

TORONTO PEARSON INTERNATIONAL AIRPORT

# NOISE MANAGEMENT



**TORONTO**  
**PEARSON**



## **Noise and the GTAA**

The GTAA is sensitive to the issue of aircraft noise and how it affects our neighbours. Since assuming responsibility for Toronto Pearson International Airport in 1996, the GTAA has implemented programs in a number of areas, including noise management, to mitigate these effects and to respond to the concerns of the local communities. As part of our ISO 14001 program, noise management has been identified as a significant aspect.

## **Managing Noise**

The GTAA balances safety and airport operations with the interests of area residents and works with the aviation community to manage and mitigate aircraft noise. Actions to achieve this have included:

- Restricting operating hours of all aircraft based on noise certification levels;
- Managing the total number of nighttime movements to remain within Transport Canada allowances;
- Using Departure and Arrival procedures to minimize noise impacts in neighbouring communities;
- Working with surrounding municipalities to restrict construction of housing in higher noise level areas;
- Working with community representatives on the Community Environment and Noise Advisory Committee (CENAC) to maintain public dialogue about aviation noise.



## Understanding noise

The universally accepted measurement of sound is the decibel. While the human ear has greater sensitivity to certain frequencies or pitches; aircraft noise and most other community sounds are usually measured in "A-weighted decibels (dBA)". To the average human, a 3 dBA increase is barely perceptible while a 5 dBA increase is clearly perceptible. An increase in 10 dBA is perceived as being twice as loud. As an example, general office noise at 50 dBA is considered twice as loud as a 40 dBA library.

Sound is transmitted through the air in waves, like ripples that move outward across a pond when a stone splashes in its midst. When we perceive sound, we judge it to be desirable or undesirable. Sounds deemed undesirable are often referred to as noise.

Unwanted or unexpected sounds can be considered noise even when their loudness and pitch are the same as familiar sounds. While an Airbus A320 flying overhead may generate the same 70 dBA level as a vacuum cleaner one metre away, the aircraft may seem more annoying to a person because one expects to hear the vacuum's noise and is therefore willing to accept it. Similarly, quieter noises that occur frequently may be considered as annoying as infrequent, louder noises.

Sound waves propagated through the air can change with humidity, temperature and wind direction. Due to these factors, sound can vary by up to five or more decibels from the same aircraft operating at the same location on different days.



## Noise Management

The GTAA is required to develop and maintain a comprehensive aircraft Noise Management Program that consists of a number of site-specific operational initiatives introduced to minimize the impact of aircraft noise on the surrounding communities. The primary elements of the program are as follows:

### Night Flight Restrictions

Toronto Pearson's night flight restriction program is the most restrictive program in Canada and was implemented to minimize aircraft noise at night.

