

# **VANCOUVER INTERNATIONAL AIRPORT**

## **2024 Aeronautical Noise Management Report**

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## EXECUTIVE SUMMARY

In 2024, aircraft, passenger, and cargo movements continued to trend upwards at Vancouver International Airport. Compared to 2023, aircraft movement were up by 2% and the passenger traffic was up by 5%. While passenger traffic nearly reached the pre-pandemic levels observed in 2019, aircraft movements were 11% lower than 2019.

To reduce the impacts of aircraft noise on the surrounding communities, Vancouver Airport Authority continually works to manage noise from aircraft and airport operations.

A key highlight of noise management activities in 2024 was the development of a new Noise Management Plan for 2025-2029. The new plan, developed in close consultation with the YVR Aeronautical Noise Management Committee, includes work focus areas and supporting initiatives identified through extensive engagement with key stakeholders, Musqueam partners, and the broader community which will guide our noise management efforts over the next five years. The final draft of the plan was submitted to Transport Canada in early 2025 for their review. Once accepted by Transport Canada, the new plan and supporting materials will be posted on [www.yvr.ca](http://www.yvr.ca).

Other highlights of noise management activities in 2024 include:

- Hosting meetings of the Aeronautical Noise Management Committee to support community-industry dialogue;
- Participating in international and national discussions on noise issues through the International Civil Aviation Organization, Airports Council International – North America, and the Canadian Airports Council; and,
- Presenting the annual YVR Fly Quiet Awards to raise awareness of noise issues in the aviation community and celebrate operators demonstrating good noise management practices at YVR.

The Airport Authority also continued its efforts in engaging with the community on aircraft noise issues, responding to questions and concerns from residents. In 2024, a total of 1,098 concerns were registered by 197 individuals. This is a decrease in the number of concerns and individuals compared to 2023 where a high number of concerns were registered regarding the extended irregular use of the north runway due to a major project on the south airfield. Approximately 72% of the total concerns were received from three individuals.

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## INTRODUCTION

Vancouver Airport Authority (Airport Authority) is a private, non-share capital corporation that manages and operates Vancouver International Airport (YVR) in service of our community and economy that supports it. The Airport Authority took over management of YVR from Transport Canada in 1992 under a long-term ground lease agreement and is committed to operating YVR in a manner that minimizes negative impacts on the environment, while providing 24-hour airport services to support the business and travel demands of the region.

As part of YVR's Ground Lease requirements with the Government of Canada, the Airport Authority is responsible for noise management activities for operations related to YVR, including monitoring noise levels and responding to noise complaints for aircraft arriving and departing YVR up to 10 nautical miles from the airport. To manage noise from aircraft and airport operations, the Airport Authority has a comprehensive noise management program and uses a sustainability framework in its approach. This framework integrates the economic, environmental, social, and governance aspects of our business and provides a balanced approach for our corporate objectives and our commitment to the local community.

The objective of this report is to share information with the community about activities of the YVR Aeronautical Noise Management Program, and to facilitate informed dialogue between stakeholders involved in managing aircraft noise. Data and information compiled for this report also help to support discussions with members of the YVR Aeronautical Noise Management Committee (ANMC), a key consultative forum for independently appointed community and industry representatives to share information and provide advice and input on the development of initiatives to the Airport Authority through a collaborative process.

## 2024 YVR NOISE MANAGEMENT HIGHLIGHTS

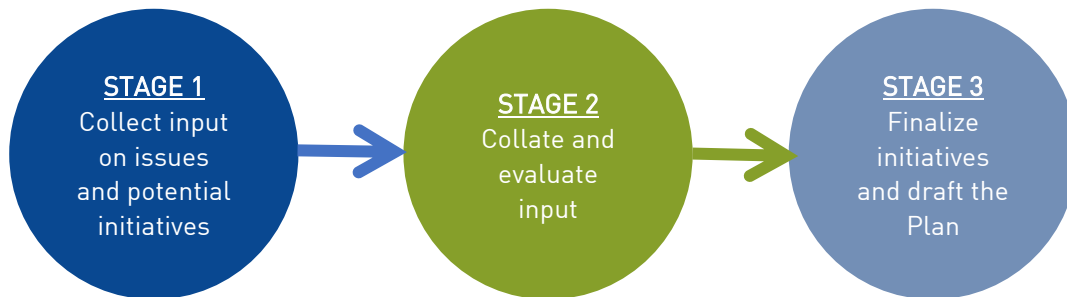
The Airport Authority is committed to advancing efforts on noise management. Annual work plans are guided by a broad set of initiatives contained in the YVR Noise Management Plan, developed with input from the community and support from the YVR ANMC. Highlights of noise management activities in 2024 are summarized below.

### CREATING THE 2025-2029 NOISE MANAGEMENT PLAN

In 2024, the Airport Authority undertook work to create a new 5-year Noise Management Plan (NMP) for 2025-2029. The NMP is an integral part of advancing the goals and objectives of the YVR Aeronautical Noise Management Program. While the last NMP ended in 2023, the work to create the new NMP was deferred due to the many challenges and unknowns facing the aviation and travel industry following the global pandemic.

The new NMP was developed in close consultations with the members of the YVR ANMC, a key stakeholder group whose membership includes: staff and citizen representatives from Richmond, Vancouver, Delta, and Surrey; Musqueam Indian Band; Transport Canada; NAV CANADA; airlines; and industry associations. The overall process to create the NMP followed three distinct stages, as illustrated in **Figure 1**.

**FIGURE 1: Process to Create the 2024-2029 YVR Noise Management Plan**



Major tasks completed in Stage 1 to collect community and stakeholder input on issues and potential initiatives are summarized below:

#### ANMC Questionnaire

A questionnaire was administered to ANMC members to solicit input for new NMP initiatives. In addition, one-on-one discussions were hosted with ANMC city staff and citizen representatives to discuss issues specific to their community and to help identify ideas for proposed initiatives and actions.

### Community Web Questionnaire

To engage with the broader community, a web questionnaire was hosted between April 27 and July 14, 2024. The questionnaire consisted of 13 close and open-ended questions that invited residents to provide input on potential initiatives as well as feedback on the Airport Authority's current communication and engagement efforts on noise management activities.

The questionnaire was promoted through YVR social media and the ANMC, and a total of 430 individuals completed the questionnaire. While many of the suggested initiatives were outside the Airport Authority's control or mandate to provide a 24/7 air services (e.g., close the airport at night, move flight paths over other areas), community input and feedback helped form the basis of several initiatives, specifically to enhance information sharing and improve our communication and engagement efforts on noise management activities.

### Listening Session with Musqueam

A listening session was hosted with Musqueam to share information on the Noise Management Program, discuss the creation of the NMP, and identify community issues of concern related to aircraft noise.

All input and suggested ideas collected during Stage 1, as shown in **Figure 1**, were reviewed and evaluated against the following criteria:

- Impact on aviation safety.
- Impact on airport or aircraft operations.
- Effects on GHG emissions or air quality.
- Economic cost to industry.
- Noise impact on other communities (i.e. noise relocation).
- Impact on current and future airport capacity.
- Alignment with YVR's mandate to provide 24-hour air service for the region.

Based on the evaluation, areas of work focus and supporting initiatives were identified.

The final draft of the NMP was submitted to Transport Canada in early 2025 for their review. Once accepted by Transport Canada, the new NMP and supporting materials will be posted on [www.yvr.ca](http://www.yvr.ca).

