Toronto Pearson Noise Management Forums

Pearson Public Meeting

September 24, 2020

Welcome + Introductions

Agenda

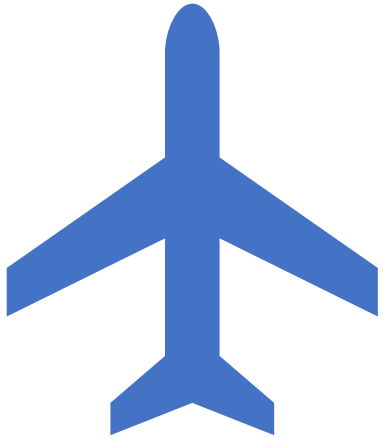
- Airport Situational Update
  - Healthy Airport Initiatives
  - Airport Operations
- NAV CANADA Updates
- GTAA Updates
  1. Maintenance Update
  2. Noise Management Action Plan
  3. InsightFull Demo
  4. Working with the Community
- Question Period

Pearson Public Meetings

- The Pearson Public Meetings are part of the Noise Management Forums which were launched in 2019. The Noise Management Forums evolved from the old Community Environment and Noise Advisory Committee that served the airport for more than 20 years
- The meetings provide residents with:
  - A chance to learn more about airport operations and how your area is impacted
  - Hear updates from GTAA and NAV CANADA about noise management efforts
  - Ask questions or raise concerns related to airport operations
- Each meeting has a drop-in style session where residents can ask questions about operations in their area and a public meeting session which includes presentations and a public question period.
- Both the drop-in session and public meetings will be held virtually until further notice

Airport Situational Update

Operations since COVID-19

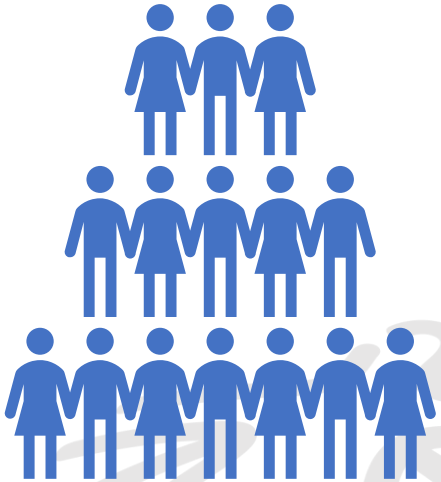


Operations

- Overall, traffic levels were down 84% in Q2 2020 compared to Q2 2019
- During the restricted hours (12:30 a.m. – 6:29 a.m.), there were 3,896 fewer operations, or approximately 43 fewer flights per night (15 down from 58)

Passengers

- Processed 96% fewer passengers in Q2 2020 compared to same period in 2019
- Currently passenger traffic through Toronto Pearson is at approximately 1970s operating levels



Healthy Airport Initiatives

HEALTHY AIRPORT

- A healthy airport is the most important part of instilling public trust in air travel
- Toronto Pearson’s “Healthy Airport” commitment puts the health of passengers and employees first.
- First North American Airport to receive ACI Airport Health Accreditation
- Embracing innovation

HEALTHY AIRPORT

HEALTHY AIRPORT MEASURES

Transport Canada regulations:

- Passenger health assessment at the final point of departure
- Mandatory temperature checks
- Arrivals health declaration to CBSA with PHAC support
- All incoming passengers must have a 14-day quarantine plan

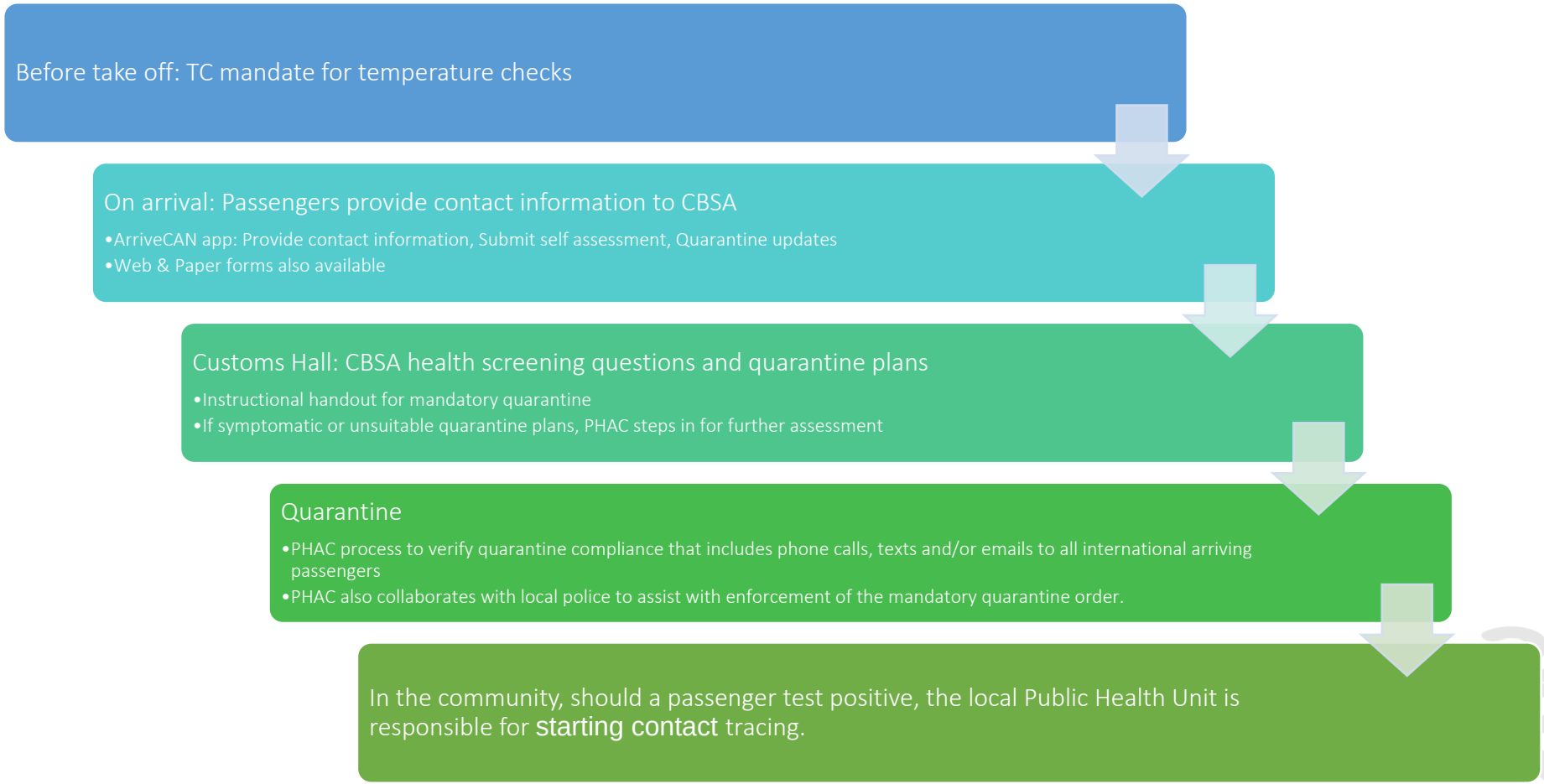
Toronto Pearson has implemented our own Healthy Airport measures:

- Mandatory masks in all public areas, for passengers and employees
- Physical distancing: plexiglass barriers, separation at kiosks/seating areas signage, floor decals, and increased passenger comms
- Limiting terminal access to only passengers and workers
- Enhanced hygiene and cleaning in high traffic areas

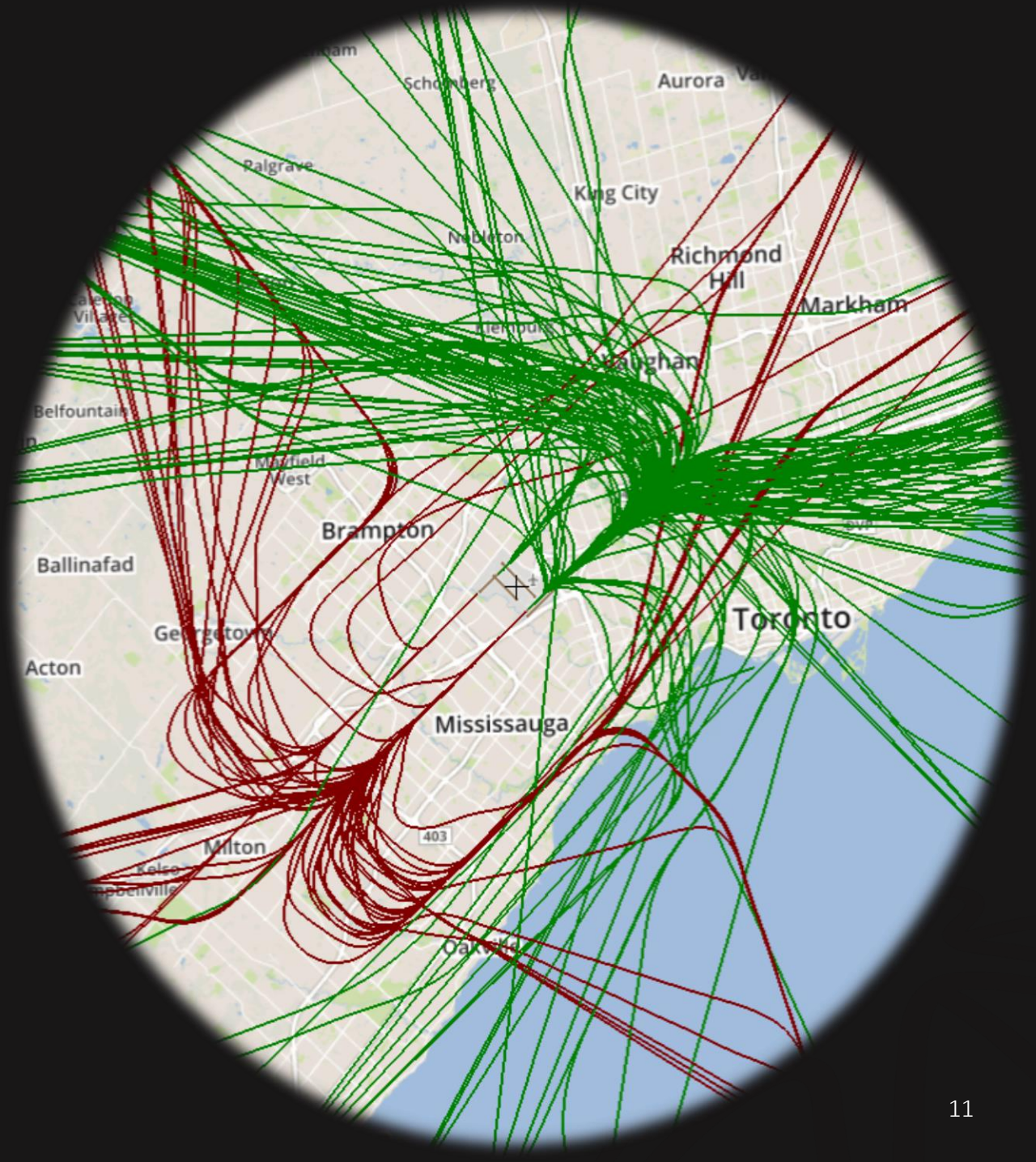
HEALTHY AIRPORT

Pearson's role in managing international passengers arriving at the airport

- Pearson is 1 of 4 airports designated by government for international flights
- Our role is to facilitate safe and healthy movement of passengers
- All other parts of the journey are managed by government agencies
- [Process Video: https://youtu.be/iByRfDjM0H4](https://youtu.be/iByRfDjM0H4)



Airport Operations



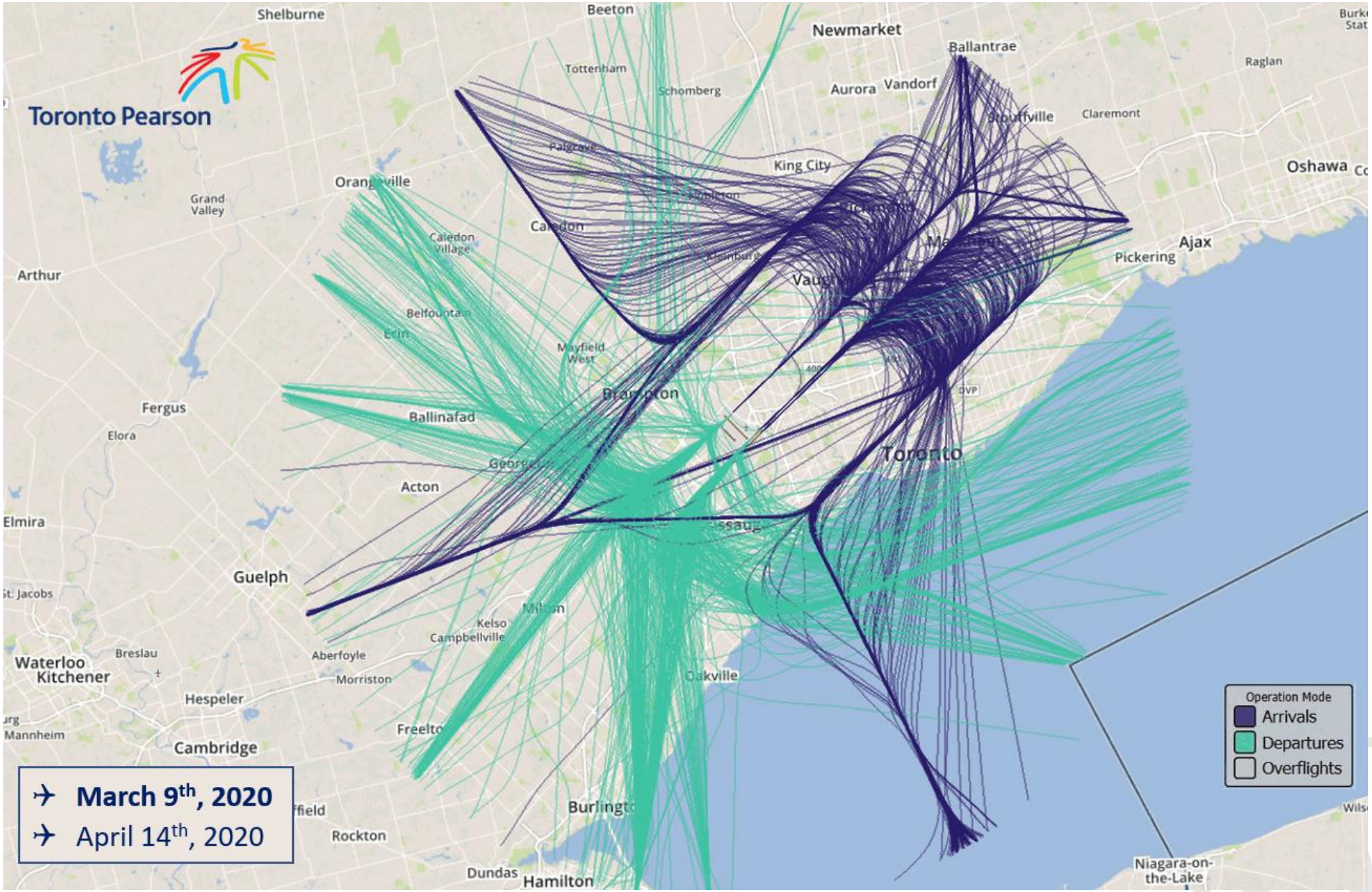
About Toronto Pearson

Prior to COVID-19, Toronto Pearson was the sixth most connected airport in the world, facilitating almost 50 million passengers and 478,000 aircraft movements a year, directly employing 49,000 people and enabling $42 billion of Ontario's GDP

