supplier engagement target in the future.
- Understand the percentage of suppliers who have started to measure and disclose their GHG emissions, and the overall level of maturity. Provides insights and context as to which suppliers NAV CANADA should target for further supplier engagement on emissions quantification, which will in turn support future Scope 3 decarbonization efforts.

Staffed Facilities

NAV CANADA facilities support the operations of the company to complete its mandate of managing 18 million square kilometres of Canadian and North Atlantic oceanic airspace. Our current staffed facility portfolio includes the following:

07 Area Control Centres (ACC)

42 Air Traffic Control Towers (ATCT)

54 Flight Service Stations (FSS)

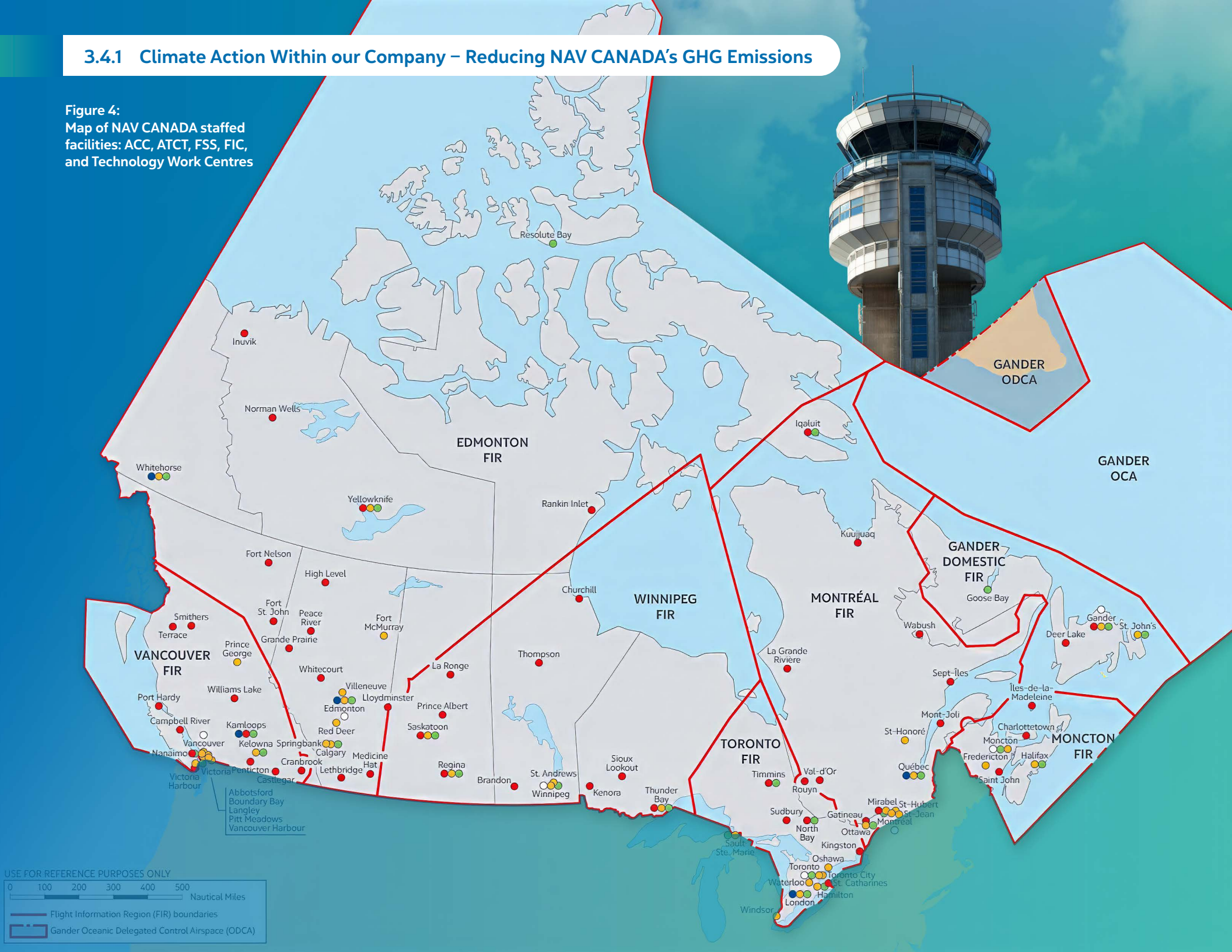
05 Flight Information Centres (FIC)

29 Technology Work Centres

03* Other (Head Office, Logistics Centre, Technical Systems Centre (TSC))

*Additional facilities that fall into the other category, where we only lease a portion of the facility include the Ottawa Hangar for our inspection aircraft, and the former NAV Centre in Cornwall.