### **AERONAUTICAL NOISE MANAGEMENT COMMITTEE (ANMC) MEETINGS**

The ANMC provides a forum for discussion and consideration of all aeronautical noise management issues at the airport. The membership includes a wide variety of stakeholders representing municipal staff, citizens, Musqueam, and industry partners. In 2024, three meetings were hosted, and meeting minutes are posted on [www.yvr.ca/en/about-yvr/noise-management/anmc](http://www.yvr.ca/en/about-yvr/noise-management/anmc).

### PARTICIPATION IN INTERNATIONAL AND NATIONAL DISCUSSIONS

The Airport Authority continues to participate in international and national discussions on noise issues through the International Civil Aviation Organization (ICAO)/Committee on Aviation Environmental Protection (CAEP), Airports Council International – North America (ACI-NA), and the Canadian Airports Council (CAC) Noise Working Group.

The CAC Noise Working Group includes members from many airports in Canada and provides a forum to exchange information on local noise issues and discuss national noise issues with Transport Canada. In 2024, the Working Group met with Transport Canada to continue discussions and provide input on their ongoing review of the Noise Exposure Forecast metric, which is used for airport noise assessment and compatible land use planning in Canada.

### YVR FLY QUIET AWARDS

The 19<sup>th</sup> annual YVR Fly Quiet Awards were presented at the annual YVR Chief Pilots Meeting in May, 2024. The goal of these awards is to support best noise management practices and raise awareness of noise issues within the aviation community. The winners were: WestJet Encore (propeller aircraft category), Porter Airlines (narrow-body jet aircraft category), and Qantas Airways (wide-body jet aircraft category).

## YVR OPERATIONS IN REVIEW

Aircraft movements and passenger traffic at YVR continued to trend upwards in 2024. Compared to 2023, total aircraft movements and passenger traffic increased by 2% and 5%, respectively. Cargo movement also experienced a continued growth and reached a record volume in 2024.

**TABLE 1: Operational Statistics for YVR, 2022-2024**

	2022	2023	2024
<b>Total Aircraft Movements</b>	<b>262,888</b>	<b>284,403</b>	<b>289,395</b>
Runway Movements	230,162	250,332	257,660
Non-Runway Movements	32,726	34,071	31,735
<b>Total Cargo (Tonnes)</b>	<b>302,572</b>	<b>316,485</b>	<b>339,276</b>
<b>Total Passengers</b>	<b>19,013,416</b>	<b>24,938,184</b>	<b>26,205,801</b>

**Figure 2** illustrates the historical trend of annual aircraft movements and passengers at YVR over the past 20 years between 2005 and 2024. While the number of passengers in 2024 nearly reached the record passenger number of 26.3 million observed pre-pandemic in 2019, aircraft movements were 11% lower than 2019. This trend indicates that aircraft are carrying more passengers and cargo per operation, which has the benefit of reducing noise and emissions.

**Figure 3** illustrates the annual average hourly runway movements by arrivals and departures in 2024. The runway movements are observed to increase at 6 AM, and peaks are experienced throughout the day.



FIGURE 2: Annual Aircraft Movements & Passenger Statistics, 2005-2024<sup>1</sup>

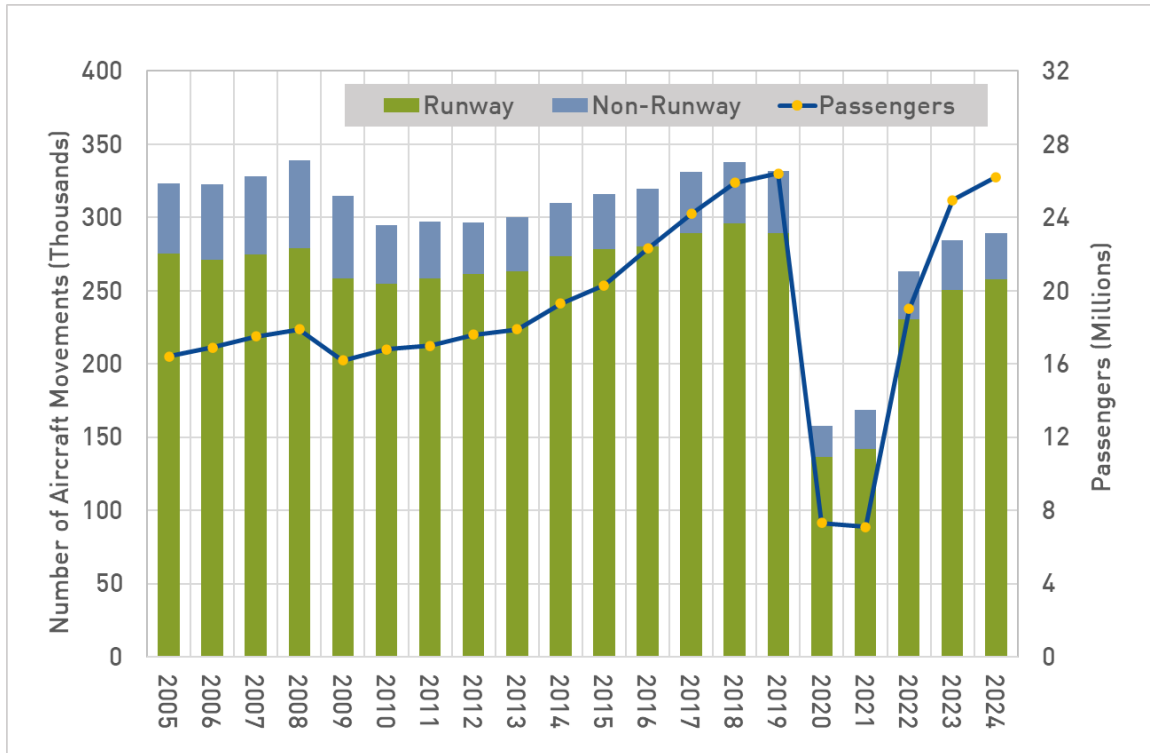
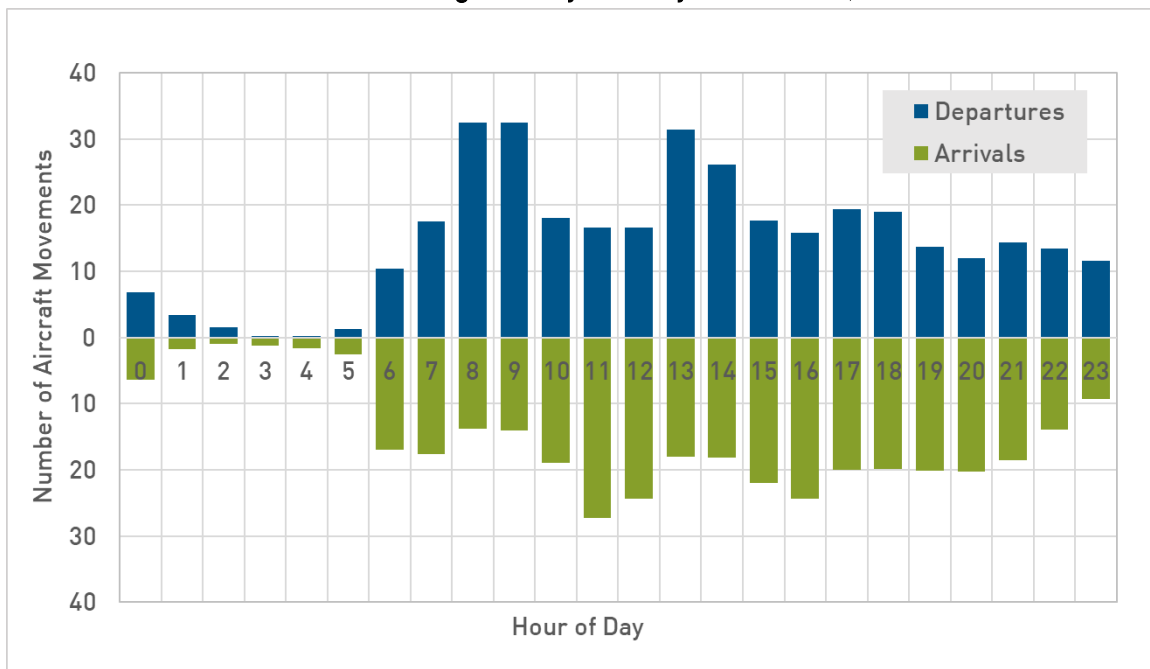


FIGURE 3: Average Hourly Runway Movements, 2024



<sup>1</sup> This chart includes both runway and non-runway movements. Non-runway movements include helicopter and floatplane operations.