Toronto Pearson is open 24 hours a day. A typical day is divided into normal operating hours (6:30 a.m. to midnight), preferential runway system hours and restricted hours

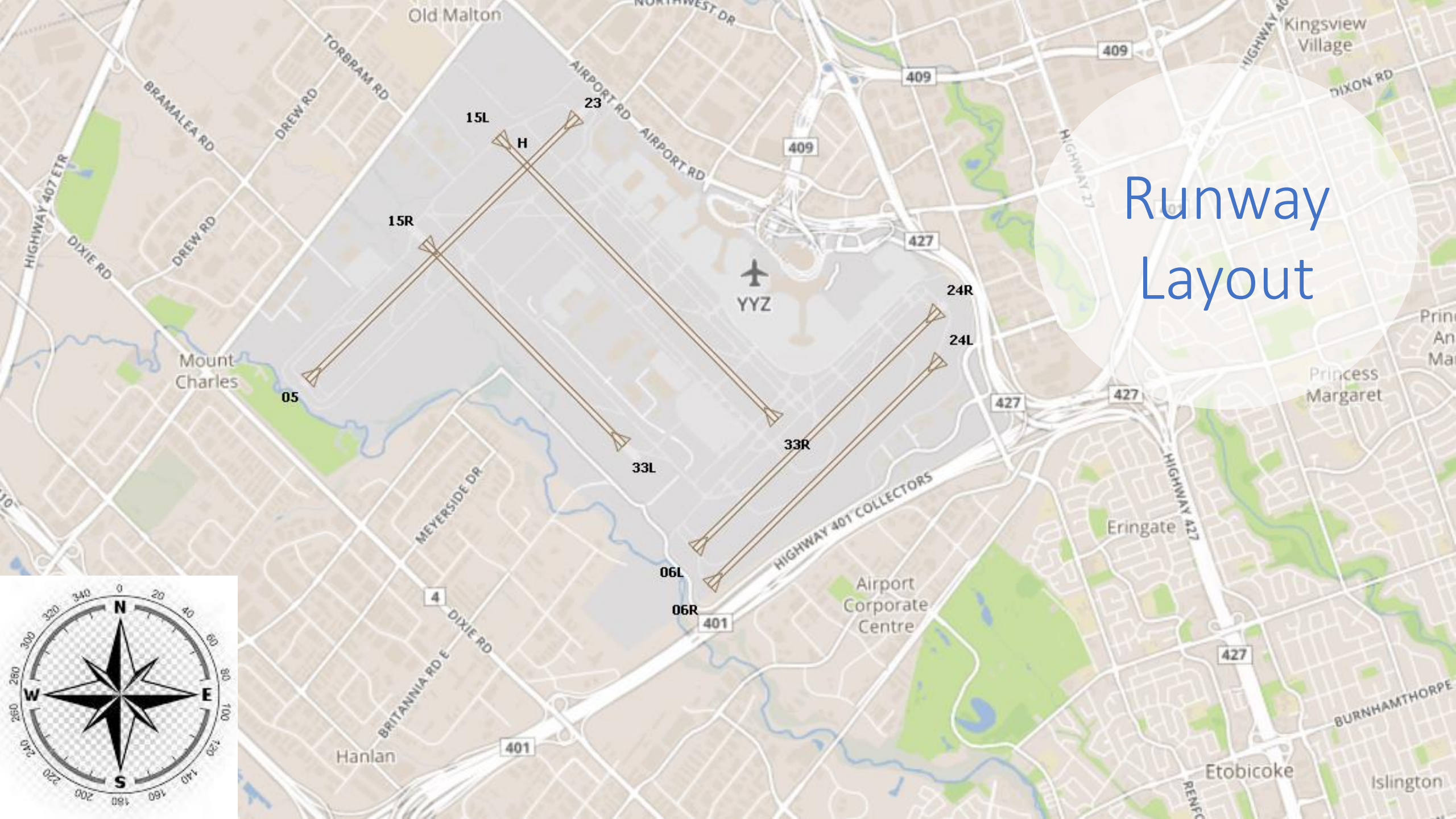
Preferential hours (midnight to 6:29 a.m.): prioritize runways that overfly the fewest people

Restricted Hours (12:30 to 6:29 a.m.): governed by a Night Flight Restriction Program which limits number of movements. Program runs from Nov 1 to Oct 31 and accounts for about 4 per cent of annual movements. Annual budget increases with passenger growth


Toronto Pearson
Shelburne
Beeton
Newmarket
Ballantrae
Totteridge
Schomberg
Aurora
Vandorf
Claremont
Raglan
Oshawa
King City
Grand Valley
Caledon
Caledon Village
Arthur
Belfountain
Mayfield West
Brampton
Ajax
Pickering
Fergus
Elora
Ballinafad
Acton
Toronto
Elmira
Guelph
Kelso
Campbellville
Aberfoyle
Waterloo
Kitchener
Breslau
Morriston
Hespeler
Cambridge
Oakville
Rockton
Dundas
Hamilton
Niagara-on-the-Lake
Operation Mode
Arrivals
Departures
Overflights
March 9th, 2020
April 14th, 2020

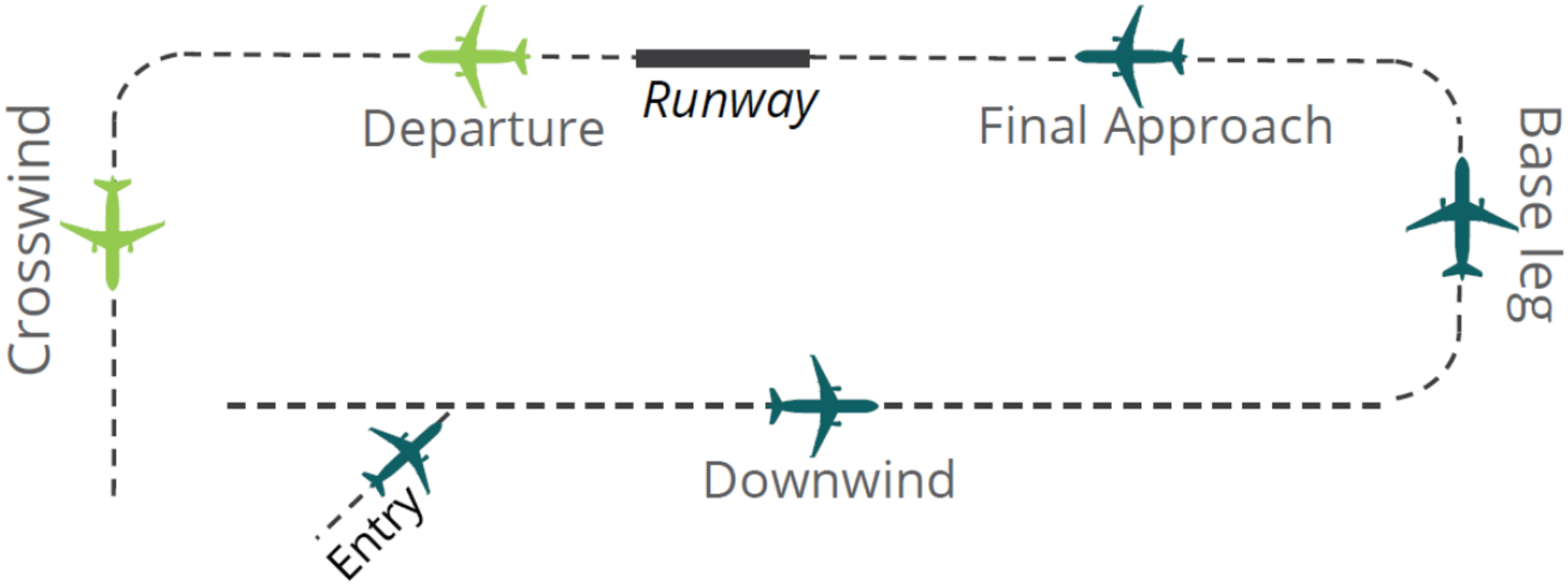
Our Runways

- Toronto Pearson has five runways
- Two runways go in the north-south direction:
  - Runway 15L/33R
  - Runway 15R/33L
- Three runways go in the east-west direction:
  - Runway 05/23
  - Runway 06L/24R
  - Runway 06R/24L
- Runways can be used from both ends, so while there are five runways, there are 10 operational ends for arrivals and departures