Figure 4:
Map of NAV CANADA staffed facilities: ACC, ATCT, FSS, FIC, and Technology Work Centres



3.4.1 Climate Action Within our Company – Reducing NAV CANADA's GHG Emissions

*The total GHG gas emissions from facilities in 2023 were **17,062 tonnes** of CO_2 equivalent.*

NAV CANADA's staffed facilities make up 60% of our total Scope 1 and 2 emissions, and therefore are a critical portfolio to focus improvements of our climate and environmental impact.

Natural gas for heating is the largest contributor to our facility Scope 1 emissions, followed by fugitive emissions (those from leaks and other unintentional discharges) from refrigerants, diesel fuel for backup generators, and other heating fuels such as propane and heating oil.

Purchased electricity is the primary Scope 2 source, with emissions varying across the country depending on the provincial/territorial grid. Electricity sourced from provincial/territorial grids with high fossil fuel sources will have higher emissions per unit of power purchased.

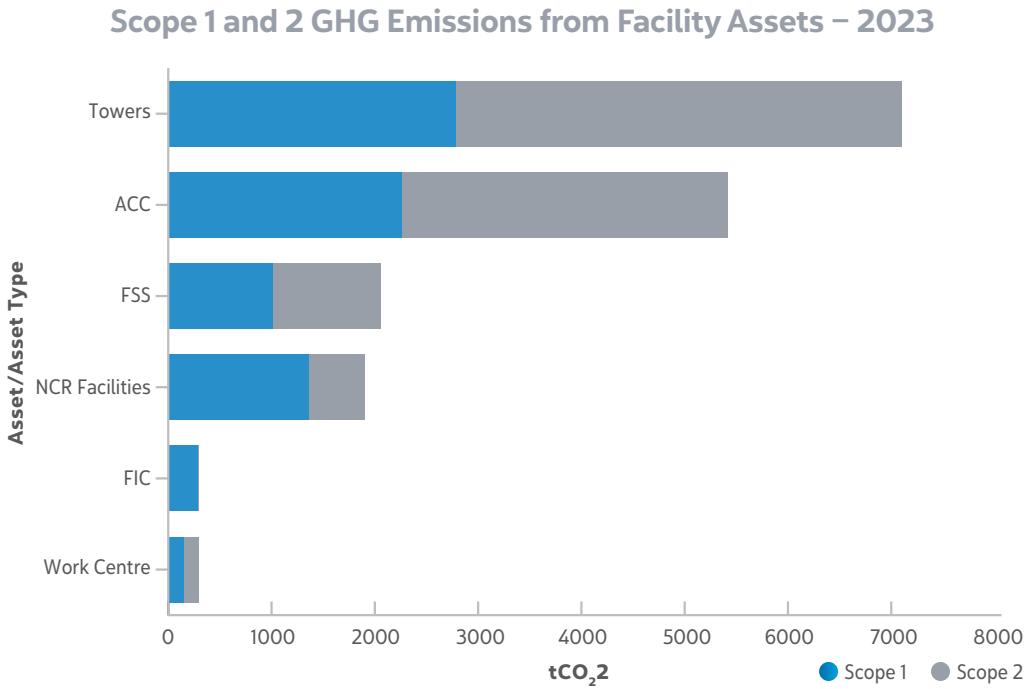


Figure 5: Scope 1 and 2 GHG emissions of staffed facilities for 2023.

3.4.1 Climate Action Within our Company – Reducing NAV CANADA's GHG Emissions

NAV CANADA is making ongoing investments in the renewal of the company's portfolio of staffed and unstaffed sites to meet the continuing operational requirements of the company. As we do so, we are also making decisions and adopting technologies to minimize the total energy usage of our facilities and reduce the environmental footprint of our infrastructure.