## NIGHT OPERATIONS

Like most international airports worldwide and all international airports in Canada, YVR is open 24 hours a day to serve the air travel and business demands of the region. Movements at night are typically associated with courier, cargo, and passenger services including several long-haul international passenger flights operated using wide-body aircraft.

In 2024, there were a total of 10,282 runway movements during the night-time period<sup>2</sup>, which accounted for 4% of the total runway movements throughout the year. On average, this equates to an average of 28 movements per night. Of these, 52% were arrivals which are generally quieter than departures.

YVR has always been open 24-hours a day, including when the airport was managed by Transport Canada prior to the transfer to the Airport Authority in 1992. **Figure 4** illustrates the annual night-time runway movements over the past 20 years.

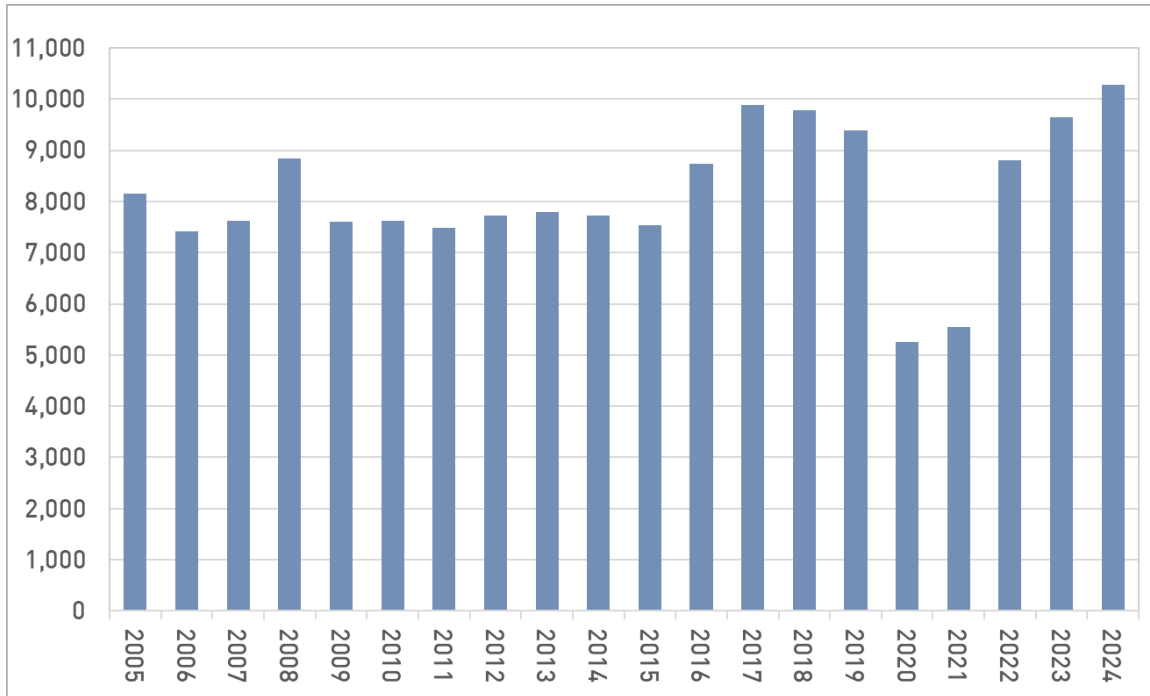
The annual night-time runway movements were higher in 2024 than the pre-pandemic level of approximately 9,400 movements in 2019. The increase was mostly observed in narrow-body jet operations.

There are various factors influencing this trend. One factor could be associated with increased transborder flights in the late evening hours due to U.S. Customs and Border Protection extending their preclearance hours starting in summer 2023. This has allowed the scheduling of additional flights to the U.S. later into the evening. While most of these additional transborder flights are scheduled to depart and arrive before midnight, the actual take-off and landing times vary each day and flights may occur after midnight due to delays, weather conditions, and traffic volume on the airfield.

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<sup>2</sup> For this report, the night-time period is the hours between midnight and 6:00 AM local time.

FIGURE 4: Annual Night-Time Runway Movements, 2005-2024



To manage the impact of operations at night, YVR has the following practices in its published Noise Abatement Procedures:

- A prior approval requirement for the departure of jet aircraft rated over 34,000 kg (maximum take-off weight) between the hours of midnight and 6 AM.
- Use of preferential runways to keep arriving and departing aircraft over the Strait of Georgia, depending on operational feasibility and weather conditions.
- Early turn and vectoring procedures for aircraft on certain routes to minimize over-flights of populated areas.
- Closure of the north runway between the hours of 10 PM and 7 AM, except in the event of an emergency or maintenance of the south airfield.

## JET FLEET MIX BY NOISE CERTIFICATION

The International Civil Aviation Organization (ICAO) is an agency of the United Nations and establishes principles for the planning and development of international air transportation to ensure safe and orderly growth. The ICAO Committee on Aviation Environmental Protection (CAEP) prescribes standards for noise with the goal of promoting reduction at the source. These standards are contained in *Annex 16: Volume I Environmental Protection - Aircraft Noise* and categorize jet aircraft as either Chapter 2, Chapter 3 or Chapter 4 depending on the Gross Take-off Weight (GTOW) of the aircraft and sound level measurements taken at three different locations (take-off, landing, and sideline)<sup>3</sup>.

The Chapter 14 noise standard was confirmed at the 9th meeting of CAEP in February 2013. This standard applies to new aircraft types over 55,000kg certified after 2017 and to new aircraft types less than 55,000kg after 2020. To meet the Chapter 14 standard, aircraft must be at least 7 EPNdB (Effective Perceived Noise in Decibels) quieter than the current Chapter 4 standard. This reduction is cumulative over the three measurement points: take-off, landing, and sideline.

In 2024, it is estimated that approximately 91% of the movements at YVR by jet aircraft with a GTOW over 34,000kg were with an aircraft type that met Chapter 4 or Chapter 14 noise certification standards. In addition, it is estimated that approximately 80% of movements by jet aircraft with a GTOW over 34,000 kg operating between the hours of midnight and 6:00 AM were with an aircraft type that met Chapter 4 or Chapter 14 noise certification standards.

Airlines worldwide continue to invest to upgrade their aircraft fleets. These new aircraft types have improved noise and emission benefits compared to the older aircraft types they replace.

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<sup>3</sup> The Government of Canada legislated the phase-out of older noisier Chapter 2 jet aircraft over 34,000kg from operation in Canada by 2002. These aircraft are no longer permitted to operate in Canada and were either retired from operation or modified to meet Chapter 3 standards. A few exemptions were granted for aircraft operating from airfields in northern Canada.

## AIR TRAFFIC FLOW

YVR has two main parallel runways and a crosswind runway. The parallel runways, which include the south runway (08R/26L) and the north runway (08L/26R), are aligned in an east-west direction with magnetic headings of 083° and 263°. The crosswind runway (13/31) is oriented in a northwest and southeast direction with magnetic headings of 125° and 305°.