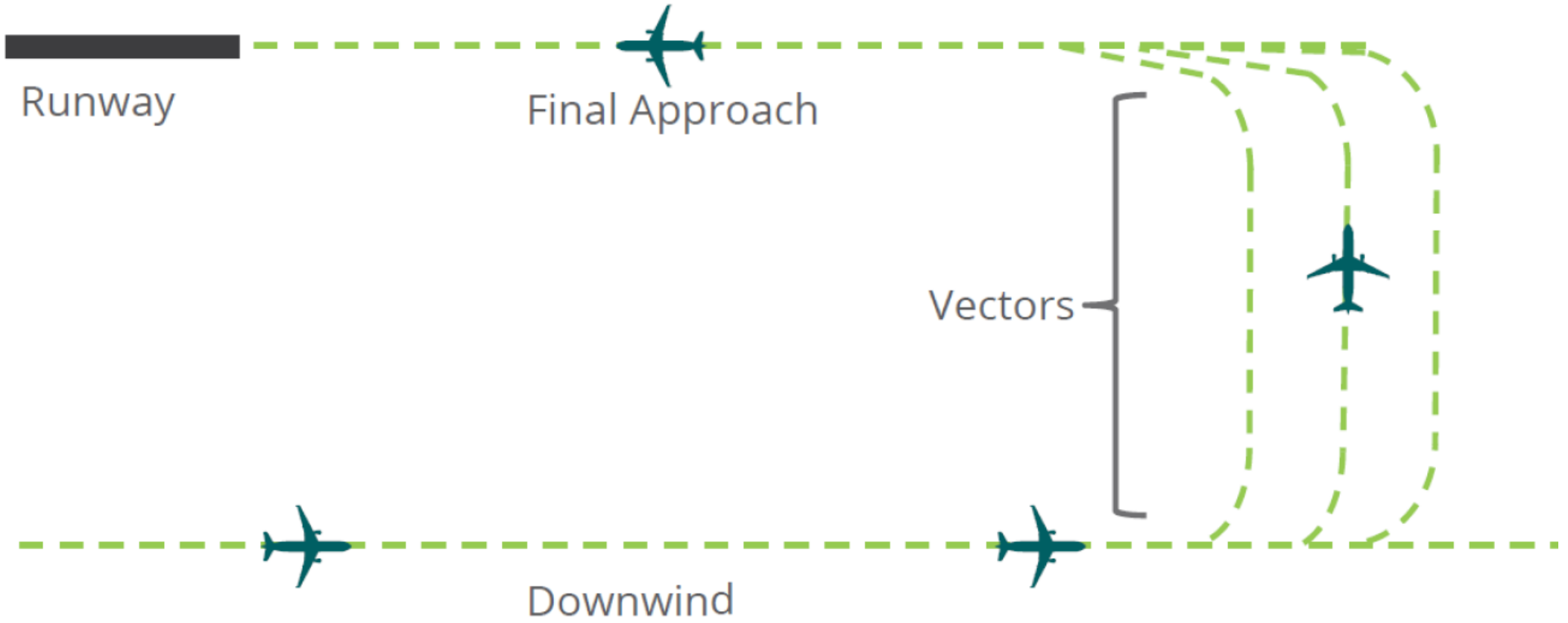


Runway Layout

Runway Circuit Pattern



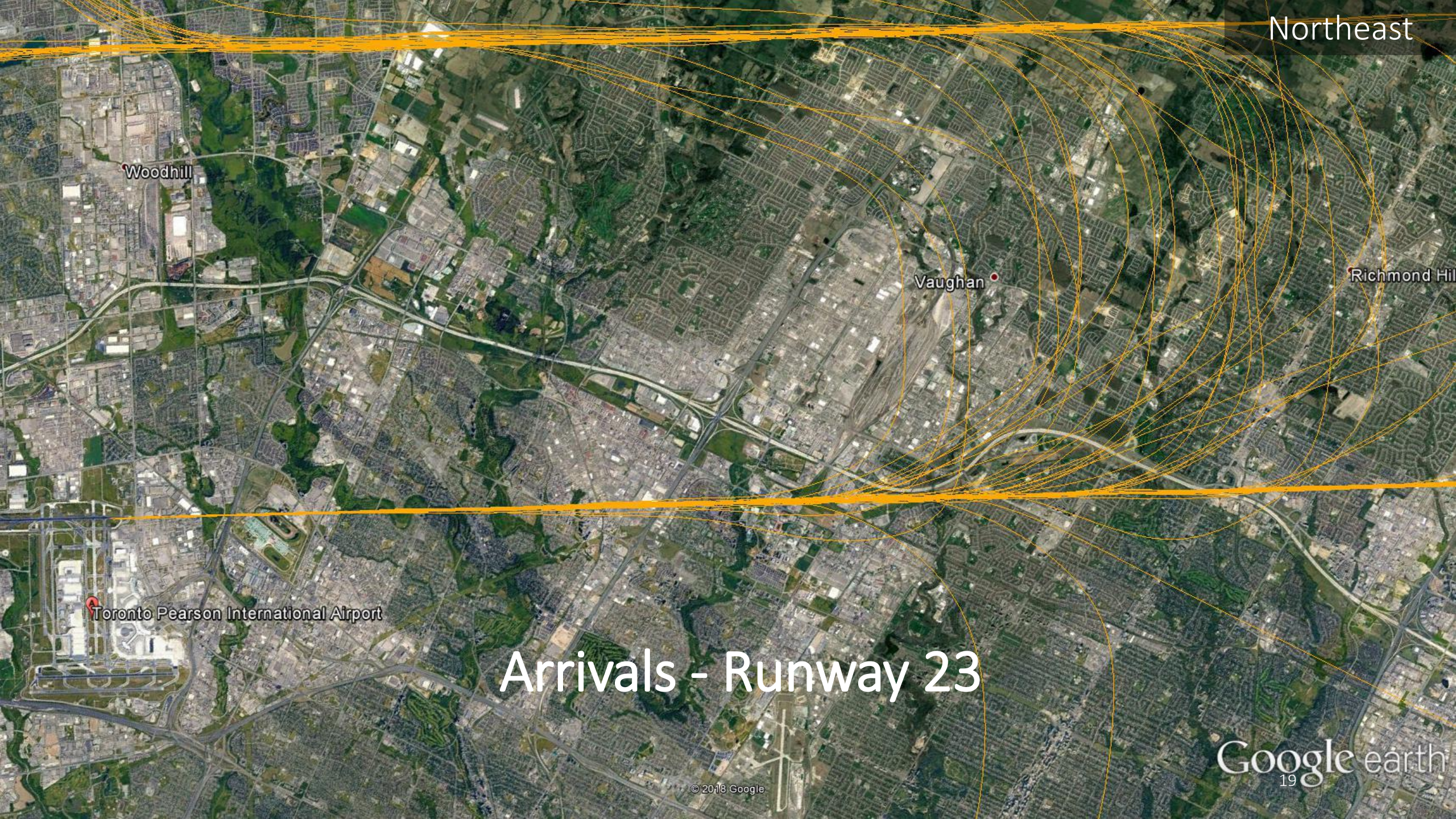
Runway Circuit Pattern



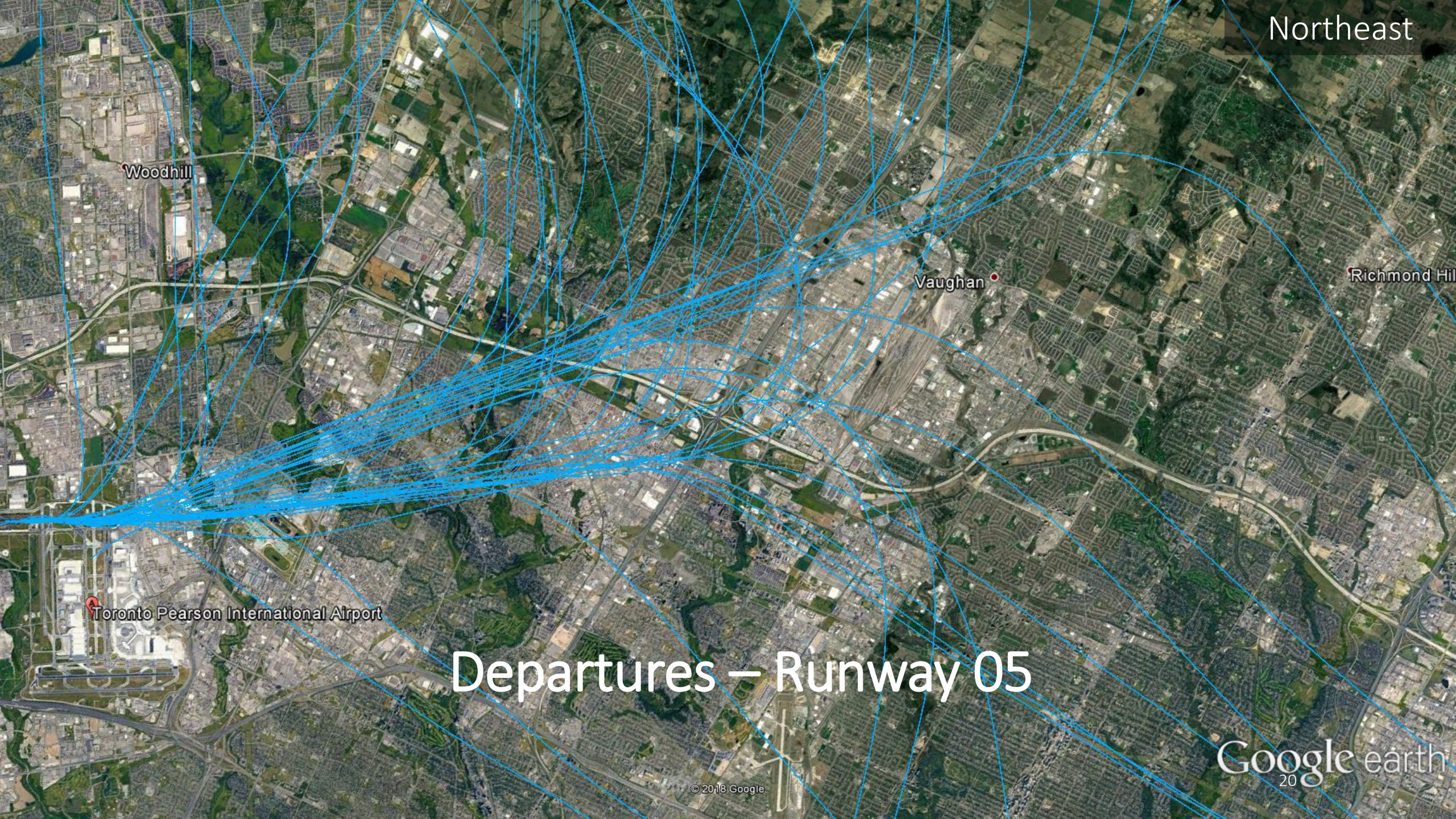
Northeast of the Airport

Mainly impacted by:

Arrivals Runway 23, Departures Runway 05



Arrivals - Runway 23



Departures – Runway 05

Southeast of the Airport

Mainly impacted by:

Arrivals Runway 24L/24R, Departures Runway 06L/06R

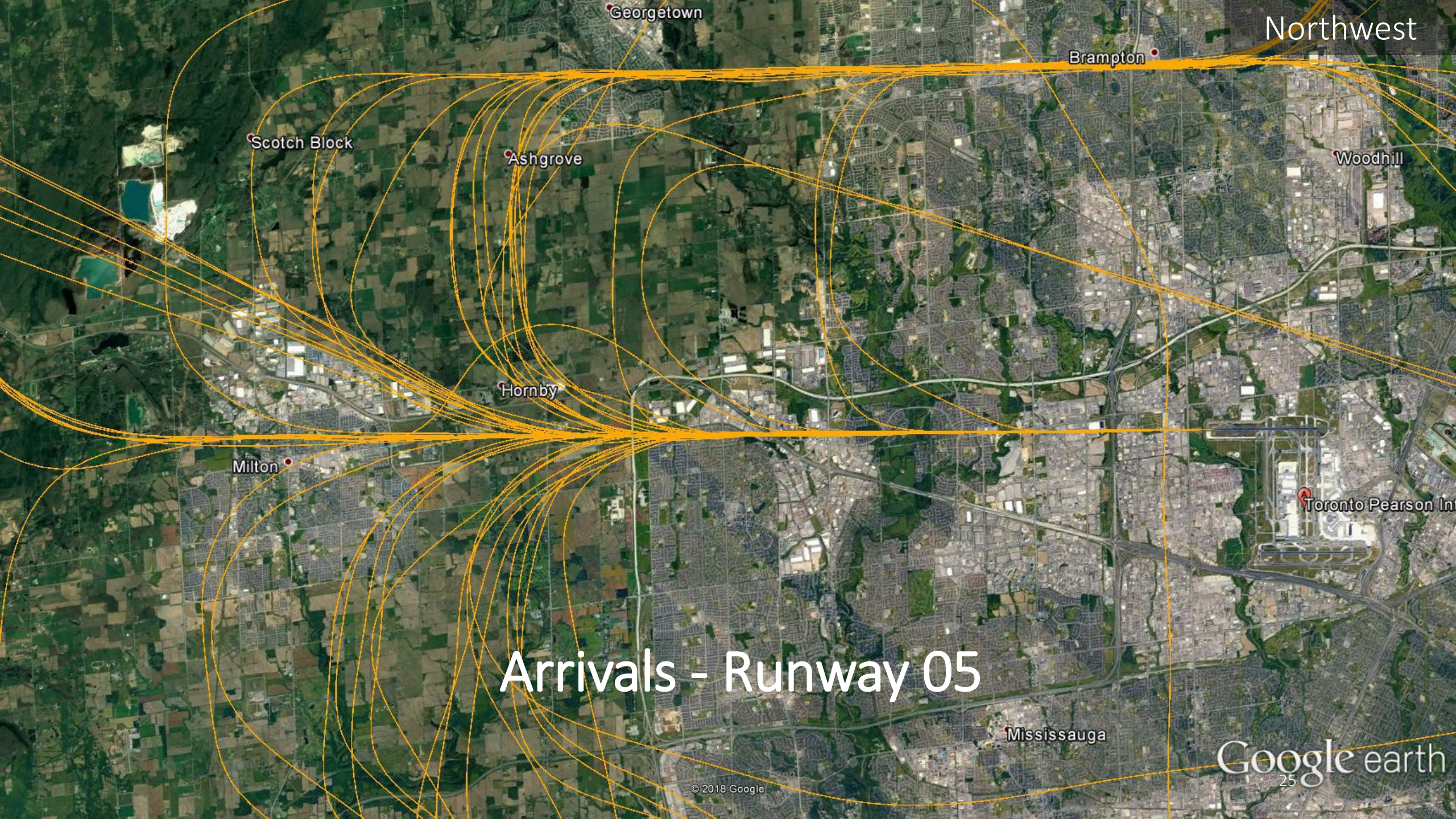
Arrivals - Runway 24L/24R

Departures – Runway 06L/06R

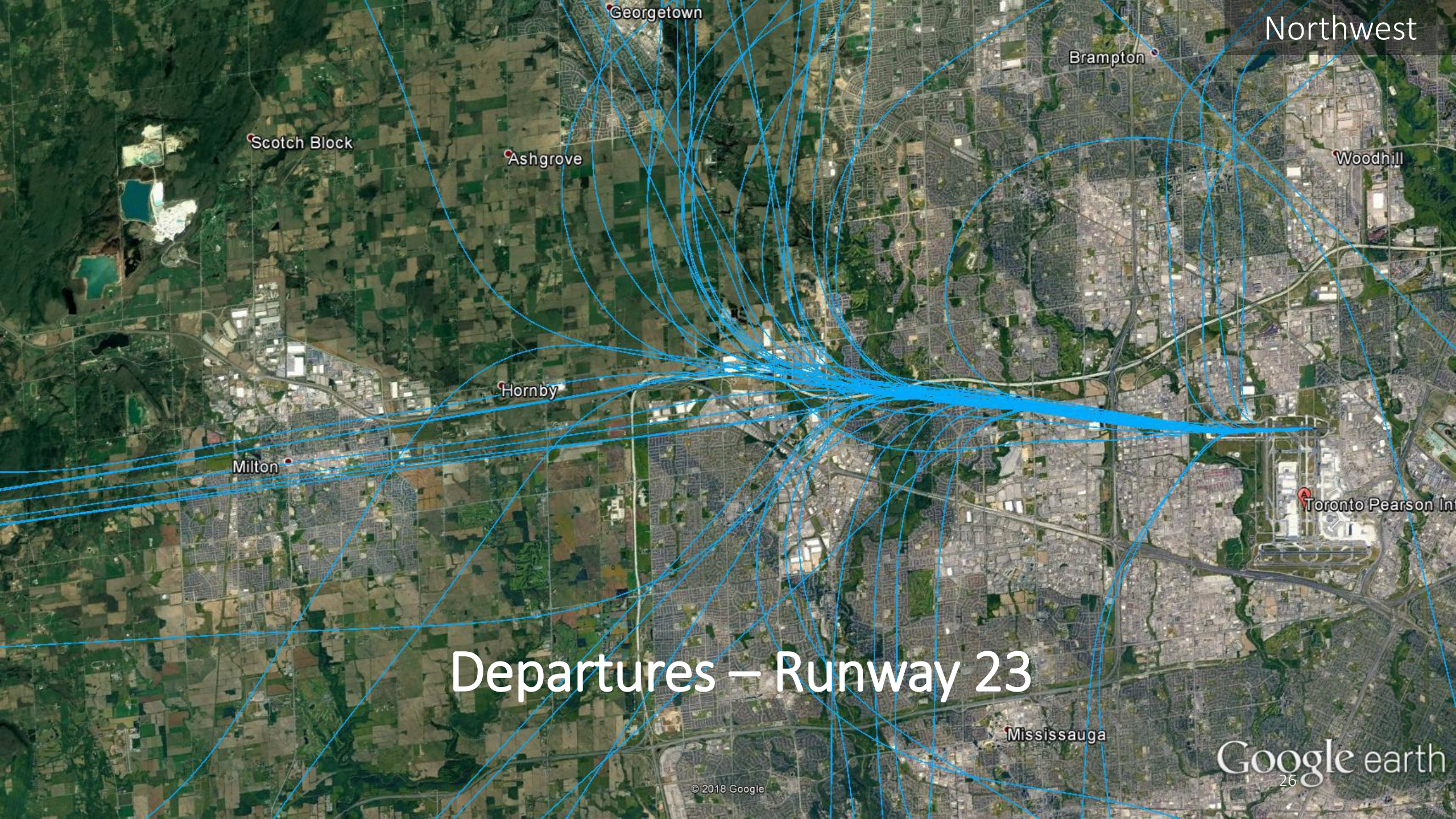
Northwest of the Airport

Mainly impacted by:

Arrivals Runway 05, Departures Runway 23



Arrivals - Runway 05



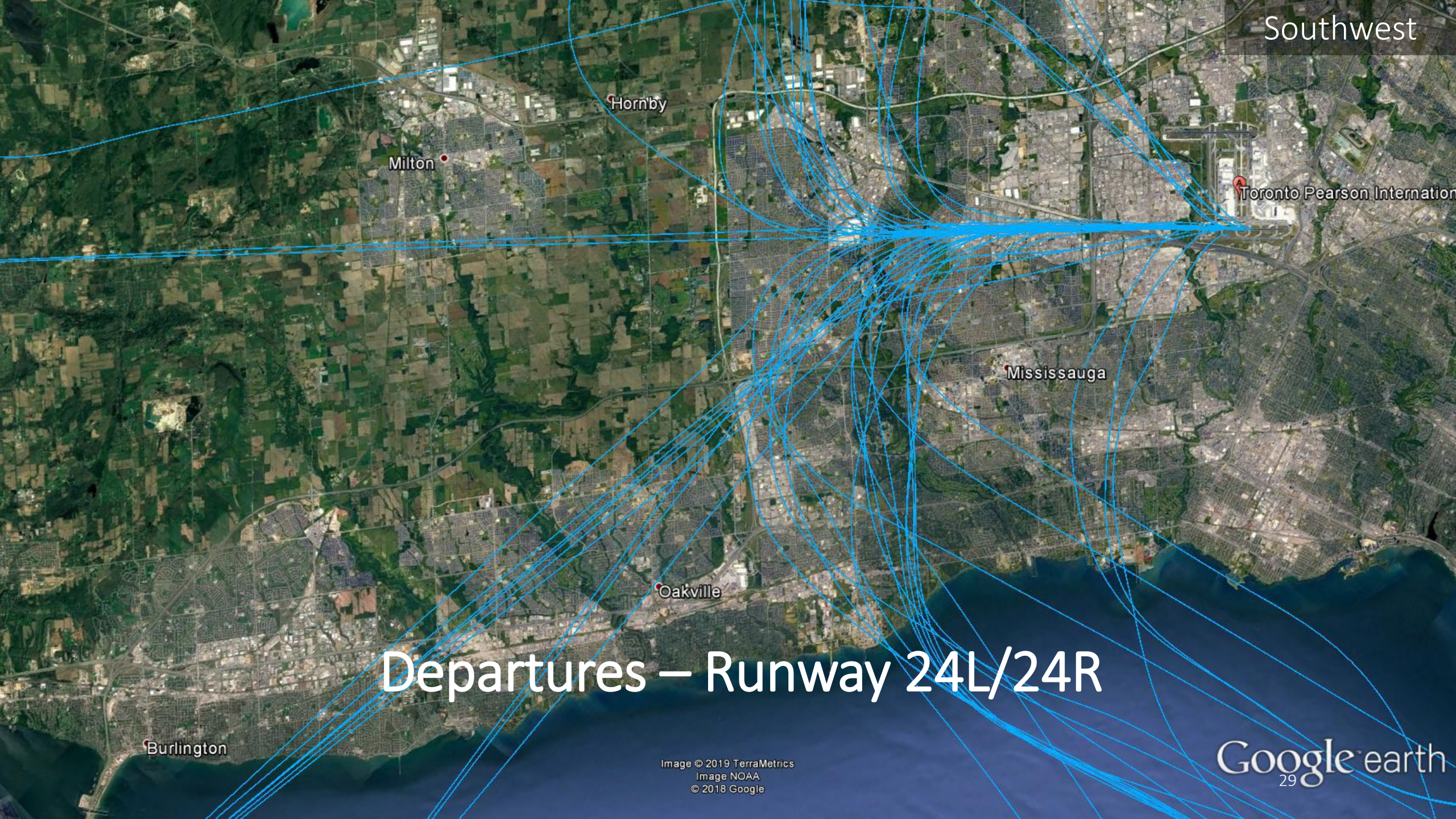
Departures – Runway 23

Southwest of the Airport

Mainly impacted by:

Arrivals Runway 06L/06R, Departures Runway 24L/24R

Arrivals - Runway 06L/06R

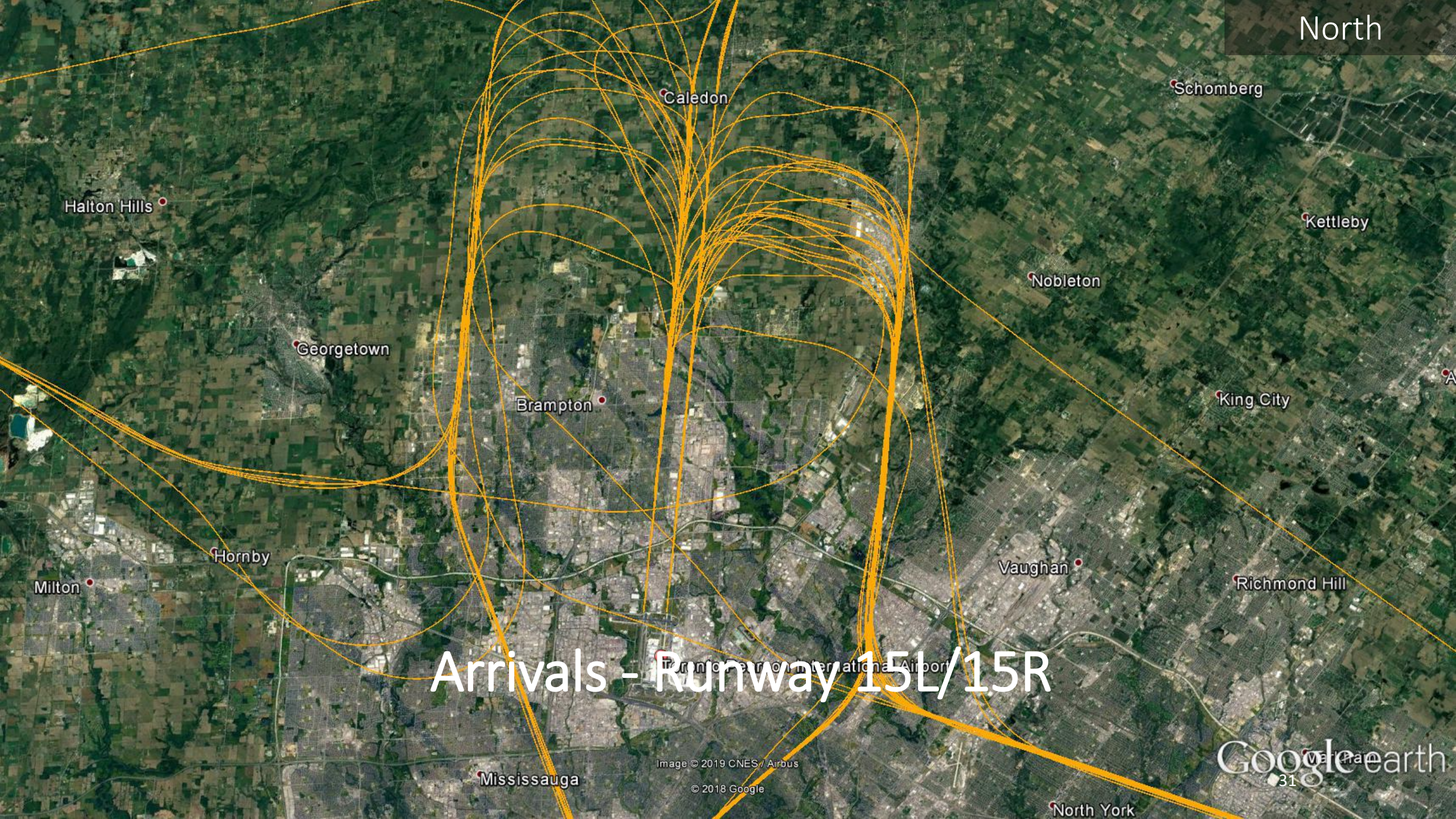


Departures – Runway 24L/24R

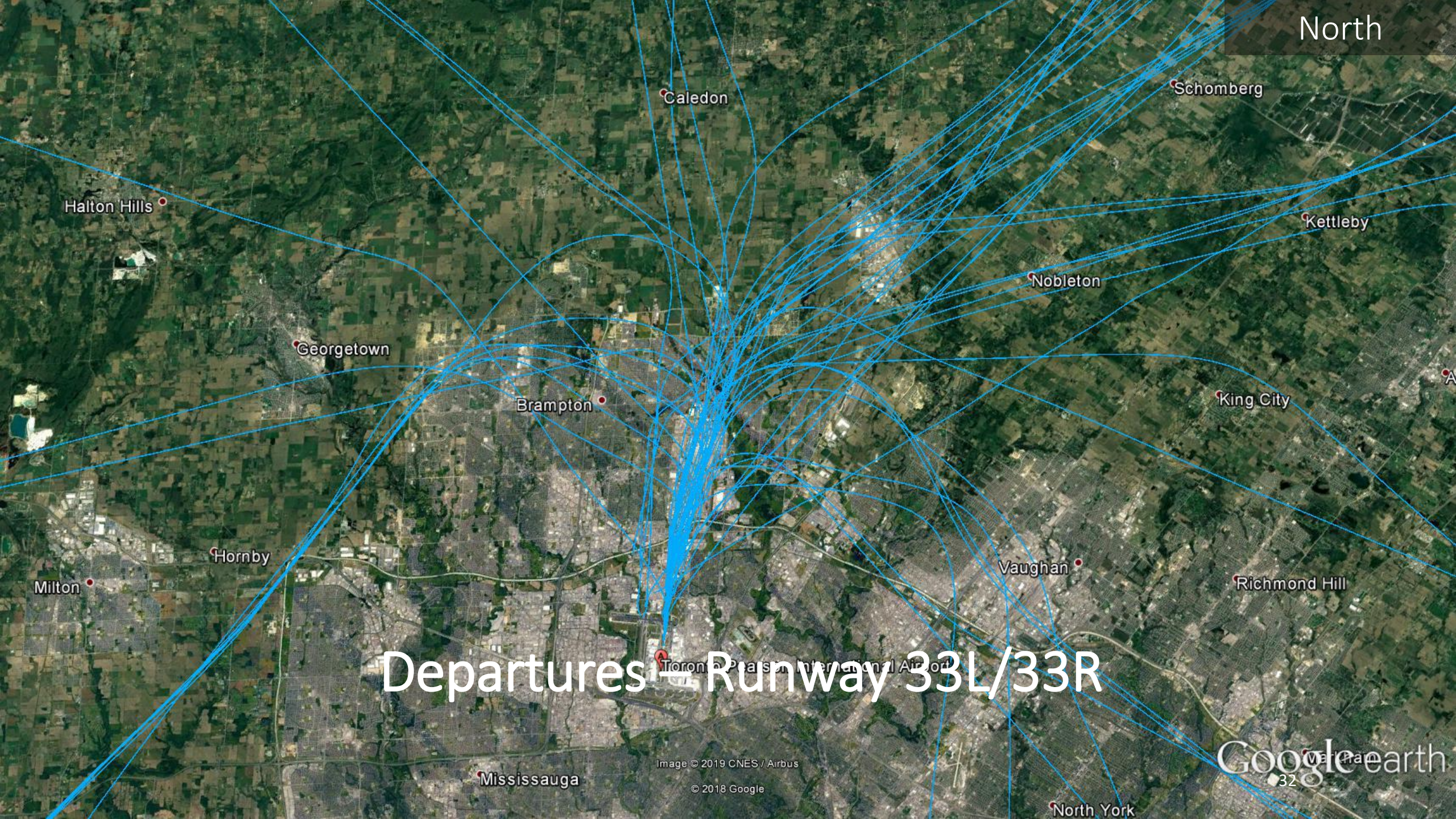
North of the Airport

Mainly impacted by:

Arrivals Runway 15L/15R, Departures Runway 33L/33R



Arrivals - Runway 15L/15R



Departures – Runway 33L/33R

South of the Airport

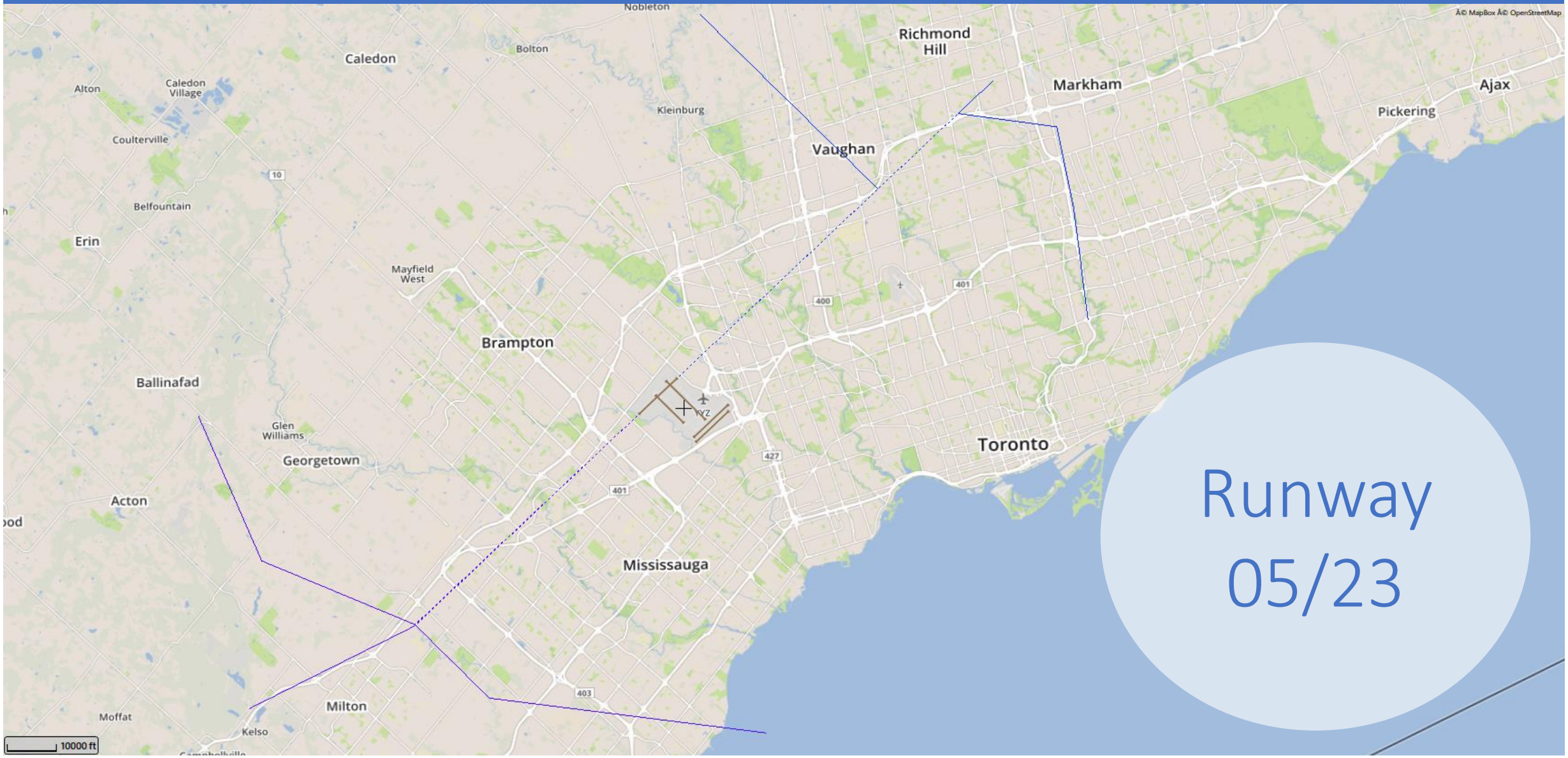
Mainly impacted by:

Arrivals Runway 33L/33R, Departures Runway 15L/15R

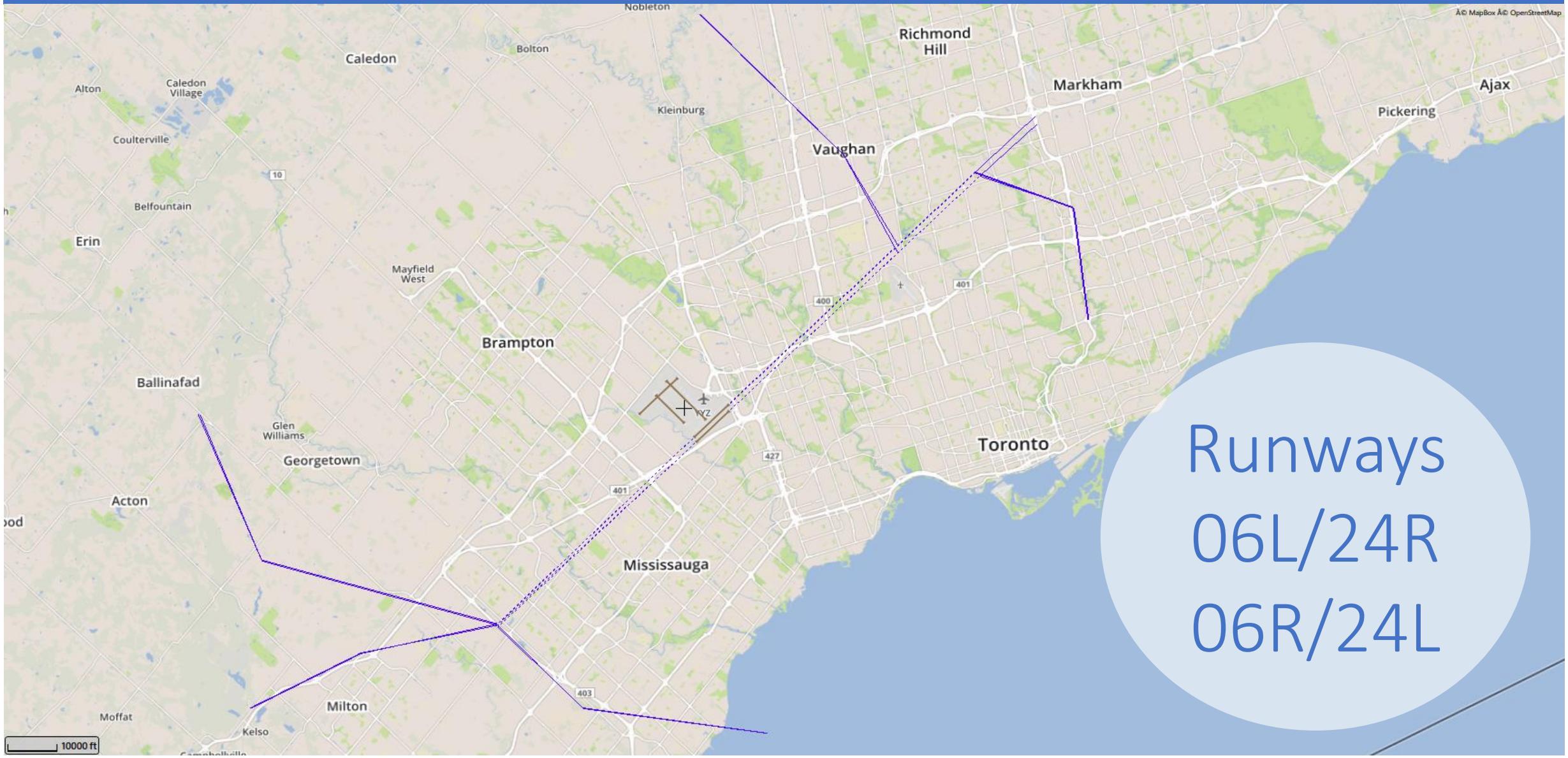
Arrivals - Runway 33L/33R

Departures – Runway 15L/15R

New Nighttime Arrival Procedures – RNAV X



New Nighttime Arrival Procedures – RNAV X



NAV CANADA Update

2020-06-05

POST-IMPLEMENTATION COMMUNITY IMPACT REVIEW

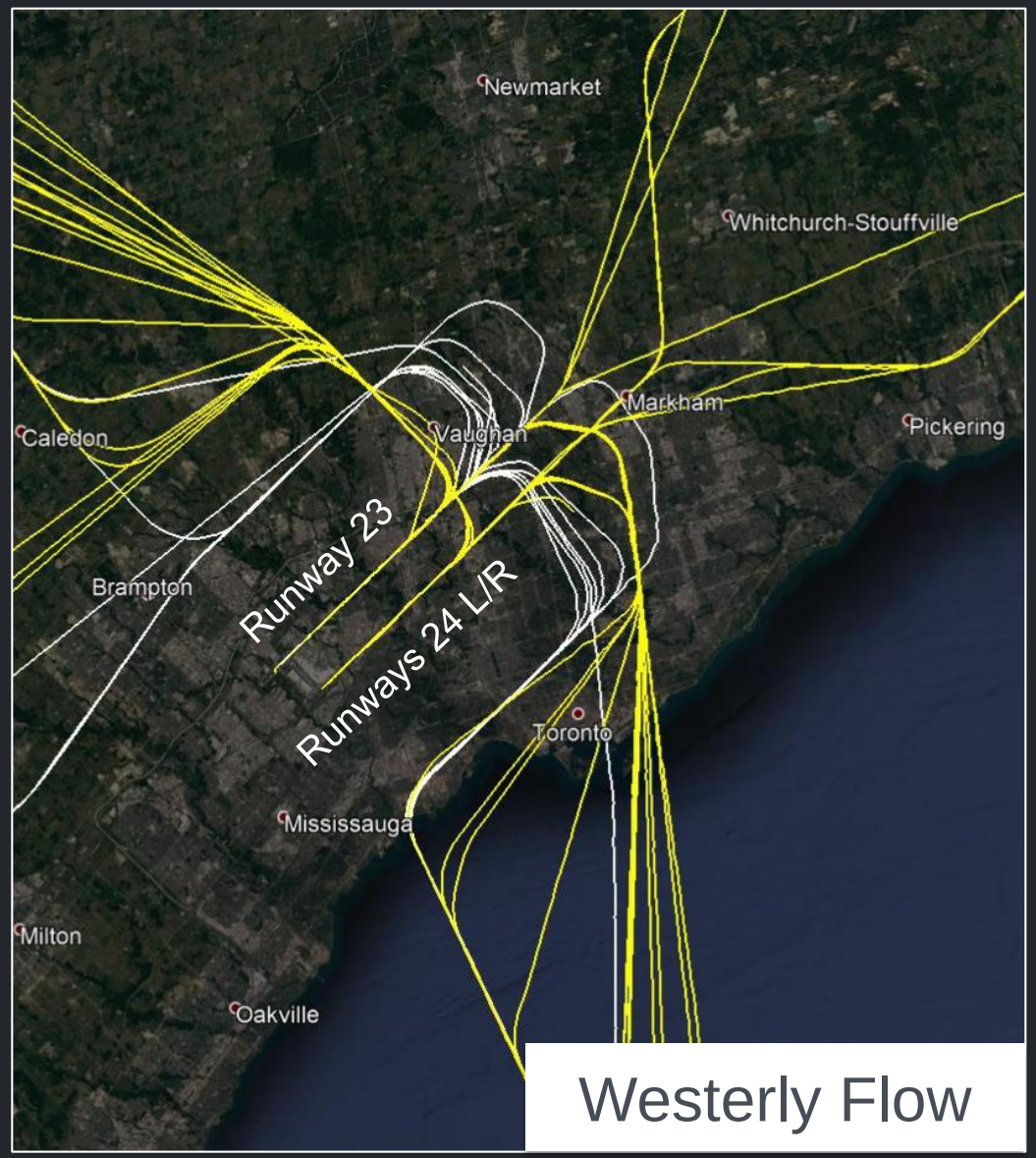
Assessing the implementation of airspace changes at Toronto Pearson

To reduce environmental and noise impacts on communities

NAV CANADA

PURPOSE & BACKGROUND

- The review examines the implementation of new procedures during YYZ's nighttime hours as well as those associated with Continuous Descent Operations
- Follow up to the six noise mitigation initiatives, which were studied and proposed by NAV CANADA and the Greater Toronto Airport Authority (GTAA).
- The period between February 28, 2019 and January 24, 2020 was examined.
- Analysis of a period pre-pandemic.
- Full report posted on www.navcanada.ca



Westerly Flow

Easterly Flow

New RNAV approaches, specifically constructed where possible to fly over fewer residential areas.
The new approaches provide for continuous descent and enable aircraft to be higher in portions of the flight path.

53%

Percentage usage of the new nighttime approaches during nighttime restricted hours (calendar 2019)

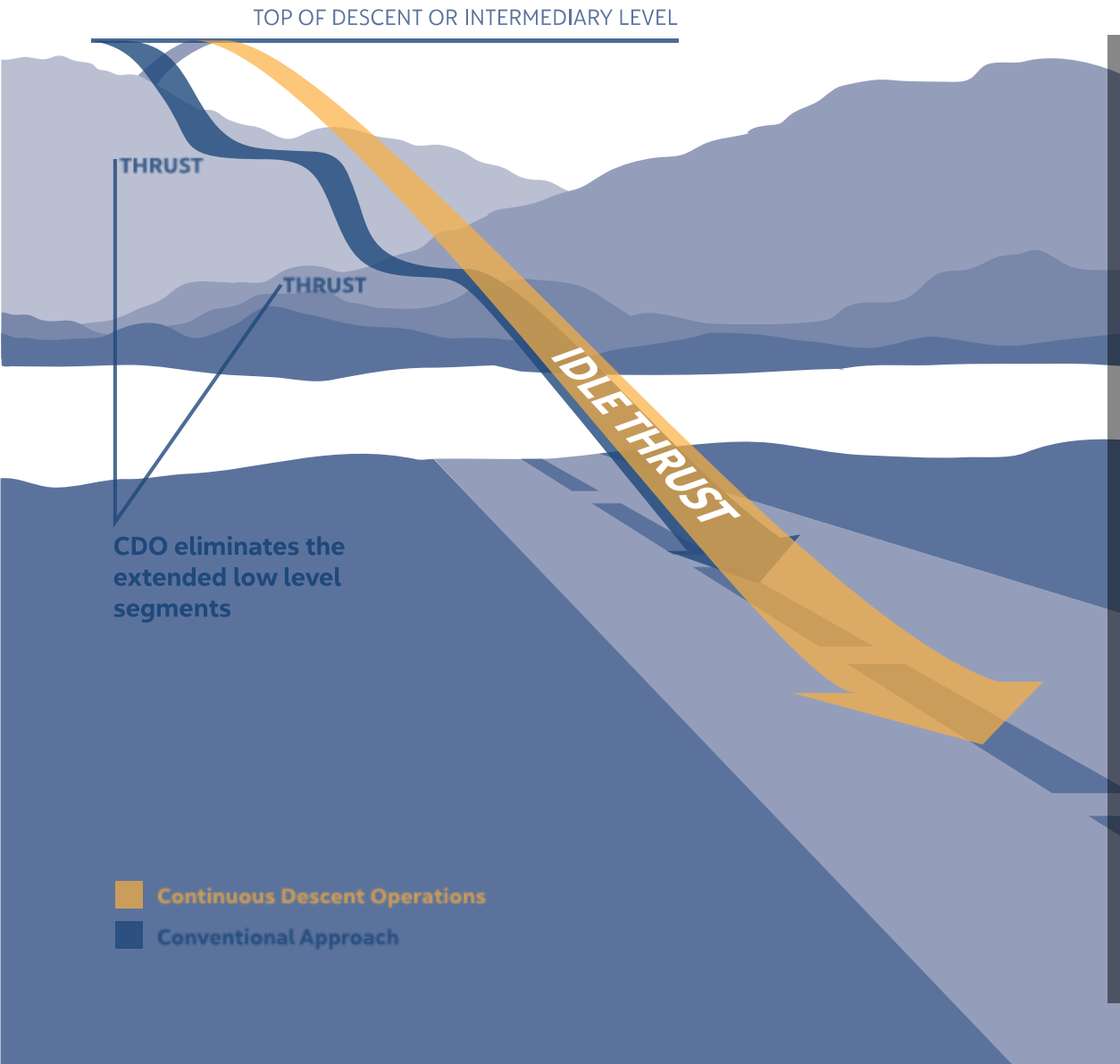
5,748

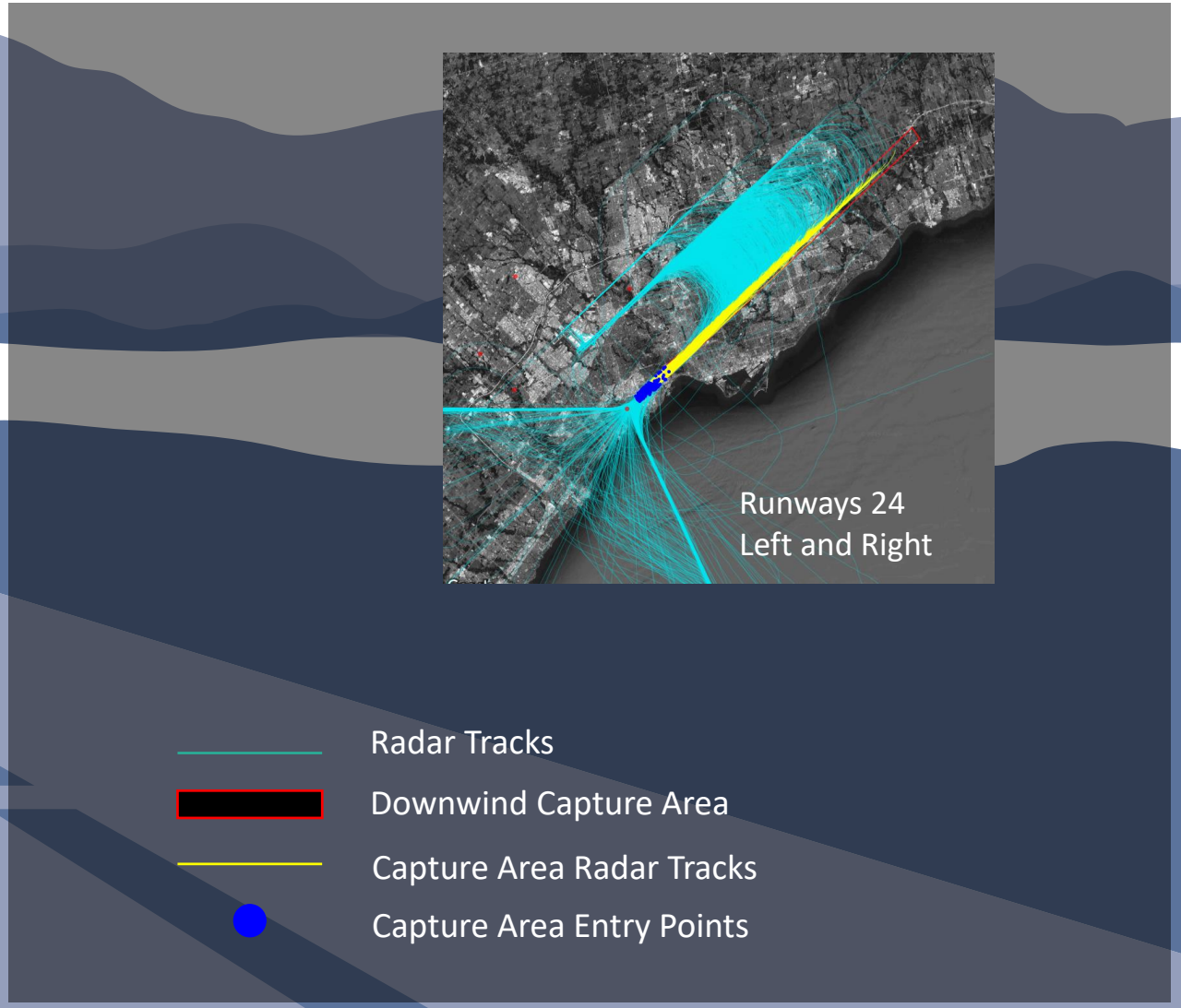
Number of times new nighttime approaches used between Nov 2018 and Jan 2020

NEW NIGHTTIME ARRIVALS

- Implementation date: November 2018
- These approaches using RNAV (used between 12:30 a.m. - 6:30 a.m.) support CDO
- Used for East-West Runways
- New procedures were published in the Canada Air Pilot and through an Aeronautical Information Circular (AIC)
- New procedures were further communicated through the Quieter Operations Guide
- Total RNAV benefits forecast achievable to 2020 2,084,000 metric tonnes CO_2e reduction