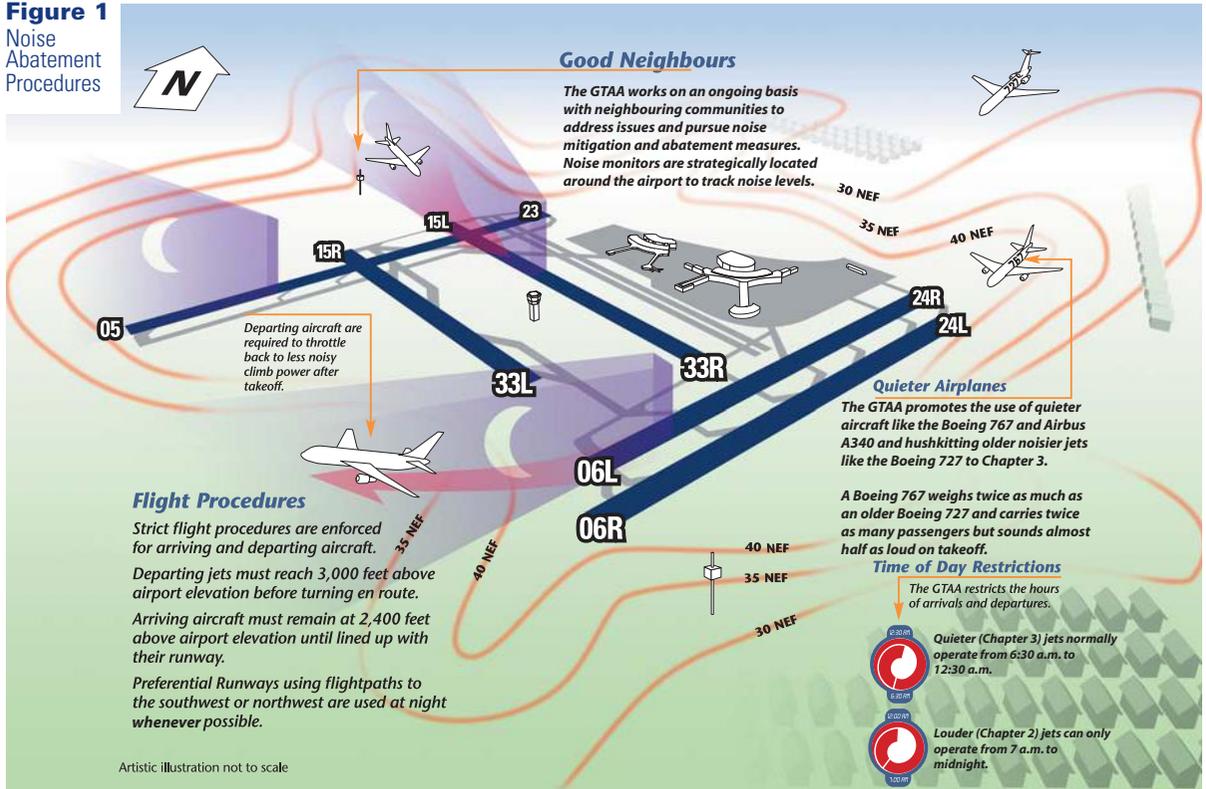
Restrictions on the hours of operation are shown below. Restrictions are more stringent for noisier categories of aircraft.

<b>Restricted Hours of Operation</b>	
Non-Noise Certificated Aircraft	8 p.m. - 8 a.m.
Chapter 2 & equivalent	12 a.m. - 7 a.m.
Chapter 3 & equivalent	12:30 a.m. - 6:30 a.m.

Operating extensions may be granted within the restricted hours on the day of operation for flights delayed by weather, emergencies, air traffic control issues or mechanical difficulties, but only for Chapter 3 or 4 aircraft. A limited number of exemptions may also be approved in advance, depending on the ability of the GTAA to remain within the annual nighttime budget. Noisier Chapter 2 aircraft, non-noise certified aircraft and equivalent operations are not granted operating extensions.

To ensure that flights during the 12:30 a.m. to 6:30 a.m. restricted period remain proportionate to overall traffic levels, Transport Canada has imposed annual limits on the total number of restricted period flights at Toronto Pearson, calculated annually between November and October.

**Figure 1**  
Noise  
Abatement  
Procedures



## Preferential Runway Assignment

The GTAA uses a preferential runway system to minimize the impact of aircraft noise from midnight to 6:30 a.m. using flight paths that impact the fewest people.

Toronto Pearson has five runways: 05-23, 06R-24L, 06L-24R, 15R-33L and 15L-33R. The runways are labelled by the first two digits of the compass bearings. For example, a pilot approaching Toronto Pearson from the southwest and cleared to land on Runway 05, would follow compass heading 057. Each runway has two designators as each runway can be used in either direction.

The preferential runways, in order of priority, are Runways 23, 33R and 24R for Departures and Runways 05, 15L and 06L for Arrivals. Non-preferential runway use during these hours

is limited as much as possible, but may be necessary due to weather, airfield maintenance, or other operational circumstances.

## Engine Run-Ups

Occasionally, airline maintenance staff must perform engine run-ups after engine repairs have been completed. At all times, these run-ups must be pre-approved by the GTAA in advance and conducted at designated times and locations that have been determined to minimize their impact on the surrounding communities.

Between midnight and 7 a.m., engine run-ups are approved only for aircraft scheduled that morning at locations furthest from residential areas. Engine run-ups are prohibited for all noisier Chapter 2 aircraft between 2 a.m. and 5 a.m.

## Noise Abatement Procedures

Toronto Pearson has noise abatement procedures for both Arrivals and Departures to reduce the impact of aircraft noise.