The active runway in use, i.e., the direction of take-offs and landings, at any given time is determined by wind conditions at the airport as aircraft must take-off and land into the wind for safety reasons. The predominant winds at YVR are typically in an easterly or westerly direction, in line with the parallel runways. Based on historical observations, traffic flow in an easterly direction (Runway 08L and Runway 08R active) is more common during the fall and winter months, and traffic flow in a westerly direction (Runway 26L and Runway 26R active) is more common during the spring and summer months. The crosswind runway is generally only used during periods of high crosswind conditions, which are very infrequent throughout the year and generally experienced during the fall and winter months. Typically, less than 1% of YVR's annual runway movements occur on the crosswind runway.

The published YVR Noise Abatement Procedures prescribe a westerly flow of traffic (Runway 26 active) as the preferred mode of operation whenever possible to reduce noise exposure on the community. Westerly flow places departures, the noisiest type of operation, over the Strait of Georgia. In addition, NAV CANADA will attempt to accommodate two-way flow between the hours of 11:00 PM and 6:00 AM to keep both arriving and departing aircraft over the Strait of Georgia to minimize over-flights and noise on the community. This operation is subject to traffic volume, airfield activities, and weather conditions.

## RUNWAY USE

At YVR, during normal operations, the south runway is the primary 24-hour runway, and the north runway is closed every night between the hours of 10:00 PM and 7:00 AM, except during emergencies and airfield maintenance on the south airfield. The Airport Authority is required to close the south runway on selected nights throughout the year to conduct preventative and routine maintenance as well as construction projects to ensure a high level of safety for passengers and aircraft. On these nights, the north runway is used for all departures and arrivals between 10:00 PM and 7:00 AM. To inform the community about upcoming airfield work and schedules, the south runway maintenance schedule is posted and regularly updated on the [YVR website](https://www.yvr.ca/noise).

Between the hours of 7:00 AM and 10:00 PM, the north runway is used primarily for landings; however, it can be used for departures when traffic demand approaches capacity, such as during peak times, to reduce delays as well as during emergencies or maintenance.



Figures 5 and 6 illustrate the distribution of arrivals and departures on all runways in 2024.

FIGURE 5: Runway Arrival Distribution, 2024



FIGURE 6: Runway Departure Distribution, 2024



## ENGINE RUN-UPS

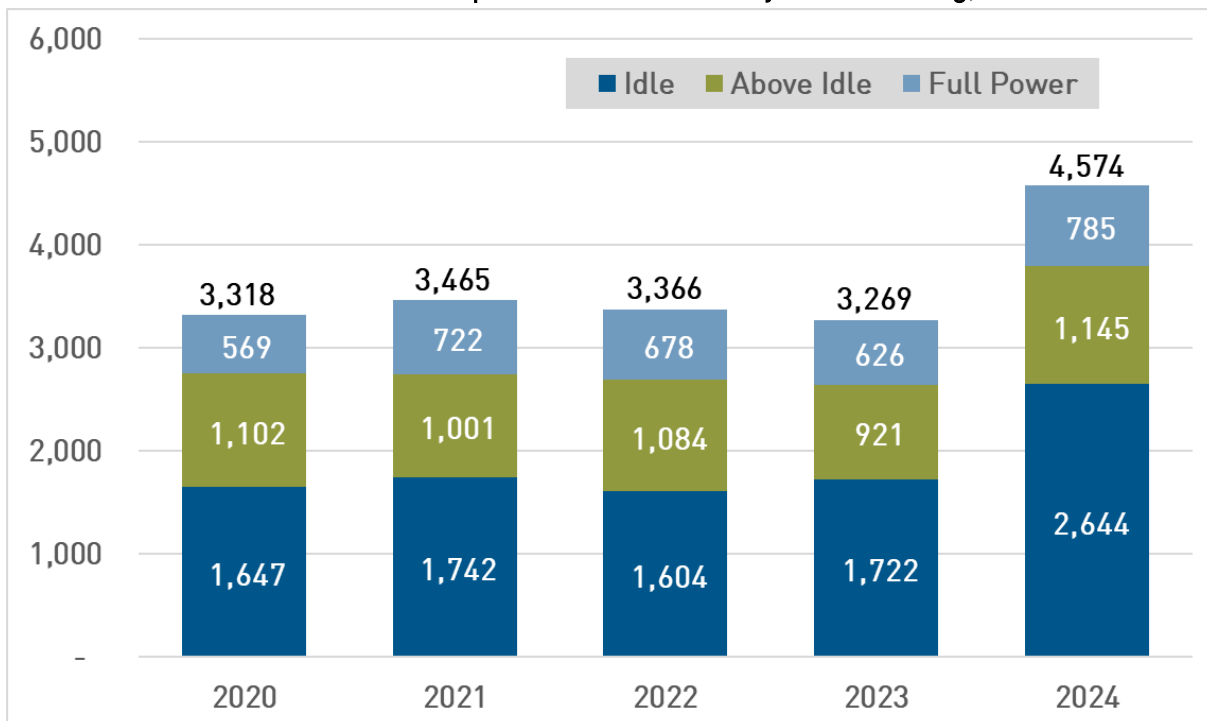
Transport Canada standards require regular maintenance of aircraft to ensure safe operations. Engine run-ups are a critical part of maintenance work and involve operating the engines at various power settings to test components and to simulate flight conditions. These tests are often a required step in the maintenance process and verify that the aircraft is airworthy and safe for its return to service.

To ensure a high level of safety on the airfield and to reduce community noise exposure from run-up activities, the Airport Authority maintains directives and procedures that prescribe how, when, and where run-ups can be performed. Information collected on run-up activities are routinely analyzed to track and identify trends and to ensure directives and procedures remain up to date.

**Figure 7** provides the number of run-ups performed each year at YVR by power setting between 2020-2024. In 2024, there were 4,574 run-ups performed at YVR, which is an average of approximately 12 run-ups per day. This is an increase compared to recent years and a return to the number of run-ups observed pre-pandemic between 2015 and 2019 where there was an annual average of 4,602 run-ups.

Compared to 2023, there was an increase of 1,305 run-ups in 2024. 71% (n=926) of the increase were associated with run-ups performed at an idle power setting.

**FIGURE 7: Number of Run-ups Performed at YVR by Power Setting, 2020–2024**



Further analysis of the 4,574 run-ups shows:

- 58% of the run-up were performed at an idle power setting, 25% were at an above idle power setting, and 17% were at a full power setting.
- 30% of the total run-ups were performed during the nighttime period between midnight and 6:00 AM. Run-ups are performed at all times of the day, and some run-ups do occur at night due to flight schedules and maintenance needs.
- 62% of the run-ups were performed by the operators located on the south side of the airport and 38% of the run-ups were performed by the operators located on the north side of the airport, with the south runway acting as the dividing line.
- 61% of high-power run-ups (above idle and full power settings) performed by south side operators were conducted in the Ground Run-up Enclosure (GRE), a three-sided open roof facility whose walls are designed to absorb and redirect noise from run-ups performed in the facility.