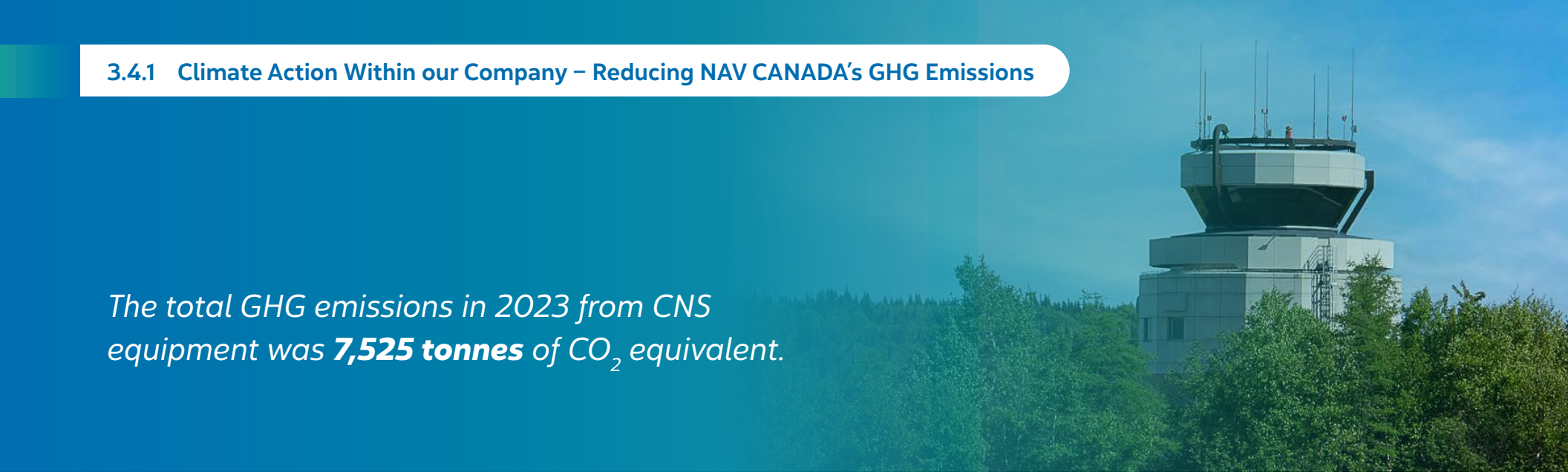
Current Actions:

- **Continuously upgrading HVAC systems** across the country to replace old and energy-intensive equipment with modern HVAC technologies, such as heat pumps and economizers.
- **Implementing Building Management Systems (BMS)** to provide a higher degree of personnel comfort and more efficient energy usage for our staffed sites.
- **Upgrading to more energy efficient and environmentally safe LED lighting** in both interior and exterior areas. This includes reducing and eventually eliminating environmentally hazardous mercury vapour-based fluorescent lighting.
- **Incorporating new environmental initiatives in new builds and major renovations**, along with a focus on carbon footprint reduction. One example at the new Victoria Control Tower is the capture and storage of rainwater for use in toilets and urinals.
- **Shifting our approach to landscaping** with more natural, drought-tolerant plants and wild grasses at NAV CANADA sites.
- **Adopting permeable pavers for roadways and walkways** instead of hard pavement surfaces like asphalt and concrete to better manage stormwater.
- **Better recycling of construction and facilities maintenance waste materials** and exploring less energy-intensive materials of construction.
- **Maximizing the purchase of green energy** where reasonable options exist to do so.

Future Considerations:

- Continue to implement the above initiatives.
- Explore electrification options in replacement of stationary fuel combustion sources.
- Explore green funding opportunities to financially support clean energy and improved efficiency projects at facilities.

Figure 6: Digital rendering of the new Victoria Tower, which is aiming to gain LEED certification upon project completion. LEED (Leadership in Energy and Environmental Design) is the most widely used green building rating system in the world.



*The total GHG emissions in 2023 from CNS equipment was **7,525 tonnes** of CO_2 equivalent.*

Communications, Navigation, and Surveillance (CNS) Equipment

As of 2023, NAV CANADA has over 1,000 assets in the CNS asset portfolio, which includes surveillance equipment (radars), navigational aids – also referred to as NAVAIDs (NDB, ILS, LOC, GP, VOR, DME), and communications equipment (transmitters and receivers).

While this equipment is necessary to maintain civil aviation operations, technological improvements have reduced the need for some types of equipment, particularly certain classes of NAVAIDs.

Current Actions:

To leverage the advances in satellite-based navigation and customer equipment, NAV CANADA has initiated a multi-year NAVAID Modernization Program (NMP) to define a reduced network of ground-based navigational aids across the country, supporting the transition to a more efficient and cost-effective performance-based navigation (PBN) based air navigation service for our customers.

The objective of the NMP is to define a network of ground-based navigation aids to supplement a fully implemented, satellite-based air navigation system (ANS). This will be the largest navigation realignment yet to be undertaken in Canada.

A phased approach to the proposed project will be used to ensure it is completed in the safest and most efficient manner. Given the project's size, complexity and long implementation timeline, NAV CANADA is committed to ongoing coordination with affected users based on the change schedule and its implications. The time frame for each phase will be based on an Aeronautical Information Regulation and Control (AIRAC) cycle with a submission and review every five months. The completion date of the modernization project is planned for May 2024.