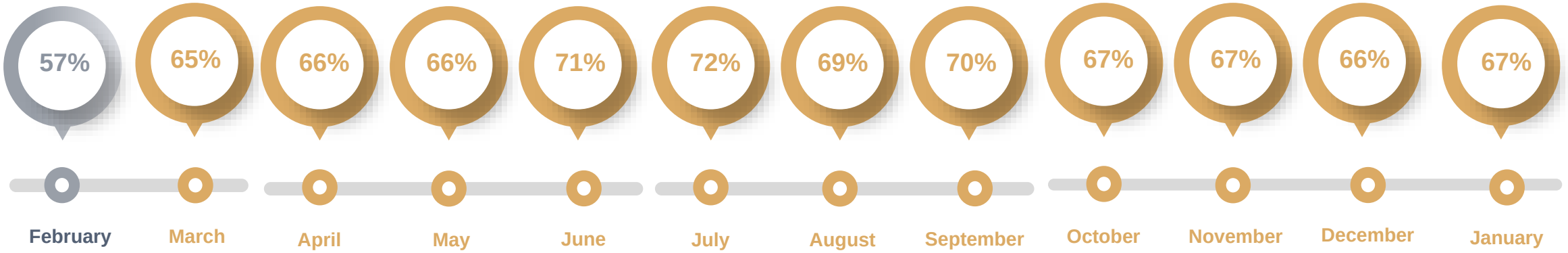
IMPROVING FLIGHT EFFICIENCY WHILE REDUCING OPERATIONAL IMPACTS





PERCENTAGE OF AIRCRAFT USING CDO PROCEDURES

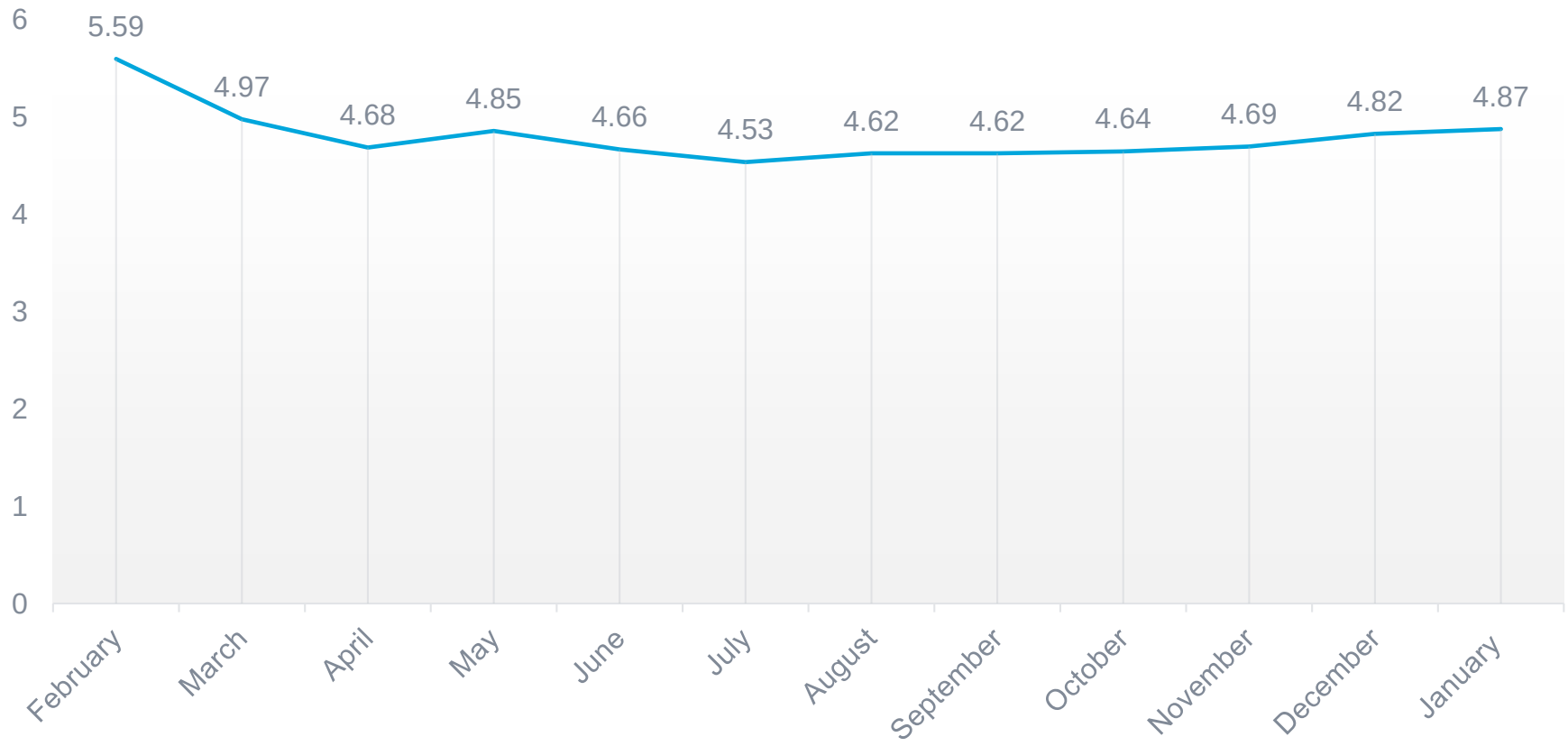
New CDO arrival procedures for the downwind segments were implemented February 28, 2019.
Current traffic levels and seasonality may influence usage of CDO.



Anticipated 10% increase in CDO during consultation.

AVERAGE LEVEL SEGMENT DISTANCE*

*For aircraft not achieving CDO

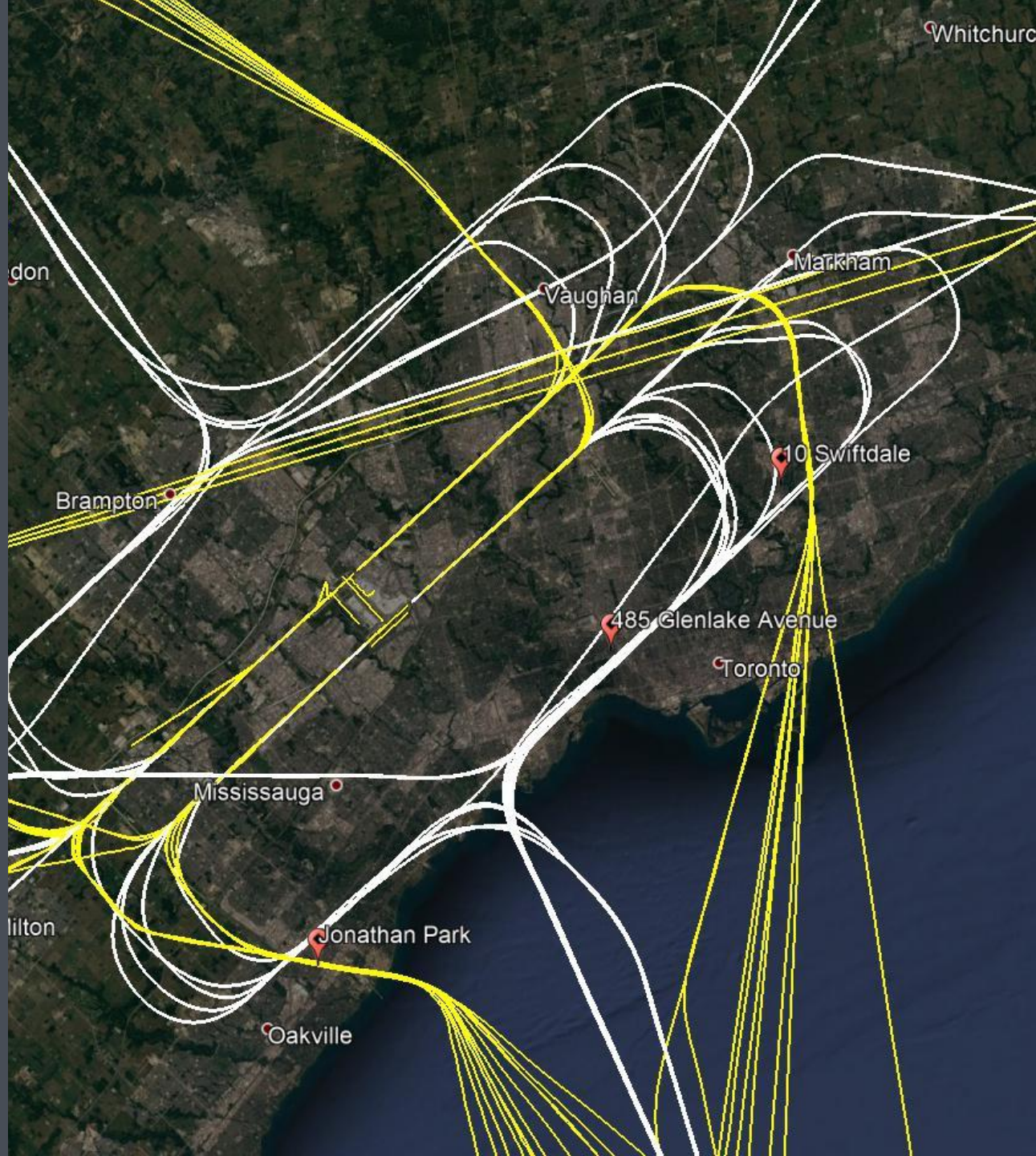


Percentage of aircraft using CDO procedures **post-implementation**

This data was provided by NAV CANADA's Corporate Performance team.

ENVIRONMENTAL CONSIDERATIONS

- Contracted Akoustik to place monitors in three locations for four days
- Sample level monitoring, to validate noise modeling
- Leverages the commonly used LAmax metric
- Start January 10th
- Extended to two weeks (Jan 10-24)
- Weather conditions were unfavourable (high winds, precipitation, 33 ops) which limited size of data set.
- Provides insights, but limits isolation of variables



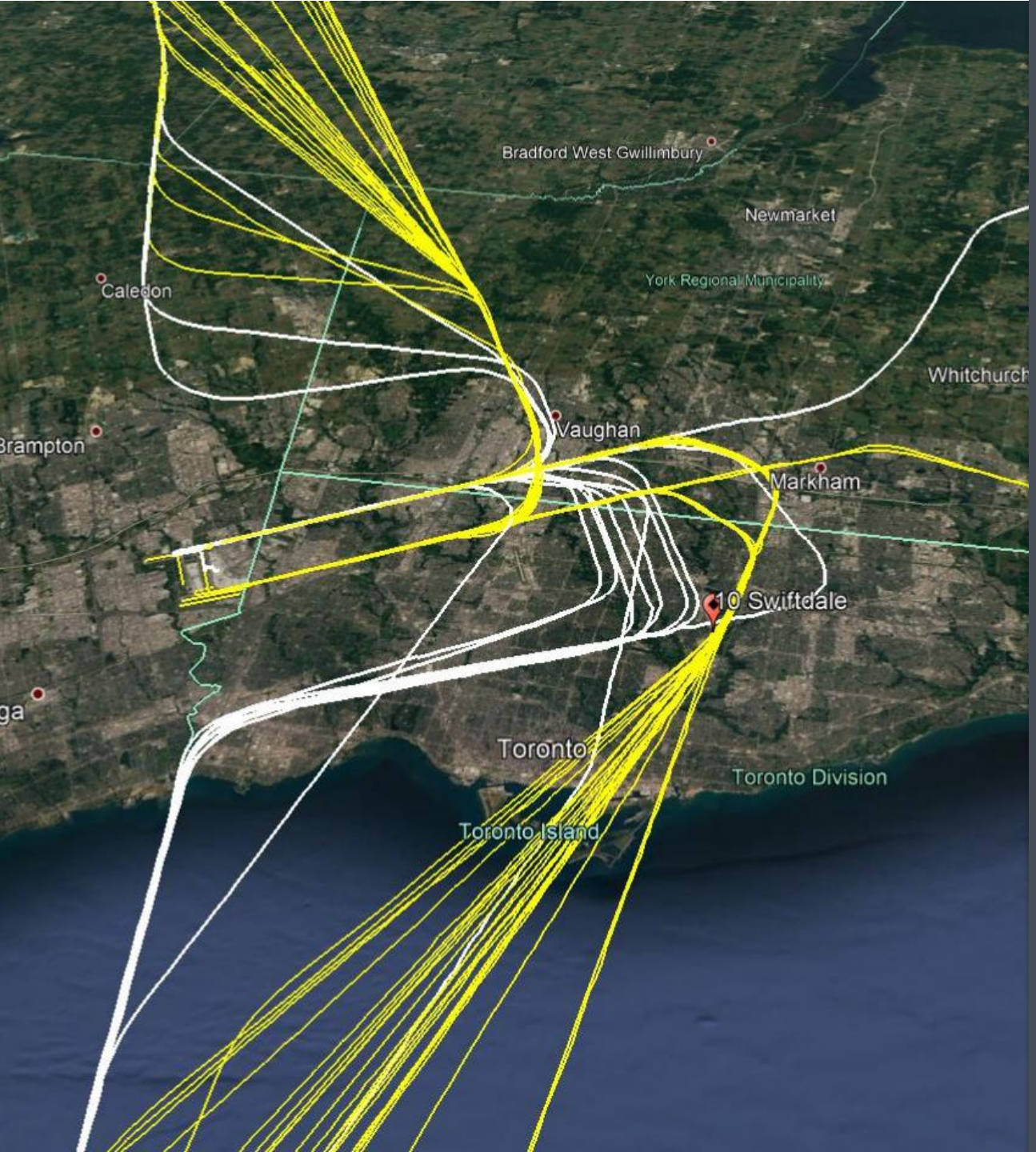
JONATHAN PARK LOCATION

- Strategically placed to get measurements for the night procedure from the south (to 06/05L/05R) – all aircraft types
- Location is just inside the 60-65 dBA range for 24R/L and in the 55-60 dBA range for 23 based on modeling
- The table below shows the average (arithmetic) maximum level, which provides an average of the individual measures versus sound energy level

Night Procedure
54 dBA

- While not directly under the downwind, it did allow us to capture some data on aircraft that were descending continuously versus those that were level.

DW Level	DW CDO
57 dBA	56 dBA



SWIFTDALE LOCATION

- Strategically placed to get measurements related to the night procedure to runways 23 and 24R/L
- Vast majority of aircraft are on a descending path
- Anticipated noise level for a 737-800 in the 60 to 65 dBA range.

Night procedure	Base leg
64 dBA	69 dBA

ASSOCIATED COMPLAINTS

- Considering complaints can be tricky as residents often do not differentiate between procedure usage, CDO/non-CDO, vs longstanding concerns.
- A total of nine residents submitted complaints attributable to night procedures (Idea #1) through GTAA submission.
- Understanding if complaints on the downwind are attributable to the new STAR profile is challenging (i.e. differentiation between downwind location and CDO).
- Overall, changes have not generated any groundswell/increase of community concern.