## NOISE CONCERNS

One of the goals of the YVR Aeronautical Noise Management Program is to respond to questions and concerns from the community and provide individuals with up-to-date information on airport operations and noise management initiatives. The community can contact the Airport Authority with their questions and concerns through the following:

- Dedicated e-mail ([noise@yvr.ca](mailto:noise@yvr.ca))
- [Online noise inquiry form](#)
- [Real-time flight and noise tracking system \(YVR WebTrak\)](#)
- YVR Noise Information Line: **(604) 207-7097**

When a concern is received, Airport Authority staff will investigate the concern using the Aircraft Noise Monitoring and Flight Tracking System as well as other data sources to determine the source of the concern. A response is then provided with information to help the individual better understand the source of their concern. While the Airport Authority is assigned the responsibility to respond to noise concerns related to YVR aircraft operations within 10 nautical miles of the airport under the long-term Ground Lease requirements with the Government of Canada, all concerns received are investigated and responded to regardless from where they are received. If the aircraft operator is suspected of non-compliance with published Noise Abatement Procedures, the incident will be forwarded to Transport Canada Civil Aviation Enforcement for further investigation.

Information provided by residents and results of investigations are used to analyze and identify trends. A summary of concerns is provided to the YVR Aeronautical Noise Management Committee at each meeting for review and discussion. In addition, customized semi-annual reports are created for City representatives to provide information on the current issues of concern from their community.

## NUMBER OF CONCERNS

In 2024, the Airport Authority received 1,098 noise concerns from 197 individuals around the Greater Vancouver area, which has a population of 2.6 million<sup>4</sup>. This represents a reduction in the number of concerns and the number of individuals compared to 2023 where a high number of concerns were received regarding the extended irregular use of the north runway due to runway and airfield closures associated with the South Airfield Rehabilitation Project.

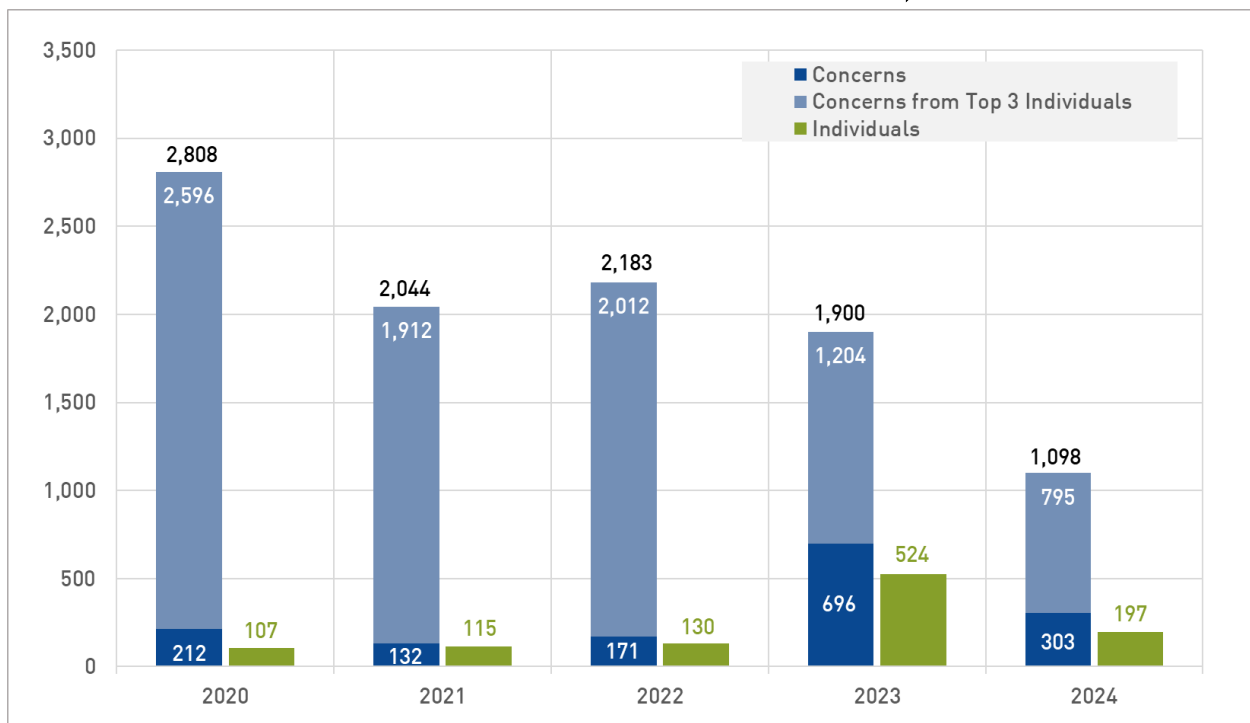
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<sup>4</sup> 2021 Statistics Canada's Census (<https://www12.statcan.gc.ca>)

**Figure 8** provides a breakdown of the number of concerns and individuals between 2020 and 2024. There are several individuals who register multiple concerns throughout the year. As such, the number of concerns associated with the three individuals that have registered the most concerns are identified for each year. In 2024, 72% (n=795) of the total concerns were received from three individuals:

- One individual in Surrey submitted 37% (n=403) of the total concerns mostly regarding departing jet aircraft over the area during Runway 08 operations.
- One individual in Richmond submitted 34% (n=368) of the total concerns mostly regarding propeller aircraft departures over the City during Runway 08 operations.
- One individual in Vancouver submitted 2% (n=24) of the total concerns regarding night-time take-offs on Runway 08L (north runway departures over the city) during south runway maintenance and project work.

**FIGURE 8: Number of Noise Concerns and Individuals, 2020-2024**

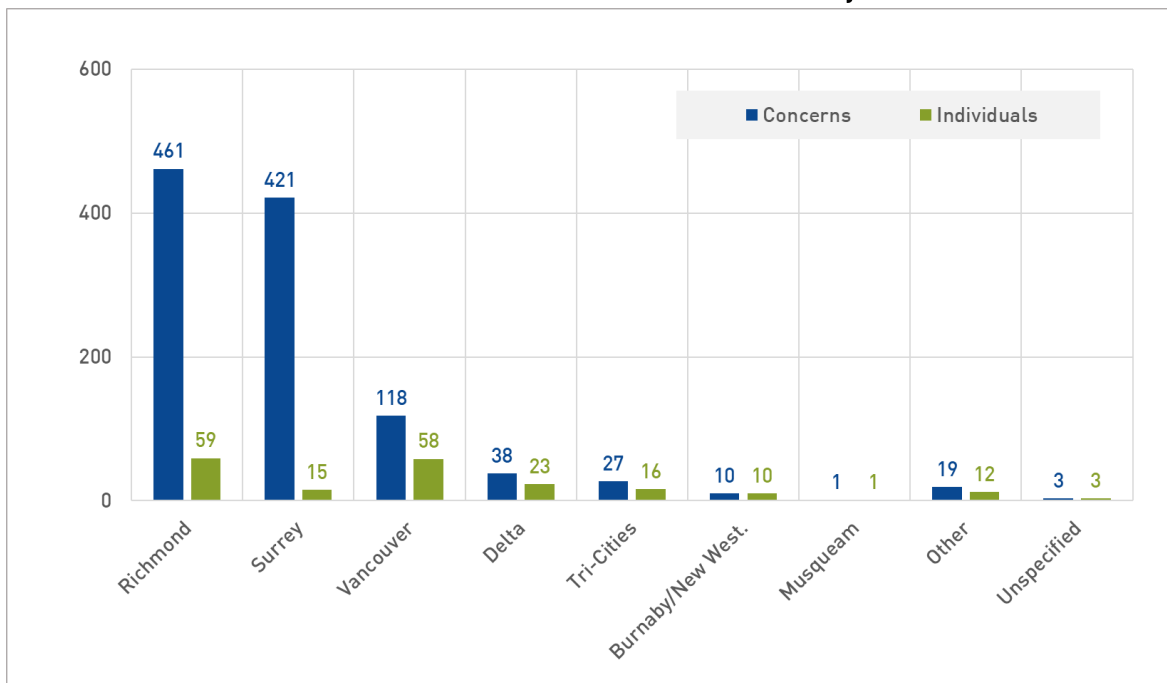


## NOISE CONCERNS BY LOCATION

Whenever possible, individuals are asked to provide the location of their residence to better understand the source of their concerns as well as the distribution of concerns across the region. **Figure 9** illustrates the number of concerns and the number of individuals submitting the concerns in 2024 by community.