A total of 305 NAVAIDs will be decommissioned over 12 phases which will result in a reduction to the number of facilities and systems, and amount of power consumption. To date, a total of 231 sites have been decommissioned.

Future Considerations:

The continuation of NAVAID decommissioning is expected to continue until all planned decommissions are complete.

*The total GHG emissions from ground fleet activities in 2023 were **582 tonnes** of CO_2 equivalent.*

Ground Vehicle Fleet

NAV CANADA operates a fleet of ground vehicles used to facilitate the inspection and maintenance of our equipment. The ground fleet plays an important role in supporting continuous operations at NAV CANADA, with vehicles in operation across the country.

As of FY2023, the ground fleet consisted of **199** vehicles, and is a mixed fleet of:

128 Pick-up trucks

57 Cross-over vehicles

06 Mini-van, cargo

06 Full-size van, cargo

01 Mini-van, passenger

01 Full-size van, passenger

The current fleet of 199 vehicles is the result of efforts to reduce the number of vehicles in operation. From 2001 to September 2023, as part of our optimization strategy, 93 vehicles and 33 specialized equipment (i.e. snow mobiles, tractors, etc.) have been declared surplus to needs and have since been removed from service. An additional nine vehicles were retired from the fleet in FY24.

Current Actions:

Current activities underway by the fleet management team to reduce the environmental impact of NAV CANADA's ground fleet include:

- Continued optimization, of fleet size and appropriate vehicle type for the activities performed.
- Eliminating under-used vehicles or sourcing versatile alternatives. A current example is a planned trial to replace two CHEV Silverado's (5.8L engine) with two mid-size trucks (2.7L engine), located in Victoria, BC. If we determine that the downsized vehicle can perform the required duties as effectively (if not more) than the existing full-sized truck, we will look to explore other areas in the fleet that can implement these alternate more fuel efficient vehicles.
- Assessing third-party fleet management service providers and resourcing options.
- Providing driver training (discouraging unnecessary travel, planning tasks and routes, deterring aggressive driving).
- New vehicle acquisitions are telematics enabled and roughly half the fleet is equipped as of FY24 year-end.

*The total GHG emissions attributable to the operation of the inspection aircraft in 2023 amounted to **4,343 tonnes** of CO_2 equivalent.*

Future Considerations:

As we aim to lessen the environmental impact of our ground fleet, a next step will be exploring various options for viability. Some initiatives being considered are:

- Implementing a fleet telematics solution,
- Incorporating electric vehicles (EVs) into the fleet. The fleet team anticipate launching an EV pilot FY25-FY26 in four flight information regions (FIRs), dependent on charging infrastructure availability.
- Implementing an idle reduction initiative. In support of our computer-based training (CBT) Driver Training initiative launched in FY24, consider including an Eco-driving module from Holman, our contracted service provider, that includes topics such as :
  - Proactive driving and Eco-driving
  - Idling
  - Managing starts and stops to maximize fuel efficiency.

A **fleet telematics solution** can be an important step before making significant investments into fleet changes, like acquiring alternative fuel vehicles. Fleet telematics data can help inform decisions when pursuing high-level objectives like continued fleet optimization or more specific initiatives like improved fuel efficiency or idling reduction. This type of information can also assist with assessing the incorporation of electric vehicles into the fleet.

To better understand future options, fleet services are also establishing a fleet-specific **environmental strategy**, starting with an assessment of the existing fleet and a financial approach to sustainability initiatives. From there requirements will be established with consideration for product availability, operational demands, replacement cycles, maintenance practices, telematics implementation and feasibility of available alternative fuel options. These will be built into an action plan, with processes in place to monitor and improve our approach.

Inspection Aircraft

NAV CANADA owns and operates two inspection aircraft with the purpose of inspecting navigational aids (NAVAIDS) and instrument approach procedures. The current fleet of inspection aircraft are two Bombardier CRJ-200 aircraft based out of the Ottawa airport. In 2023, the NAV CANADA inspection aircraft flew 1,355 hours performing various inspection duties.

Current Actions:

NAV CANADA is in the process of replacing the two CRJ-200 inspection aircraft with two King Air 360ER. The first aircraft is slated for delivery in FY2025 Q4 followed by the second aircraft in FY2026 Q2. Based on the fuel consumption specification of each aircraft model, these new aircraft are projected to reduce emissions from our existing aircraft by 40%.

Future Considerations:

The flight inspection team are exploring ways to reduce the environmental impact of inspection activities.