Arriving jet aircraft must remain at 2,400 feet (732 m) above airport elevation prior to lining up with the runway, generally 7 to 10 nautical miles (13 to 18.5 km) from the airport. They must maintain a three-degree angle of descent on final approach to the runway and minimize the use of reverse thrust after touchdown.

Departing jet aircraft are required to throttle back from take-off power to less noisy climb power shortly after take-off and must follow specified headings or ground tracks to 3,000 feet (914 m) above airport elevation before making en route turns.

Noise abatement procedures apply to jet aircraft at all times,

and to propeller aircraft between 11 p.m. and 7 a.m. Unless safety is in question, pilots are required to follow the GTAA Noise Abatement procedures.

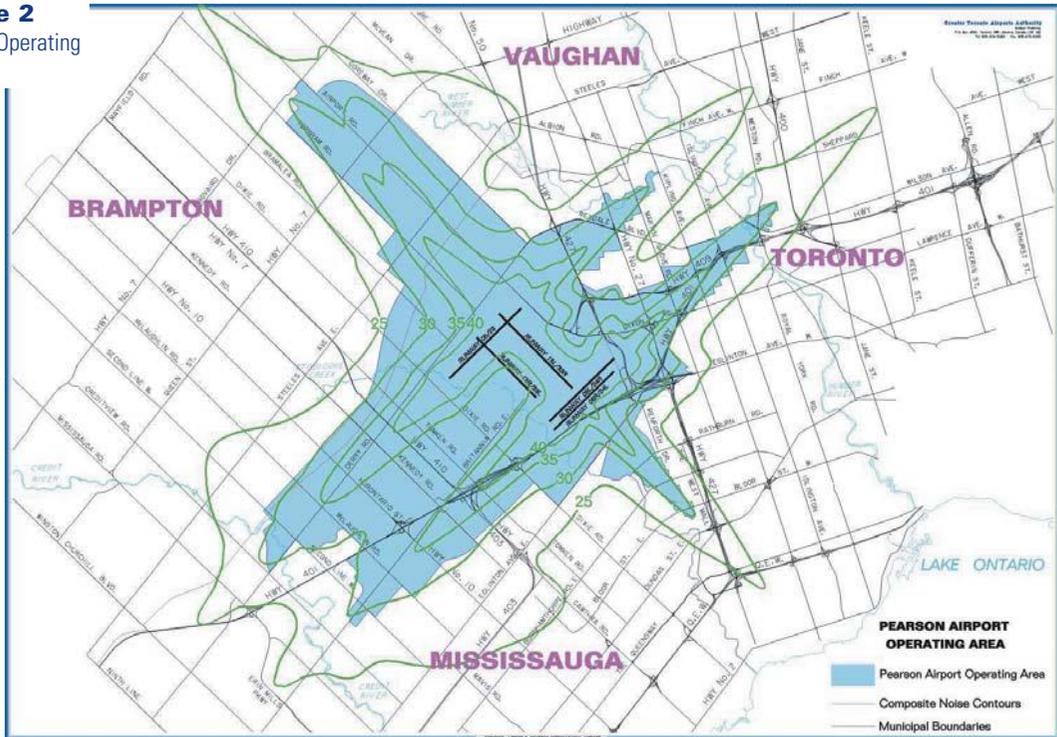
## Land Use Planning

The GTAA works closely with surrounding municipalities to ensure that areas impacted by aircraft noise are zoned appropriately and that sensitive land uses, like residential areas, are restricted in higher noise-impacted areas.

## Noise Exposure Forecast

Transport Canada has developed a Noise Exposure Forecast (NEF) model to calculate long-term aircraft noise exposure based on actual and forecasted flights, and the assessed level of noise annoyance in those areas. Contour lines are drawn on a map connecting points of equal noise impact representing 25, 30, 35 and 40 NEF. The NEF contour does not

**Figure 2**  
Airport Operating Area



measure decibel levels for individual flights, rather it is a cumulative noise value of overall actual and forecasted flights and noise annoyance.

Areas as low as 25 NEF may be affected by aircraft noise. Areas of 30 NEF or greater are considered to be incompatible for sensitive land use, such as residential development.