While the highest number of concerns were received from Richmond and Surrey, most of these concerns were registered by one individual in each community as discussed above. Excluding the concerns received from these individuals, there were 93 concerns from 58 individuals in Richmond and 18 concerns from 14 individuals in Surrey.

**FIGURE 9: Number of Concerns and Individuals by Location**



**Figure 10** illustrates the geo-distribution of noise concerns received in 2024. In general, locations closer to the airport exhibit a greater density of noise concerns due to the lower altitude of aircraft and greater regularity of aircraft activity.

**Figure 11** illustrates the geo-distribution and the frequency of concerns in the Greater Vancouver area in 2024. The size and colour of each dot represent the volume of concerns originating from that specific location.

Concerns submitted without location information are omitted from these figures.

FIGURE 10: Geo-distribution of Noise Concerns, 2024

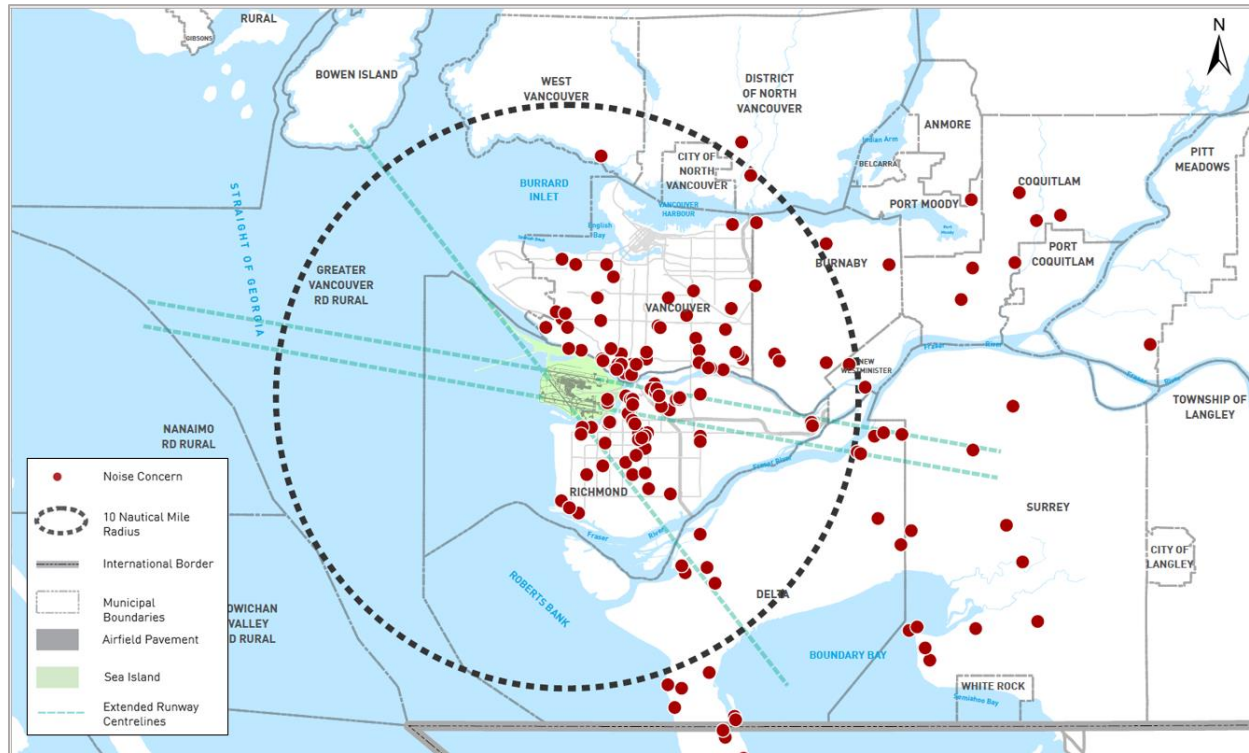
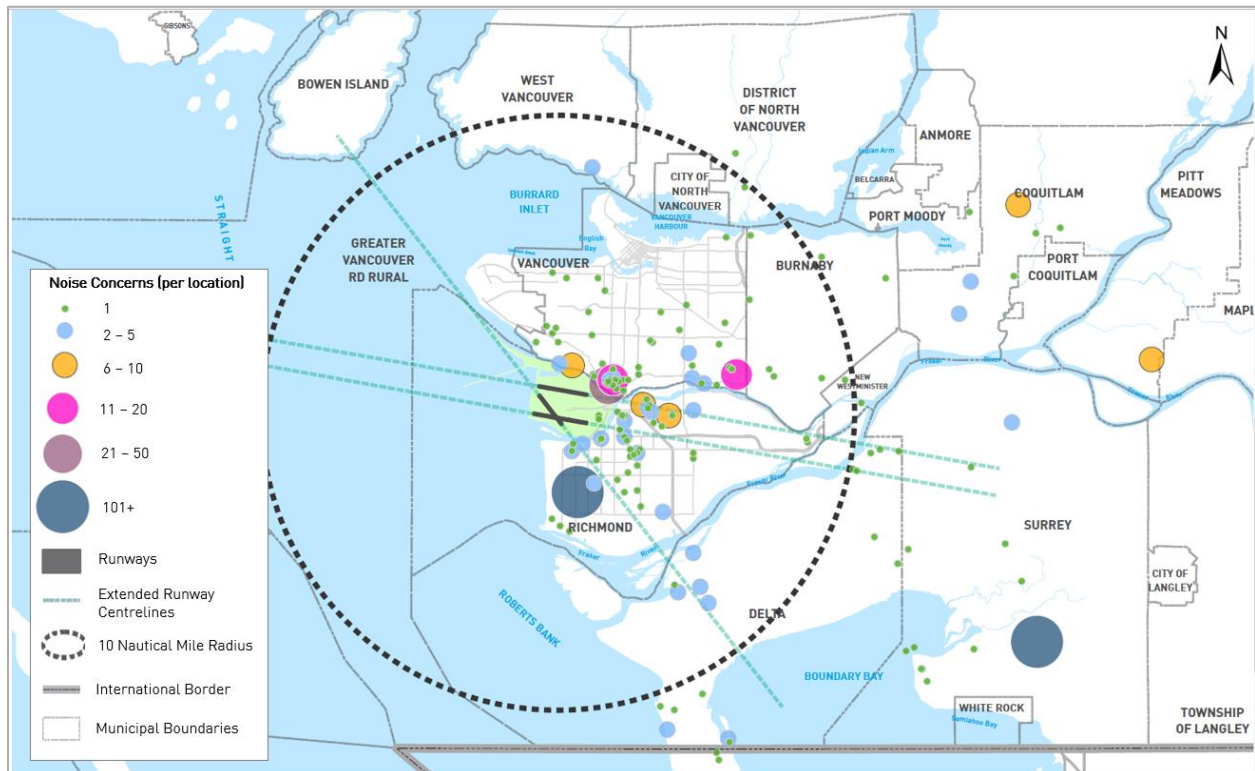