- A project to use RPAS for ILS inspections is currently in the proof-of-concept phase. Initial indications show that this project will be successful and future deployments should reduce aircraft flying time by roughly 50 hours annually.
- In conjunction with the implementation of a new AIM designer tool, we are assessing ways to gain efficiencies in the Flight Validation of procedures by building a tasking of those procedures with no defined implementation dates. This concept would allow the planning group to build the procedures into profiles more efficiently and thus reducing aircraft flight times.

The total GHG emissions attributable to these four Scope 3 categories in 2023 amounted to ***24,754 tonnes*** *of* CO_2 *equivalent.*

Other Activities

Other activities that contribute to NAV CANADA's GHG emissions portfolio, under the Scope 3 category, include:

- fuel and energy-related activities,
- waste generated in operations,
- business travel, and
- investments.

Fuel and energy-related activities comprise of any fuel consumption not captured in the scope 1 and 2 inventories, such as transmission system losses and upstream GHG emissions from purchased fuels.

The investments category includes NAV CANADA's stake in the joint venture of Aireon LLC. It does not include investments associated with NAV CANADA employee pension plans.

Currently much of the data used to calculate emissions with these other Scope 3 activities is spend-based, which does not provide insight into the actual activity contributing to GHG emissions. For example, for waste generated in operations, an emissions factor is applied to the spend on waste services. Future work to understand the activity level (in the example, the type of waste and actual amount of waste disposed of) would lead to more precise calculations of GHG emissions for these categories.

3.4.2 Climate Action Impact on our Customers – NAV CANADA's role in reducing overall aviation emissions in Canada

NAV CANADA's combined scope 1, 2, and 3 emissions in 2023 were 90,594 tonnes of CO_2 equivalent, or about ***0.4% of Canadian air operator emissions.***

In 2019, the GHG emissions released by Canadian air operators amounted to approximately 22 million tonnes of CO_2 equivalent[1]. The order of magnitude of emissions from NAV CANADA customers is much greater than NAV CANADA's direct emissions and this poses a unique opportunity for NAV CANADA to enable emission reductions to air carriers.

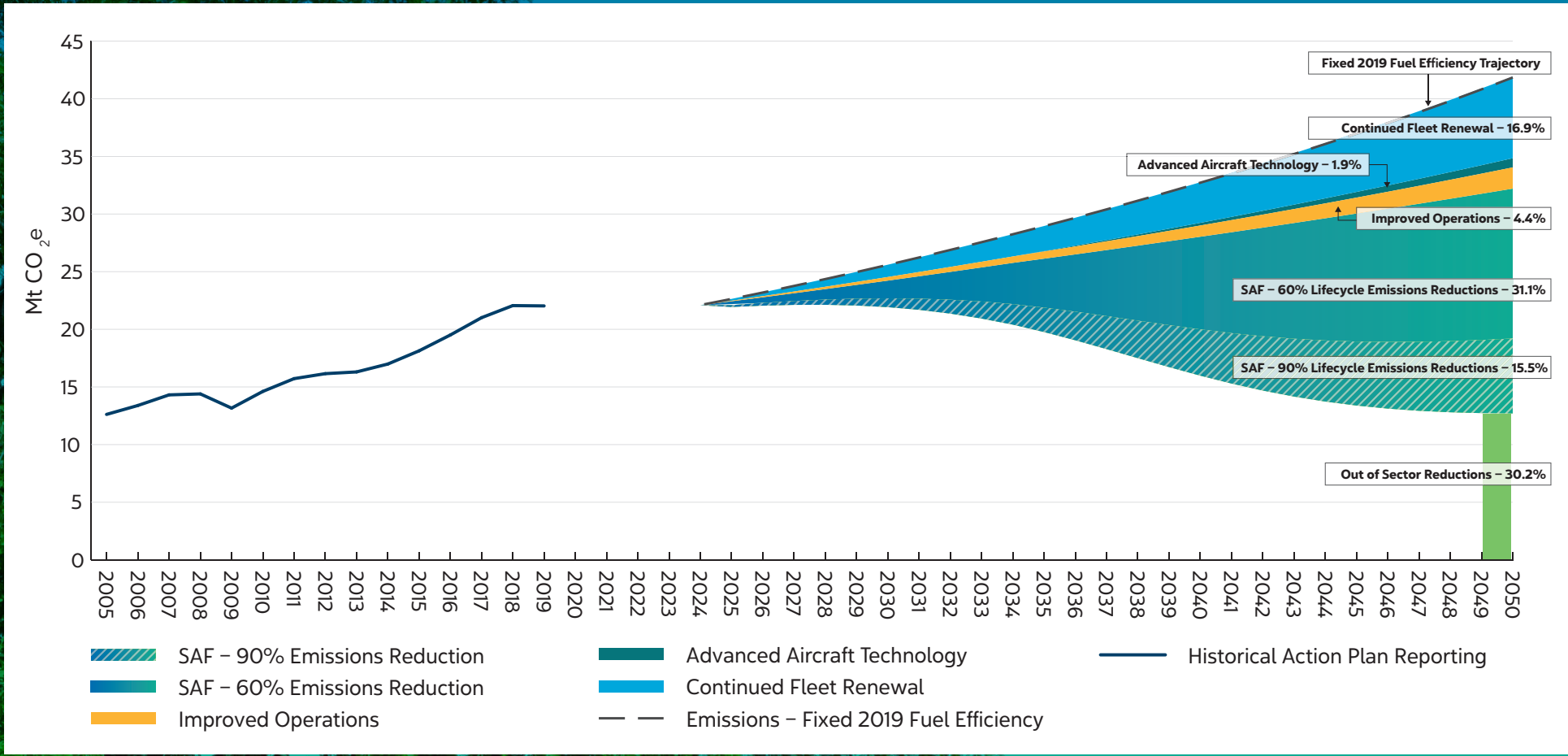
As mentioned in section 3.3, NAV CANADA supports Canada's Aviation Climate Action Plan, which sets out a vision for net-zero GHG emissions – both domestic and international – by 2050 for Canada's aviation sector and identifies the key measures to get there.