INMB UPDATE

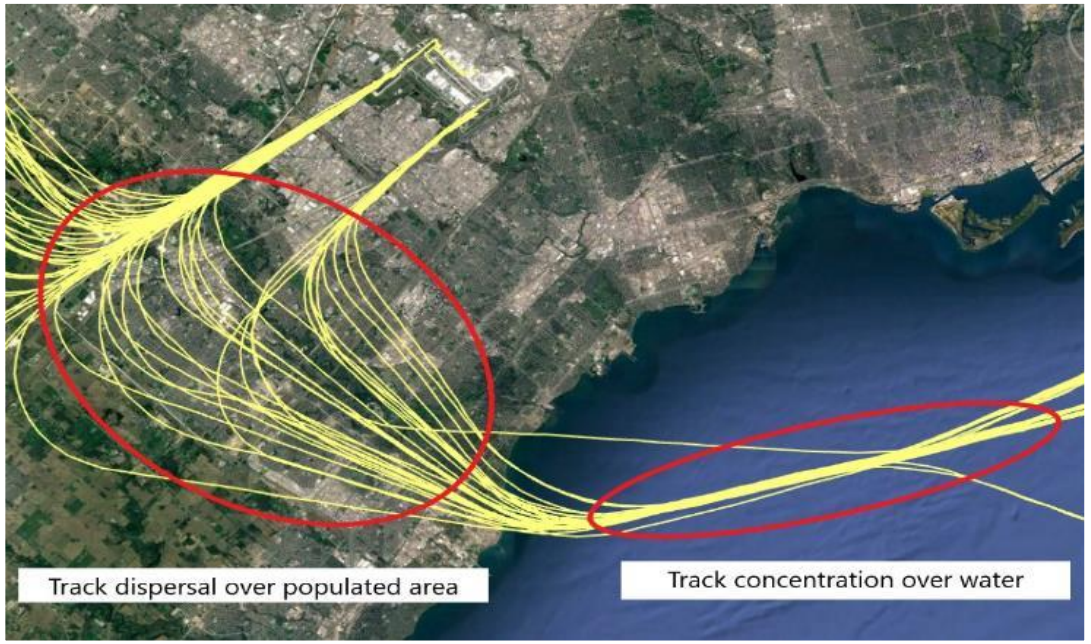
Departure Operations

OVERVIEW

- Current departure considerations
- Ongoing consideration for departures
  - MIT slower climb study
  - NADP1 and NADP2
  - 4DT Trajectory (long-term)
- Independent Review Dashboard

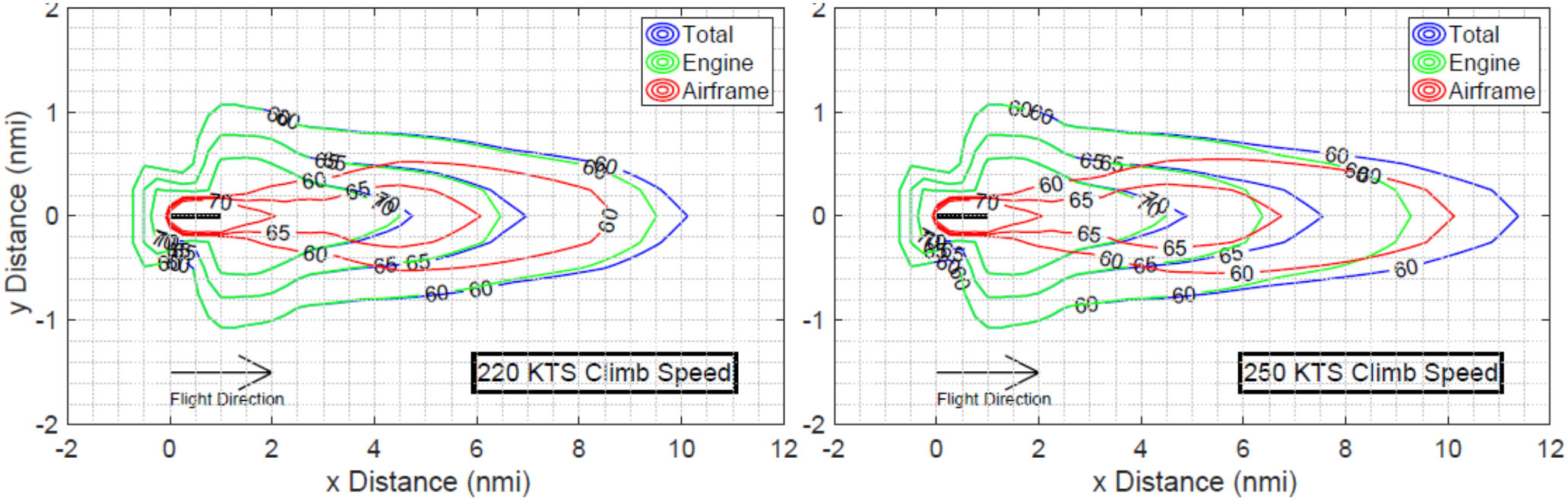
CURRENT DEPARTURE CONSIDERATIONS

- Need to keep arrivals and departures safely separated
- Departures typically operate under arrival procedures
- Wind drift can change location of aircraft, despite flying on heading
- Hybrid SIDs balance need for structure while allowing for some dispersion
- Limited toolkit on departure, but monitoring emerging ICAO standards



MIT STUDY

- Study developed by MIT International Center for Air Transportation and Boston Logan International
- Proposes aircraft climb at a slower rate (from about 250 knots to 220 knots)
- Goal to reduce engine noise to a level equal to that of the airframe on initial climb
- Based on noise modeling
- Trade-off between noise level and duration of exposure



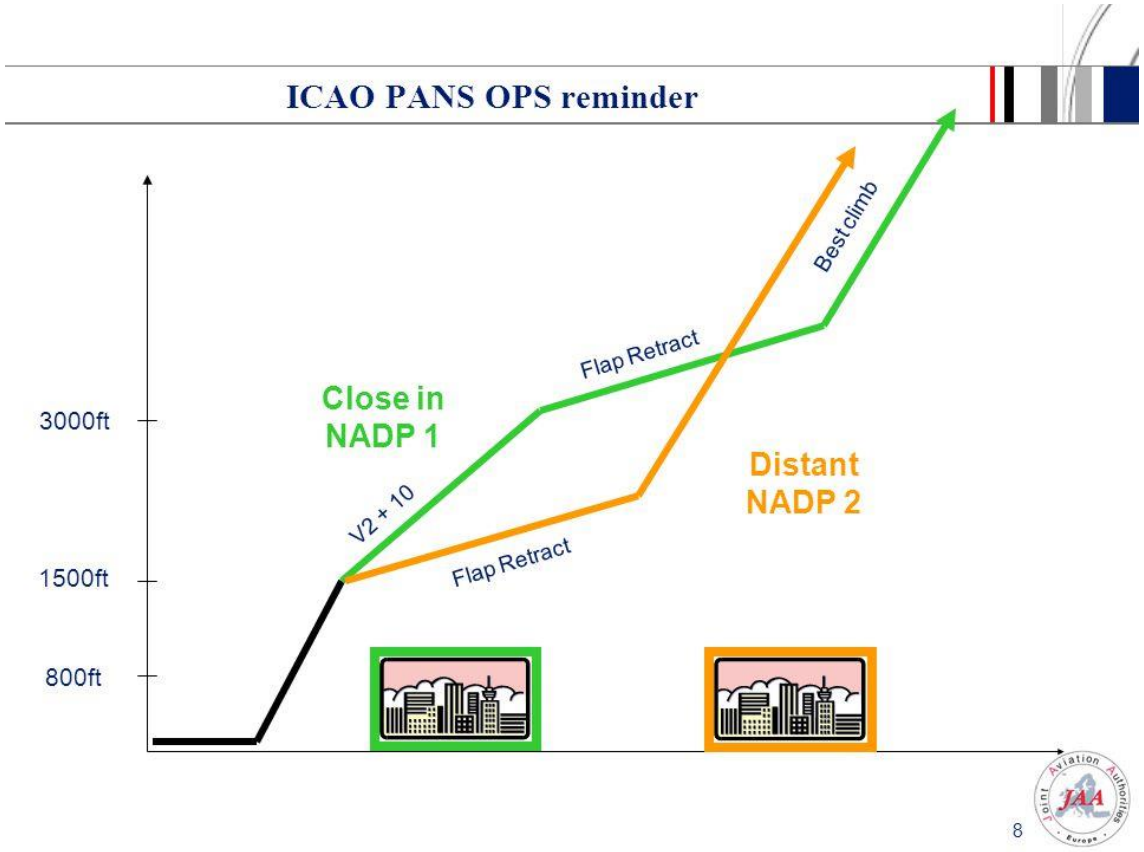
Source: Block 1 Procedure Recommendations for Logan Airport Community Noise Reduction, Hansman et al (December 2017)

MIT STUDY

- Not all aircraft can safely climb at a speed of 220 knots
- Increases complexity in normally congested airspace with aircraft climbing at different speeds
- Impacts capacity as it requires increased separation between aircraft at different speeds
- Workload impacts as aircraft remain in airspace longer
- Increase in Greenhouse Gas Emissions
- Will continue to monitor research on this topic, but at this time it is not deemed to be a feasible solution

NADP1 AND NADP2

- Standard Noise Abatement Departure Procedures used around the world
- Garnering a better understanding of how they are used at Toronto Pearson



4DT TRAJECTORY

- Longer-term consideration
- Fully-integrated planning environment between airlines, airports and ANSP
- Gate-to-gate concept with optimum trajectories
- Supports increased use of noise mitigating procedures
- CDO, CCO

HELIOS WORKPLAN DASHBOARD

Recommendation Areas	Status
Supporting retrofitting of A320 (1A, 1B)	Supported in Principle
Establish INMB (2A)	✓
Code of Conduct (2B)	✓
CDO Definition (2C)	✓
Examine Reduced Flap Landing (2D)	✓
CDO Reporting (2E)	✓
CDO Benchmarking (2F)	🕓

HELIOS WORKPLAN DASHBOARD

Recommendation Areas	Status
Design RNP-AR Procedures (3A), Maximize Use (3B)	
Develop RNAV procedures to support CDO (3C)	
Consider 3.2 degree glideslope (4A)	
Support Runway GTAA Runway Alternation (5A)	
Increase use of Short Cuts over the Lake (6A)	
Investigate Point Merge (7A)	
Implement an Arrival Manager (AMAN) (8A)	
Extend Horizon of AMAN (8B)	
Invest in Time-Based Seperation	

3A – IMPLEMENT RNP-AR

Design RNP-AR procedures that can reduce the need for a high / low operation

- NAV CANADA, the GTAA and INMB are undertaking preliminary analysis work on how the concept could be deployed at Toronto Pearson
- New ‘Established on RNP-AR’ separation standard approved by ICAO and NAV CANADA has worked with Transport Canada to gain approval for use in Canada (3B).

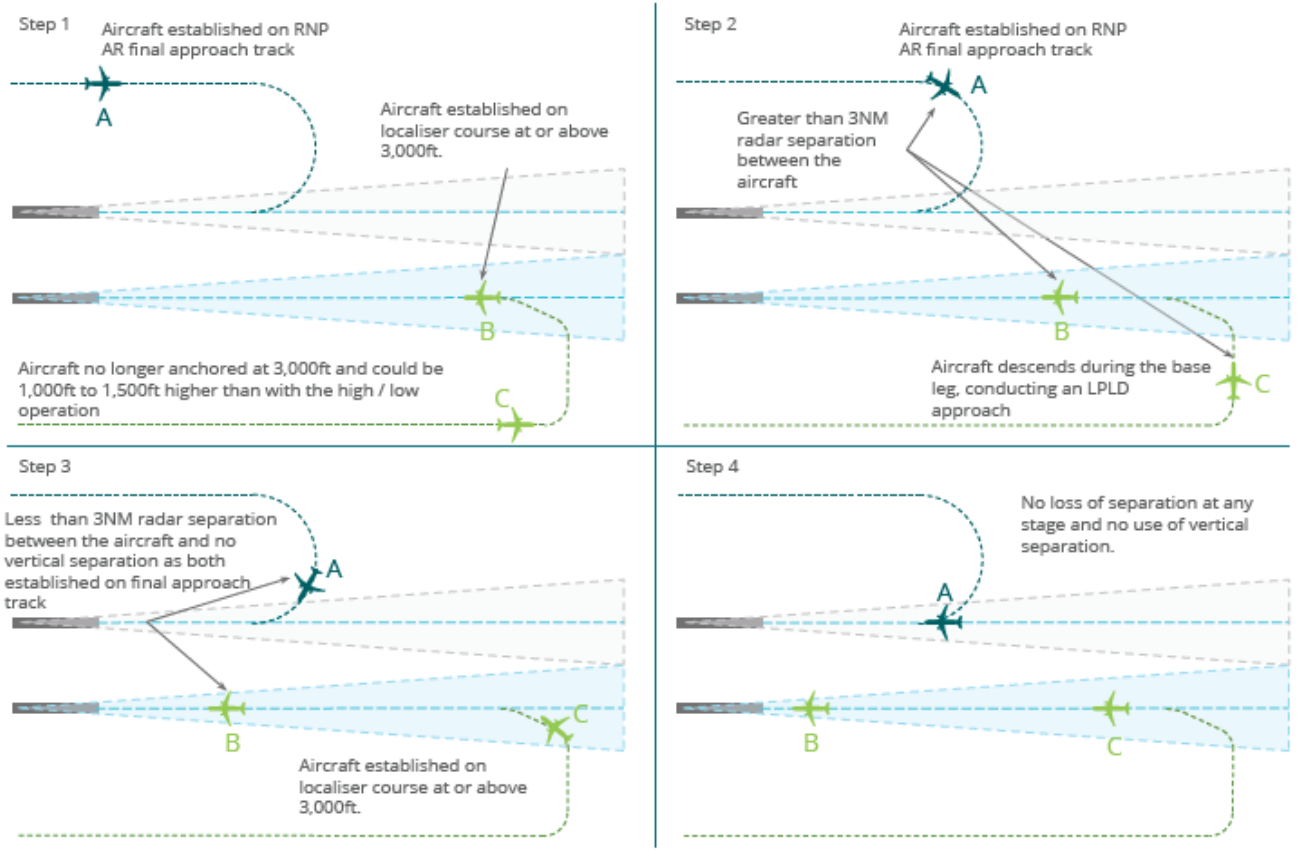
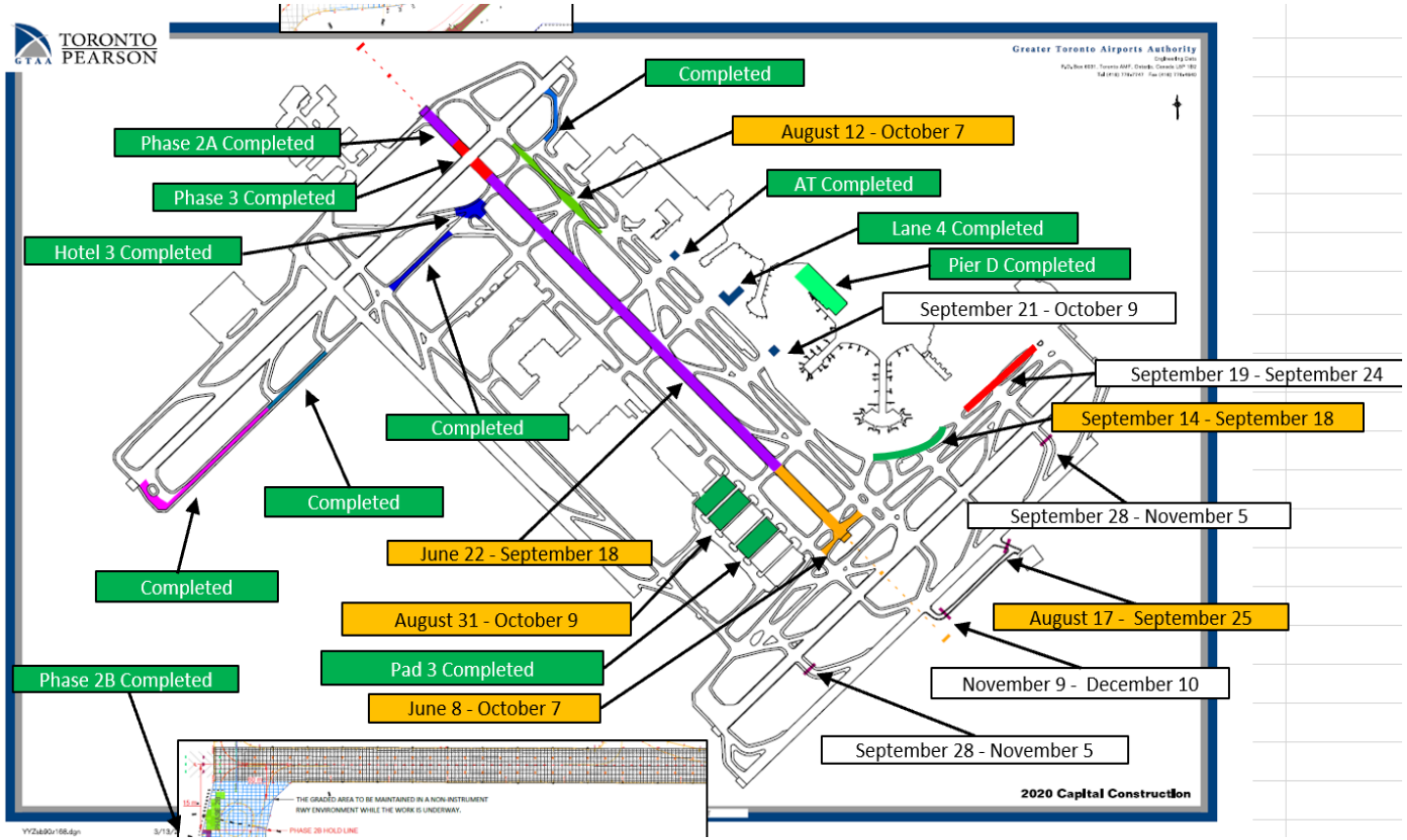