### **Airport Operating Area**

The GTAA has established the Toronto Pearson Airport Operating Area (AOA), which uses well-defined natural and human-made boundaries to approximate the 30 NEF contour on the ground. Surrounding municipalities have included this operating area in their official plans and have approved associated policies that limit incompatible land uses within these areas.

## **Community Consultation**

### **Community Environment and Noise Advisory Committee (CENAC)**

The GTAA works with neighbouring communities through the Community Environment and Noise Advisory Committee (CENAC), which was formerly known as the Noise Management Committee (NMC). This forum meets four to five times a year and allows community officials, residents and others to meet with the GTAA and representatives of the aviation industry to discuss noise issues. The committee advises the GTAA about community noise concerns and promotes noise reduction initiatives. Recently, its role has evolved to encompass other important environmental impacts of airport operations such as air quality and greenhouse gas emissions. Membership includes local elected officials and residents, with technical support provided by federal, provincial and municipal government officials, NAV CANADA and the Air Transport Association of Canada (ATAC).

## **Noise Management Office (NMO)**

In addition to receiving, analyzing, and responding to complaints concerning aircraft noise from the public, the GTAA Noise Management Office monitors, reviews and recommends amendments to the operating restrictions and noise abatement procedures at Toronto Pearson. Staff at the NMO also respond to CENAC inquiries, provide information and analysis as required, research noise mitigation initiatives, and provide technical expertise for committee meetings and committee members. This ongoing collaboration between the NMO and CENAC is a key element of the Noise Management Program at Toronto Pearson.

### **Airport Noise Monitoring and Flight Tracking**

The GTAA utilizes a sophisticated Airport Noise Monitoring and Flight Tracking System that combines radar flight tracking data from NAV CANADA with mapping from a Geographical Information System (GIS). The data is then correlated with noise readings collected at the Noise Monitoring Terminals (NMTs) in the surrounding communities.

### **Community Noise Monitoring Terminals**

The GTAA uses NMTs within the Noise Management Program to quantify aircraft noise throughout the Airport Operating Area. A total of 21 NMTs are currently in use. NMO staff collect and analyze noise levels generated by aircraft operating in and out of the airport. The NMT data is also used when investigating resident complaints.

### **Noise Complaints**

To register an aircraft noise complaint within 10 nautical miles (18.5 km) of Toronto Pearson, contact the NMO at (416) 247-7682. Noise complaints can also be registered through the GTAA website at [www.GTAA.com](http://www.GTAA.com). For



complaints concerning en route aircraft or those beyond 10 nautical miles of the airport, call Transport Canada at (416) 952-0335.

### **Noise Enforcement**

The GTAA investigates potential violations of noise abatement procedures, restricted hours operations and maintenance engine run-ups. Investigations conducted by the GTAA result from both registered public complaints and ongoing tracking and monitoring carried out by the GTAA. If the GTAA believes that a violation has occurred, the details of the case are forwarded to Transport Canada for final disposition, as it has the sole authority for determining financial penalties. For any violation, Transport Canada may assess a maximum fine of \$25,000 against a company and \$5,000 against a pilot. In addition, in support of the CENAC, Transport Canada publishes the names of corporations in violation of the Aeronautics Act and the Canadian Aviation Regulations, including noise violations, are available online at: [www.tc.gc.ca/civilaviation/standards/enforcement/publications/corporate/summary.htm](http://www.tc.gc.ca/civilaviation/standards/enforcement/publications/corporate/summary.htm)

For more information about the GTAA's Noise Management program, please visit us online at [www.GTAA.com](http://www.GTAA.com).



## **Greater Toronto Airports Authority (GTAA)**

The GTAA holds the responsibility to operate, manage and develop Toronto Pearson, under terms set out in the December 1996 lease with the federal government. We are authorized to operate on a commercial basis, to set fees, and to develop and improve facilities.

The GTAA has embarked on the next phase of our corporate development. As a result, a new vision for the organization was established; one that speaks directly to the challenges and opportunities ahead.

Our vision: To be "A leading airport company championing sustainable global access for the Greater Toronto Area". To achieve this vision, a new five-year strategic plan was established, which focuses on global competitiveness, corporate sustainability and gateway traffic development.



For further information about Toronto Pearson International Airport contact:

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