Under the Action Plan, NAV CANADA is responsible for supporting improved operations, which includes improved ATM. *Improved Operations* is identified as an area of action that can reduce overall aviation emissions in Canada by 4.4% by 2050. While a small percentage of Canadian aviation emissions, when compared to NAV CANADA's own emissions, it is a much larger impact that would result in the reduction of millions of tonnes of CO_2 equivalent.

[1]Transport Canada – Canada's Aviation Climate Action Plan 2022–2030.

3.4.2 Climate Action Impact on our Customers – NAV CANADA's role in reducing overall aviation emissions in Canada

2050 Canadian Aircraft Emissions Forecast – A Vision to Net-Zero



Source: Canada's Aviation Climate Action Plan (2022-2030).

Note: data gap is due to baseline setting in 2019, and sector rebound to pre pandemic levels in late 2024.

3.4.2 Climate Action Impact on our Customers – NAV CANADA's role in reducing overall aviation emissions in Canada

*The Government of Canada will continue to pursue adoption of **international best practices**, conducive to emissions reductions.*

Other pathways to achieve net-zero by 2050 include the development and adoption of new green aerospace technology, sustainable aviation fuels (SAF), out-of-sector reductions, international coordination, and measures to reduce non-aircraft emissions.

ATM improvements that are identified in the Action Plan include:

- optimizing airspace design and structure
- implementing reduced air traffic control separation minima (particularly between aircraft on approach)
- allowing user-preferred trajectories
- authorizing wake energy retrieval operations, continuous climb and descent operations, and trajectory-based operations

Planned Actions:

- Transport Canada will work with and support NAV CANADA to determine the optimum airspace design for the Canadian domestic airspace.
- Canadian air carriers will collaborate with Transport Canada and NAV CANADA to implement airspace redesign initiatives.
- The Government of Canada will continue to pursue adoption of international best practices, conducive to emissions reductions.
- Canadian air carriers will accelerate the implementation of industry best practices with respect to operational efficiencies from aircraft operations on the ground and in the air.
- NAV CANADA will implement Trajectory-Based Operations (TBO) to enhance system efficiencies, mitigate delays and enable aircraft to fly preferred routes, leading to the use of less fuel.
- NAV CANADA will design and implement Required Navigation Performance – Authorization Required (RNP AR) approaches, which provide opportunities to adequately equipped aircraft to fly continuous descent approach profiles and reduced track-mileage, reducing fuel burn and GHG emissions. NAV CANADA will also implement Established on RNP AR (EoR) at major airports with parallel runway operations.
- NAV CANADA will explore collaborating with the Department of National Defence in identifying opportunities for Flexible Use Airspace (FUA), which will allow aircraft to fly preferred routes.
- Parties will explore alternatives to improve the efficiency of ground aircraft movement.

A separate task group has been created to directly address NAV CANADA's contribution to improving air traffic management for emissions reductions. The ATM Climate Action Task Group is running concurrently alongside the Climate Action and Environment Task Group under the ESG Steering committee per the established governance structure of the ESG initiative.