FIGURE 11: Geo-distribution and Frequency of Noise Concerns, 2024



## NOISE CONCERN BY OPERATION TYPE

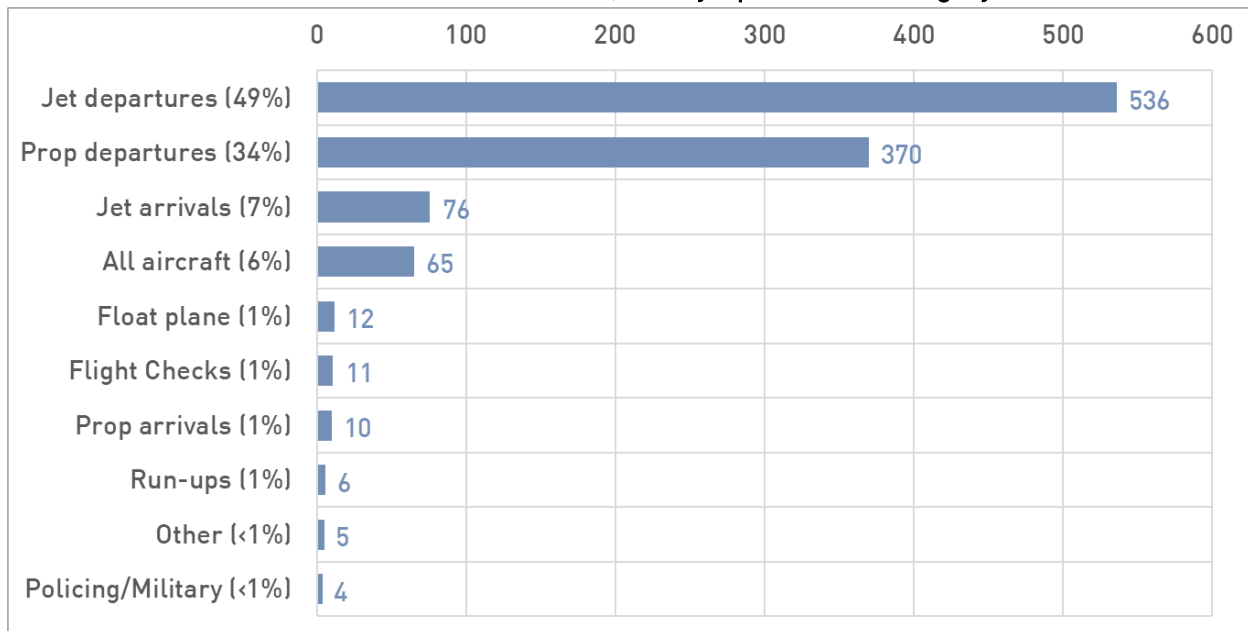
When reporting a noise concern, individuals will generally provide details of date, time, and their location as well as the information related to a specific operation. Based on the information provided and investigations using the airport's Aircraft Noise Monitoring & Flight Tracking System, each concern is matched and categorized into an operation type such as Jet Departure, Jet Arrival, Helicopter, and Run-Ups. In some cases, concerns are general in nature and the individual does not reference a specific operation or activity. These types of concerns are categorized as "All Aircraft". Concerns that cannot be matched against an operation for the time and location provided by the individual are categorized as "Other".

While all areas of the region are exposed to some level of aircraft activity, the level of exposure will vary depending on the location of the area in relation to the airport and its proximity to flight paths.

**Figure 12** illustrates the breakdown of all noise concerns received in 2024 by operational category.

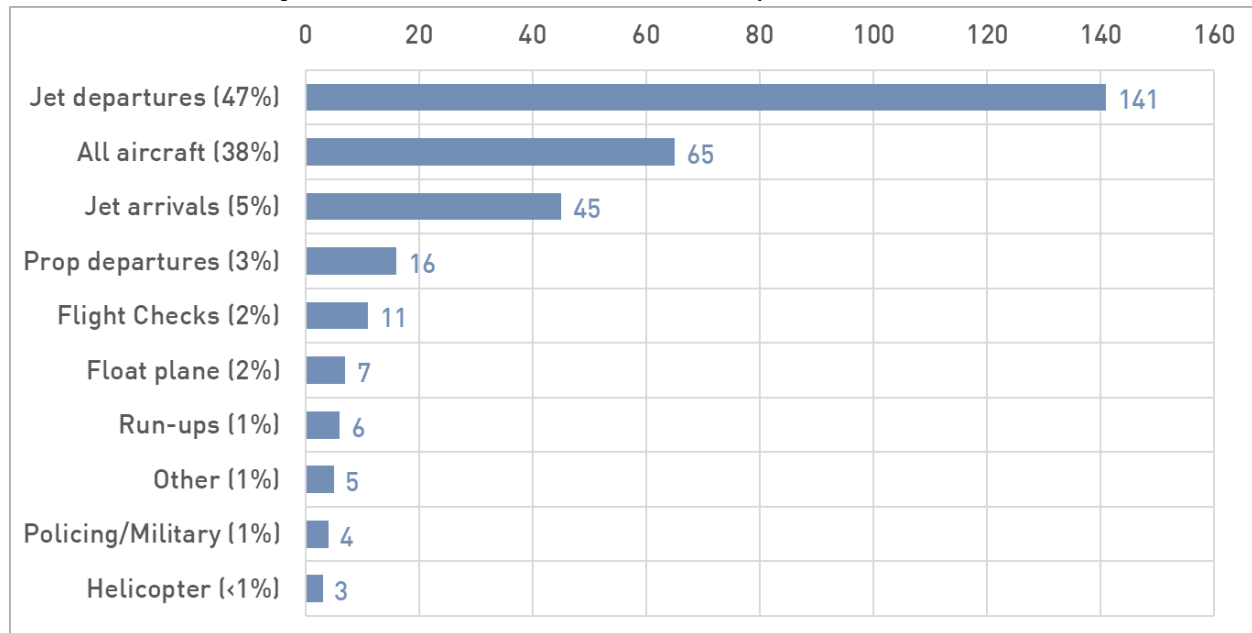
As illustrated, the three operational categories associated with the most concerns in 2024 were jet departures, prop departures, and jet arrivals.

**FIGURE 12: Concerns (n=1,098) by Operational Category**



With a small number of individuals registering many concerns, further analysis was performed by excluding the 795 concerns received from three individuals who registered the most concerns. **Figure 13** illustrates the remaining 303 concerns received from 194 individuals, by operation type.

**FIGURE 13: Concerns (n=303) by Operational Category,  
Excluding the 3 Individuals with the Most Frequent Number of Concerns**



Analysis of the 303 concerns shows that “Jet departures”, “All aircraft” and “Jet arrivals”, were the top three operational categories cited, accounting for 251 of the 303 concerns.

- 35% of the concerns related to jet departures (n= 49) were received from Vancouver. The majority of these concerns were associated with the night-time jet departures on the north runway during south runway maintenance and project work.
- 32% of the concerns related to jet departures (n=45) were received from Richmond, mostly from areas exposed to jet aircraft take-offs at low altitudes during Runway 08 operations.
- 2% of the concerns were associated with an aircraft performing flight checks on Instrument Landing Systems (ILS) at YVR (n=11) – eight from Vancouver, two from Burnaby, and one from an unspecified location. ILS is a critical piece of navigational equipment that provides both vertical and horizontal guidance to aircraft on approach. ILS must undergo routine maintenance and subsequent flight checks to ensure the system is accurately calibrated and functioning properly. During flight checks, a specially equipped aircraft will fly approaches to the airport from several angles, elevations and speeds. These flight profiles are unusual and not seen during normal daily operations.
- 1% of the concerns were regarding engine run-ups (n=6) – three from Richmond and three from Vancouver. All associated run-ups were approved and performed at their assigned location and heading.



## NOISE MONITORING DATA

The Airport Authority uses the Aircraft Noise & Operations Monitoring System (ANOMS) to monitor noise levels and assess the contribution of aircraft noise in communities around the airport. ANOMS combines noise data collected at Noise Monitoring Terminals (NMTs) with radar flight tracking data provided by NAV CANADA. **Figure 14** illustrates the current NMT network in relation to the airport.