Figure 26. Established on RNP AR

GTAA Updates

Maintenance Update

2020 Work Program



- Work began in Spring 2020, and potential impacts were communicated through:
  - Briefing sessions for Elected Officials and Neighbourhood Table
  - Advertisements in local newspapers
  - Social media and Checking In
  - Digital advertising
  - Media outreach
- Runway 05/23 fully re-opened to traffic on July 9
- Runway 15L/33R is substantially complete, scheduled to re-open mid-October

Noise Management Action Plan

Noise Management Action Plan

- Night Flight Restrictions
- Communications, Outreach & Noise Committees
- Noise Complaints
- New Quieter Fleet Incentive Program
- New Fly Quiet Reporting Program
- Noise Reporting and Metrics
- Noise Abatement Procedures
- Land Use Planning
- Runway Usage

NMAP Deliverables to Date

- ✓Launched Noise Management Forums
- ✓Published updated Complaint Process
- ✓Completed A320 Family Audit and began tracking usage against 2019 audit
- ✓Six Ideas:
  - ✓Ideas 1-4 implemented
  - ✓Idea 5 tested summer 2018, trialed summer 2019 (will not be pursued based on trial results and community feedback)
  - ✓Idea 6 trial began February 2020
- ✓Launched InsightFull, a new noise management website
- ✓Began publishing standard noise reports
- ✓ Began working with selected school on the Pilot School Air Conditioning Program

A320 Family Retrofit Program

A320 Family Retrofit Program

- We are monitoring usage of the A320 family operations at Toronto Pearson against the audit conducted in 2019
- We will share the reports on the usage through the Noise Management Forums and in the Noise Management Action Plan updates on our website at torontopearson.com/nmap

A320 Usage Report Summary

- The reports for January to June 2020 show that:
  - 32% of A320 family aircraft operating at CYYZ are retrofitted
  - 53% of A320 family movements are performed by retrofitted aircraft
- This means that airlines are using proportionally more of their retrofitted aircraft for operations at CYYZ
- Based on the reports, more than 90% of A320 movements will be performed by retrofitted aircraft by the end of 2021

A320 Family Usage by Total Movements

January - June 2020							
Airline	Retrofitted	% Retrofitted	Scheduled for Retrofit*	% Scheduled for Retrofit	Not Scheduled for Retrofit	% Not Scheduled for Retrofit	Total A320 Movements
Air Transat	479	68%	0	0%	228	32%	**707**
Air Canada Family	9,584	56%	7,391	44%	0	0%	**16,975**
American Airlines	231	36%	414	64%	0	0%	**645**
United Airlines	60	21%	0	0%	228	79%	**288**
Interjet	23	7%	0	0%	303	93%	**326**
Avianca	0	0%	0	0%	149	100%	**149**
Delta Airlines	0	0%	0	0%	184	100%	**184**
Azores Airlines	0	0%	0	0%	116	100%	**116**
Sunwing	0	0%	0	0%	64	100%	**64**
TOTAL	**10,377**	**53%**	**7,805**	**40%**	**1,272**	**7%**	**19,454**

*Although not currently retrofitted, the airline has indicated these aircraft will be retrofitted in the near future.

A320 Family Usage by Aircraft

January - June 2020							
Airline	Retrofitted	% Retrofitted	Scheduled for Retrofit*	% Scheduled for Retrofit	Not Scheduled for Retrofit	% Not Scheduled for Retrofit	Total A320 Aircraft
Air Transat	7	54%	0	0%	6	46%	**13**
Air Canada Family	56	52%	51	48%	0	0%	**107**
American Airlines	35	34%	67	66%	0	0%	**102**
United Airlines	24	26%	0	0%	70	74%	**94**
Interjet	8	22%	0	0%	28	78%	**36**
Avianca	0	0%	0	0%	14	100%	**14**
Delta Airlines	0	0%	0	0%	39	100%	**39**
Azores Airlines	0	0%	0	0%	3	100%	**3**
Sunwing	0	0%	0	0%	2	100%	**2**
TOTAL	**130**	**32%**	**118**	**29%**	**162**	**40%**	**410**

*Although not currently retrofitted, the airline has indicated these aircraft will be retrofitted in the near future.

Quieter Fleet Incentive Program

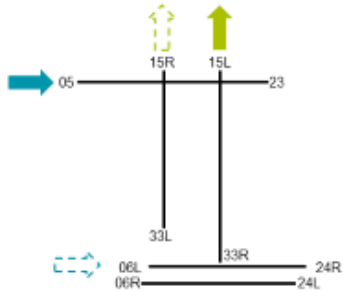
- Next Steps
  - Determine timing for the next A320 family audit
  - GTAA exploring “impact charge” for airlines that operate non-retrofitted A320 family aircraft after 2022
  - Explore options for Phase 2 of the Quieter Fleet Incentive Program including encouraging quieter fleet operations, looking at a potential phase out of noisier aircraft or possible noise charges.
    - Starting with an audit of aircraft operating at Toronto Pearson to determine Chapter type

Preferential Runway System Trial

- The GTAA began a trial of the updated Preferential Runway System on February 27, 2020
- Trial will last for one-year to test usage of the updated system across multiple weather conditions, during runway construction season, and winter operations
- Reports on the usage of the updated Nighttime Preferential Runway System are published on our website every three months
- Feedback survey will be open during trial for residents to provide their input on the same webpage as the reports

Updated Nighttime Preferential Runway System

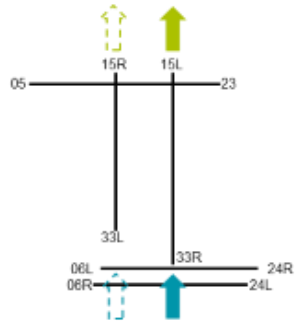
1st Choice - Whenever crosswind, tailwinds & winds-aloft allow



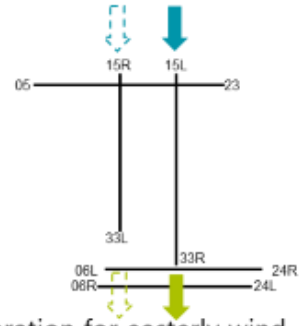
2nd Choice - Whenever crosswind, tailwinds & winds-aloft allow

Selection driven by weather conditions and infrastructure availability when 1st or 2nd choice are not operable. Ultimately any single or pair of runways can be used.

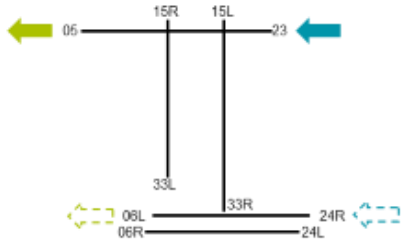
Operation for northerly wind



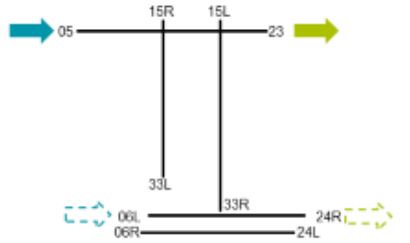
Operation for southerly wind



Operation for westerly wind



Operation for easterly wind



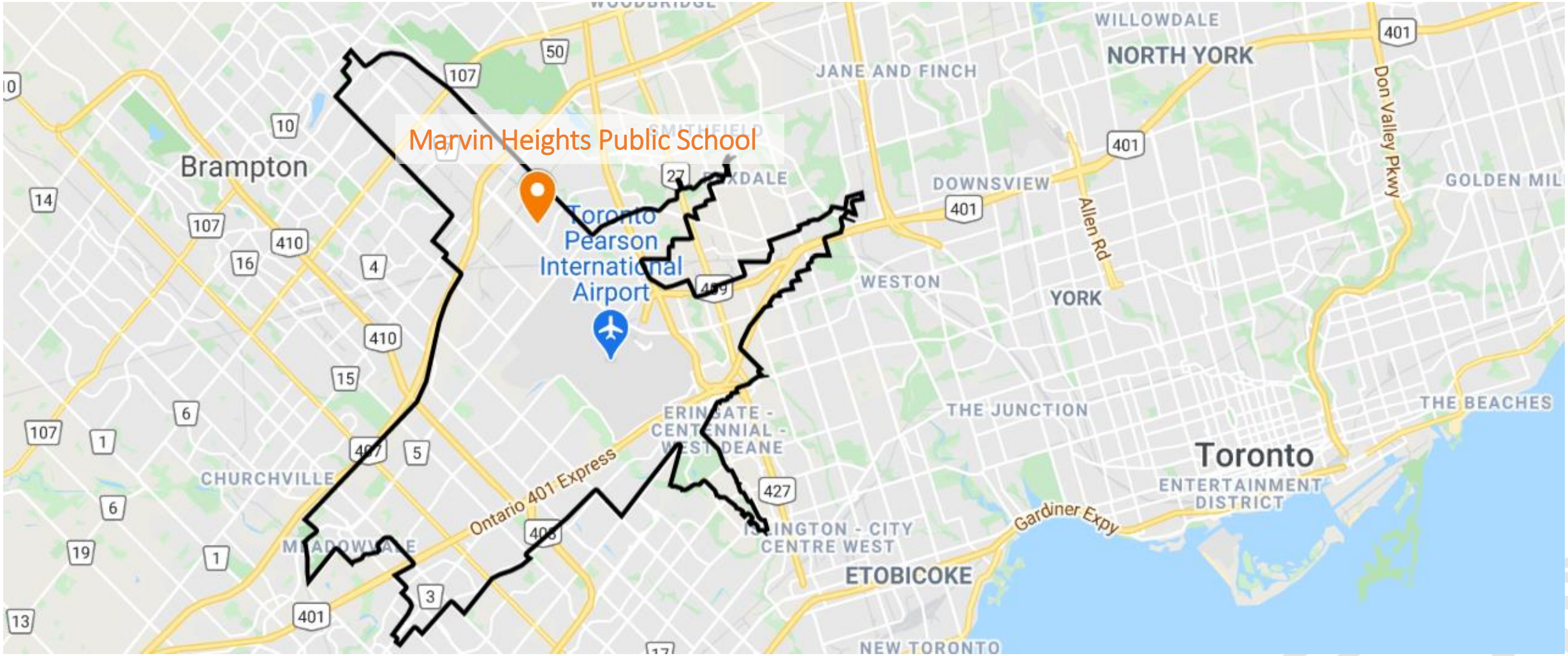
Key:

- Primary departures
- Primary arrivals
- Maintenance adjusted departures
- Maintenance adjusted arrivals

Pilot: School Air Conditioning Program

- As part of the 2018-2022 Noise Management Action Plan (NMAP), Toronto Pearson committed to exploring a pilot program to provide funding for HVAC systems to one or a small number of local schools within the most noise impacted communities. Similar programs have been offered by leading international airports.
- Based on criteria matrix, selected Marvin Heights Public School in the Peel District School Board was selected, and work is currently underway
- When operational in Spring 2021, the system will have an added benefit of improving the air quality at the school
- We have learned lessons and started working on plans to evolve the program, however given the airport's current financial constraints, determining what phase 2 of the program is on hold

Marvin Heights Public School within the AOA



InsightFull and Noise Reports

- Worked with the Neighbourhood Table throughout 2019 to develop both InsightFull and the Noise Reports
- InsightFull
  - Toronto Pearson launched InsightFull in March 2020, becoming the first airport in North America to launch this self-serve web portal
  - Residents can access InsightFull from our website at torontopearson.com/en/community/noise-management
- Noise Reports
  - Added an interactive dashboard of noise reports on InsightFull utilizing information from the airport's 25 Noise Monitoring Terminals
- The web-portal and noise reports will continue to be updated
- Both initiatives are now complete

InsightFull Demo

Q4 2020 NMAP Workplan

- Trial continues for Idea 6: Review of the Preferential Runway System with quarterly reports
- Launch final pieces of Noise Management Forums
- Develop metrics and engage with industry and community stakeholders for the Fly Quieter and Greener Reporting Program
- Continue review of the Night Flight Restriction Program
- Continue to publish noise data and enhance content on InsightFull

Question Period

Next Meeting

December 3, 2020

Thank You