3.5 Targets

Considering the data collection required to calculate NAV CANADA's annual GHG emissions inventory, tracking progress annually via interim targets will also help identify opportunities to ***improve the annual emissions*** *inventory data.*

NAV CANADA is committed to setting GHG emissions reduction targets under SDG 13: Climate Action. We plan to set both net-zero and interim targets, and to measure progress agaist targets annually.

The magnitude of interim targets will also define the magnitude of emissions reductions required on a more regular frequency, which can be better matched to specific projects and initiatives with expected GHG emissions reductions. The interim targets will be a valuable part of the Implementation Plan, as introduced in section 1.0.

Quantifying the impact of external factors (such as grid decarbonization) on our interim targets and comparing realistic reductions from ongoing initiatives will inform on any gaps and the identification of further opportunities for emissions reductions at NAV CANADA.

Considering the data collection required to calculate NAV CANADA's annual GHG emissions inventory, tracking progress annually via interim targets will also help identify opportunities to improve the annual emissions inventory data. Assumptions and spend-based estimations of emissions (as opposed to actuals based on activity) may obscure real trends in overall emissions for the organization. Interim targets will provide a more regular opportunity to scrutinize the data inputs to GHG emissions metrics, and act as a basis for identifying opportunities to improve data quality and metric accuracy.

3.6 Implement Tools

To enable and improve the collection of NAV CANADA's GHG emissions inventory, to track progress against our targets and interim targets, a software tool to manage emissions data is being implemented. This is a core component of the Climate Action and Environment strategy, as it will provide a single platform for data collection, verification, and measurement of emissions. It will improve the data collection process and assurance readiness, and assist in the preparation of regulatory disclosures, where required.

Software tools for the purposes of collection emissions inventory data are commonly referred to as 'carbon accounting tools.' The requirements for a carbon accounting tool to be used at NAV CANADA were determined by the Corporate Performance and Sustainability team and platform selection and implementation is underway.

Many data collection process changes have already been made in preparation for tool implementation, and ***further improvements*** *will continue.*

TIME PERIOD	COMPLETED ACTIVITY
FY2023 Q1+	Requirements specified
FY2024 Q1	Vendor selected
FY2024 Q2+	Tool implementation
FY2025	2024 emissions inventory validated in tool

Table 1: timeline for tool selection and implementation

While the tool is implemented emissions will also be calculated manually to complement and verify the tool. Many data collection process changes have already been made in preparation for tool implementation, and further improvements will continue. Process changes include efforts to:

- Reduce the manual effort required to collect data,
- Facilitate integration of existing platforms with the tool (e.g., Workday),
- Clarify data ownership and responsibilities for data collection,
- Ensure consistency of data sources across the organization, or
- Improve quality of data or source information.

Once the tool has been implemented and the output verified, manual calculations of NAV CANADA's GHG emissions portfolio will cease and automated calculation via the tool will be used moving forward.

3.7 Leverage Existing Initiatives

As outlined in section 3.2.2, there are many ways that ongoing programs at the company can have an impact on the environment and climate change mitigation efforts.

While part of the strategy and accompanying Implementation Plan will focus on new initiatives that can be implemented, existing initiatives may have environmental or climate benefits and can be leveraged as well. Existing initiatives provide key benefits to our climate action and environment strategy, namely that they are already planned, with some approved and underway.

Recent and ongoing initiatives at NAV CANADA with potential environmental benefits include:

- The NAVAID modernization program
- The sale of NAV Centre
- Replacement of the CRJ-200 inspection aircraft
- Edmonton Work Centre relocation into the Edmonton ACC
- Victoria Tower LEED project
- Facility improvements such as:
  - Building Automation System (BAS) implementation,
  - HVAC updates like the C-ANS Chiller replacement project.
- Electric Vehicle (EV) chargers

The goal is to quantify the expected magnitude and timeline of emissions reductions from these existing initiatives. This information, in combination with target development, will inform our emissions reduction strategy and Implementation Plan.

3.8 Research and Development

As we identify pathways to reduce emissions and environmental impact, we are exploring innovative ideas and technologies to help transition areas of our operations that currently rely on fossil fuels. An example is reducing the fuel required for emergency backup generators. One project underway is an 8-hour / 48-hour backup battery solution, which would replace combustion engine generators and diesel fuel storage systems at select NAVAID locations.

We currently have eight of these systems in place for some of our VOR sites, with seven being operational and one as a test set-up. Therefore, we have already replaced the need for seven generator systems and reduced the diesel fuel consumption from these sites. Exploratory work is being done to assess expanding this program to more sites.

Another innovative solution is to extend the performance of the 8-hour / 48-hour backup battery system by having a solar powered trailer on site to charge the batteries with solar panels. There is currently a test site at the Ottawa C-ANS and the feasibility of expanding this project to other sites is being explored.