**FIGURE 14: NMT Locations in the Greater Vancouver Area<sup>5</sup>**



<sup>5</sup> NMT #13 on North Sea Island was removed from its location in 2023 due to potential land development in the area. The Airport Authority is assessing new locations for the NMT in the adjacent areas.

### ANNUAL AVERAGE NOISE LEVELS (LEQ)

One common metric for community noise assessment is the equivalent sound level, or average noise level (Leq), measured over a given period. **Table 2** presents the annual average Leq, measured in units of A-weighted decibel or dBA, at each NMT location for the last five years. It is important to note that the average noise levels, presented below, include contributions from all sources in the community, including aircraft, motor vehicles, people, lawn mowers, barking dogs, etc.

To provide context on sound exposure, **Figure 15** illustrates example sounds levels ranging from 0 to 130 dBA associated with typical sources. As a note, a 3 dBA increase in noise level is achieved by doubling equal noise sources and is generally the smallest difference in noise level that is perceptible by a receiver. A 6 dBA increase in noise level is clearly perceived, and a 10 dBA increase is perceived as being twice as loud.

**TABLE 2: Annual Average Noise Level (in dBA), 2020-2024**

YEAR	NOISE MONITORING TERMINAL										
	1	2	3	4	5	6	7	8	9	10	11
2020	74.4	62.8	51.7	59.6	56.3	56.0	57.6	51.4	49.3	60.6	58.3
2021	72.4	62.2	53.5	60.1	55.6	56.4	58.0	50.2	49.7	57.2	57.0
2022	67.8	63.0	51.1	59.1	56.5	55.8	57.6	50.2	49.1	55.2	59.2
2023	74.2	62.5	51.2	59.1	57.8	55.5	57.5	50.9	49.2	55.1	61.2
2024	72.3	64.0	51.8	59.4	57.5	56.4	58.1	50.8	49.5	53.9	60.1

YEAR	12	13	14	15	16	17	18	19	20	21	22	23
2020	68.7	59.8	55.4	55.4	58.5	53.9	53.5	55.1	52.6	51.0	-	-
2021	65.8	59.5	55.3	59.8	54.5	57.1	53.8	54.8	56.9	51.0	51.0	49.7
2022	74.9	60.5	54.6	54.7	53.4	53.6	51.8	53.2	61.8	51.2	51.2	52.0
2023	71.5	61.9	55.5	54.0	53.7	52.5	51.3	53.6	53.3	51.3	51.2	51.3
2024	75.4	-	55.2	56.2	54.2	52.6	52.3	53.0	51.6	51.3	51.3	50.6



FIGURE 15: Example Sound Level and Associated Sources



Source: URS Corporation, 2008

## NUMBER OF EVENTS - SINGLE EVENT NOISE LEVEL

Another metric used to assess noise is the single event noise level (SEL), measured in dBA. For an aircraft fly-over, either a landing or take-off, the SEL represents the total acoustic energy above a prescribed reference threshold and is typically 10 dBA greater than the maximum noise level experienced during the aircraft fly-over. The primary use of the SEL is to provide a comparison of noise events with different noise levels and durations.

At each NMT, a sound level reference threshold is set according to the ambient background noise level in the area. Reference thresholds are typically set between 65 and 70 dBA during the day (7:00 AM to 10:00 PM) and between 55 and 60 dBA during the night (10:00 PM to 7:00 AM). When the sound level measured by the NMT exceeds the reference threshold, a noise event is captured.

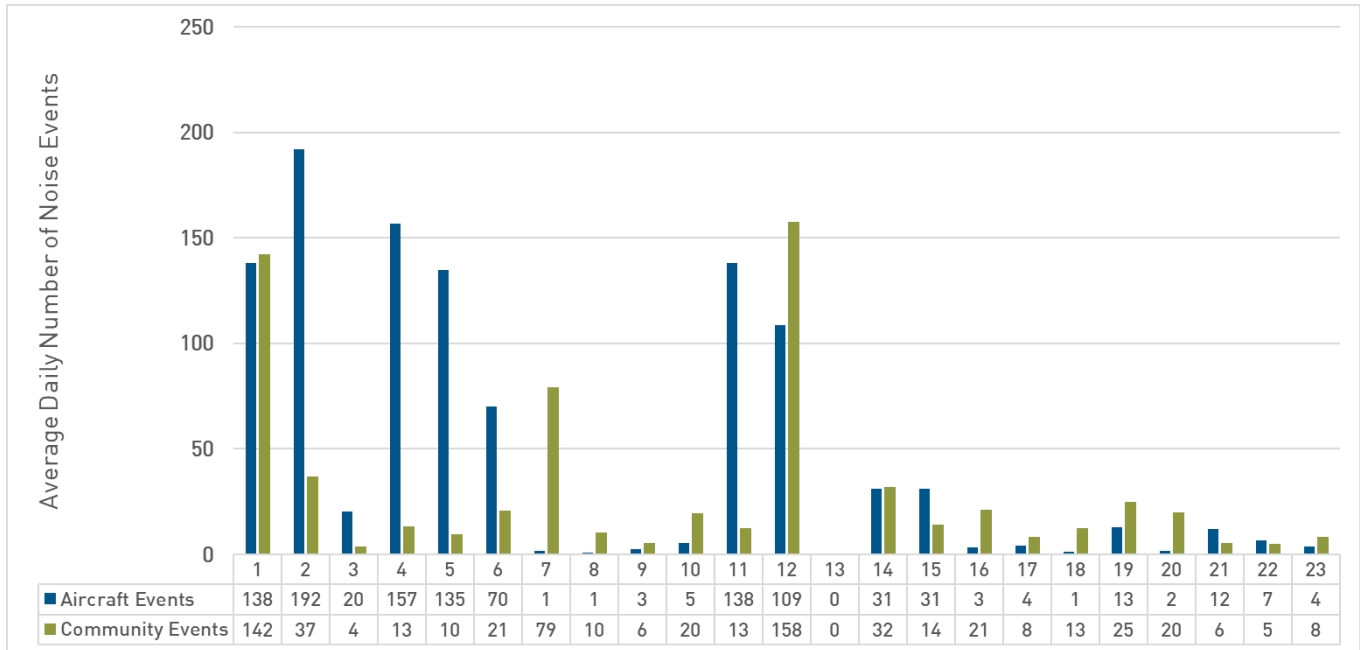
Noise events are then analyzed together with radar flight tracks by ANOMS and are categorized as either correlated or uncorrelated. Correlated noise events are those associated with aircraft activities and uncorrelated noise events are those associated with other sound sources in the community. For those NMT sites located under flight paths and where aircraft operate at lower altitudes, the captured noise events tend to be more associated with aircraft than community sources. Conversely, for those NMT sites located farther away from the airport or where aircraft tend to operate at higher altitudes, the captured noise events tend to be more associated with community sources.

**Figure 16** illustrates the daily average number of aircraft versus community noise events<sup>6</sup> captured at the NMTs in 2024.

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<sup>6</sup> Noise events with durations less than 60 seconds and a SEL greater than 70dBA are included in this count.

FIGURE 16: Average Daily Number of Noise Events at NMTs, 2024





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#### Note on Reported Figures and Data:

The Airport Authority receives aircraft operations data from NAV CANADA. This data includes daily aircraft arrivals and departures at YVR as well as aircraft transiting through the Vancouver Control Zone. Every effort is made to verify and correct anomalies in the dataset, and numbers stated in this report may vary slightly from those reported by others.

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