During the development of the Implementation Plan, further exploration will continue to identify potential research and development opportunities to help us meet our emissions targets and environmental impact goals.

Solar Trailer for Battery Charging

8-hour/48-hour Emergency Back-up Battery System

3.9 Expand our Organizational Mindset

The focus of the aviation sector has expanded to understanding the role and impact of aviation on environment and climate change. As Canada's ANSP, and a signatory to the UN Global Compact and Canada's Aviation Climate Action Plan, NAV CANADA has a responsibility to evolve with the sector and adopt sustainability within its business practices.

Changing our organizational mindset to encompass principles of sustainability will require support across NAV CANADA, a thorough understanding of our mandate, and embracing an innovative approach to the future of our operations.

The ESG strategy governance structure outlined in section 2.1 will be a critical mechanism for alignment across the company as we expand our organizational mindset and consider new opportunities for climate action.

3.9.1 Executive Support

Executive support will be the primary enabler of innovation and adoption of sustainability at NAV CANADA. The aforementioned ESG governance structure, established as part of the ESG Strategy implementation at NAV CANADA, provides a direct link between the work of the Climate Action and Environment Task Group and executive management via the ESG Steering Committee.

This alignment will serve to maintain transparency and communication so that organizational decisions around environment and climate action are data-driven and informed.

3.9.2 Employee Outreach

Along with executive support, support of the NAV CANADA employee base is integral to the adoption of a sustainability mindset across the organization. Education on sustainability principles and providing opportunities for engagement are key methods to involve employees in the implementation of an ESG strategy at NAV CANADA. Education and opportunities can be facilitated mainly by:

1. **Providing skills and training to employees:**
   - Provide presentations on ESG strategy,
   - Provide access to UN Global Compact training materials available to all employees,
   - Further develop internal training and resource materials, and
   - Share educational opportunities, such as webinars.
2. **Consistent communication on ESG activities:**
   - Internal-facing Central page with more specific content for employees on motivations for climate action and a forum for employee feedback,
   - Utilizing NAV CANADA NOW to update employees on sustainability-related initiatives,
   - Employee town halls/presentations,
   - Integrating regionally based working groups, and
   - Regular touchpoints between Sustainability and Communications teams.

These methods of employee outreach were brainstormed by the Climate Action and Environment Task Group and are aligned with coordination between the Communications and Corporate Performance and Sustainability teams.

3.9.3 Business Justification

NAV CANADA has a unique governance and financial structure as a not-for-profit corporation, and justification of investment decisions prioritize safety, reliability, and innovation in addition to cost. Properly integrating sustainability into the company's organizational mindset will require expanding our business justification to include prioritization of climate action and environmental protection. This means capturing all benefits and risks, including social and environmental considerations, when assessing capital and operational needs for projects.

This will align our progress to our commitment to the UN Global Compact and their promotion of 'just transition', to ensure that environmentally sustainable development is fair and inclusive.

The Climate Action and Environment Task Group will work to determine any changes required to existing business procurement and contracting practices to better incorporate the principles of just transition and reduce the impact of climate risks to the company.

Summary of all Current Actions and Future Considerations aligned to their Emissions Reduction Pathway

Asset Optimization
- NAVAID modernization
- Fleet optimization
- Telematics
- Inspection aircraft replacement

Energy Efficiency Measures
- Upgrading HVAC systems
- Implementing Building Management Systems (BMS)
- LED lighting upgrades

Electrification
- Explore electrification options in replacement of stationary fuel combustion sources
- Electric vehicles

Clean Energy
- Purchase of green energy
- Explore Green funding opportunities

Supplier Sustainability
- ESG Supply Chain Strategy

4.0

Next Steps and Implementation Plan

This document is intended as a scoping report on environment- and climate-related initiatives currently underway at NAV CANADA. These activities, outlined in section 3.3, along with the target development outlined in section 3.4 will inform an Implementation Plan with specific actions to reduce emissions at NAV CANADA and progress our overall climate action and environment portfolio.

The Implemenataion Plan will consider the requirements to achieve NAV CANADA's GHG emissions reduction targets, such as cost, timing, and expected benefits of emissions reduction initiatives. As it is developed, it will be subject to the ESG governance process outlined in section 2.1 to ensure communication, alignment, and awareness across the organization.

Developed by Corporate Performance and Sustainability in collaboration with:

- Environmental and OSH Compliance
- Fleet Services
- Flight Inspection Operations
- Infrastructure Delivery (CFS/FSI)
- Supply Chain
- Technical Services

And the assistance of Communications

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