Toronto Pearson Noise Management Forums

Pearson Public Meeting

April 15, 2021

Welcome + Introductions

Pearson Public Meetings

- The Pearson Public Meetings are part of the Noise Management Forums
- 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

Agenda

- Airport Situational Updates
  - Healthy Airport Initiatives
  - Airport Operations
- GTAA Updates
  - Maintenance Update
  - Noise Management Action Plan Update
  - Working with the Community
- NAV CANADA Updates
- Industry Noise Management Board (INMB) Updates
- Question Period

Airport Situational Updates

Healthy Airport Initiatives

Building a Healthy Airport

- **Healthy Airport Commitment**
  - 1st airport in Canada to receive ACI Health Accreditation 2020
  - 2021 ACI World ASQ Awards: “Best Large Airport in North America serving more than 40 million passengers” and “Best hygiene measures by region” in North America
- **Embracing Innovations**
  - Including BlueDot to predict/monitor COVID-19 and other infectious disease risk
  - Autonomous floor cleaners, UV light for disinfection, probiotics in washrooms to eradicate bad bacteria
  - Active monitoring duct system offering real time air quality assessment in terminal and online
- **Healthy Airport Measures**
  - Implemented Healthy Airport measures in addition to the Transport Canada rules:
  - Mandatory masks in all public areas, for passengers and employees
  - Plexiglass barriers, separation at kiosks, signage, floor decals, increased passenger comms
  - Limiting terminal access to only passengers and workers
  - Enhanced hygiene and cleaning in high traffic / high touch areas
  - Voluntary testing for employees and internationally departing passengers

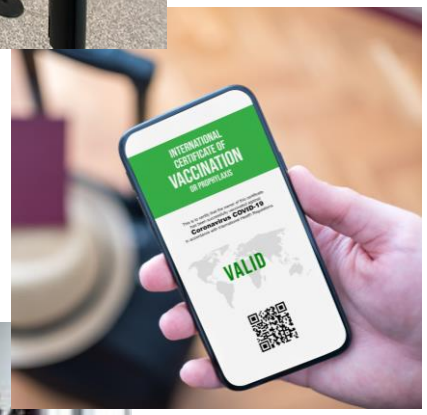
Key elements of a framework for restart – *Ready when you are*

Vaccination & Testing to reduce quarantine:

- Follow the science to reduce, and remove & replace hotels and quarantines with a robust testing strategy, including use of rapid tests
- Recognition that vaccinated travellers pose lower risk
- Support the development of effective, rapid, affordable testing solutions (happening already at Pearson)

Frictionless travel:

- Develop processes to decrease the need for contact and touch throughout the passenger journey, with upstream integration into established passenger journeys



Digital travel health credentials:

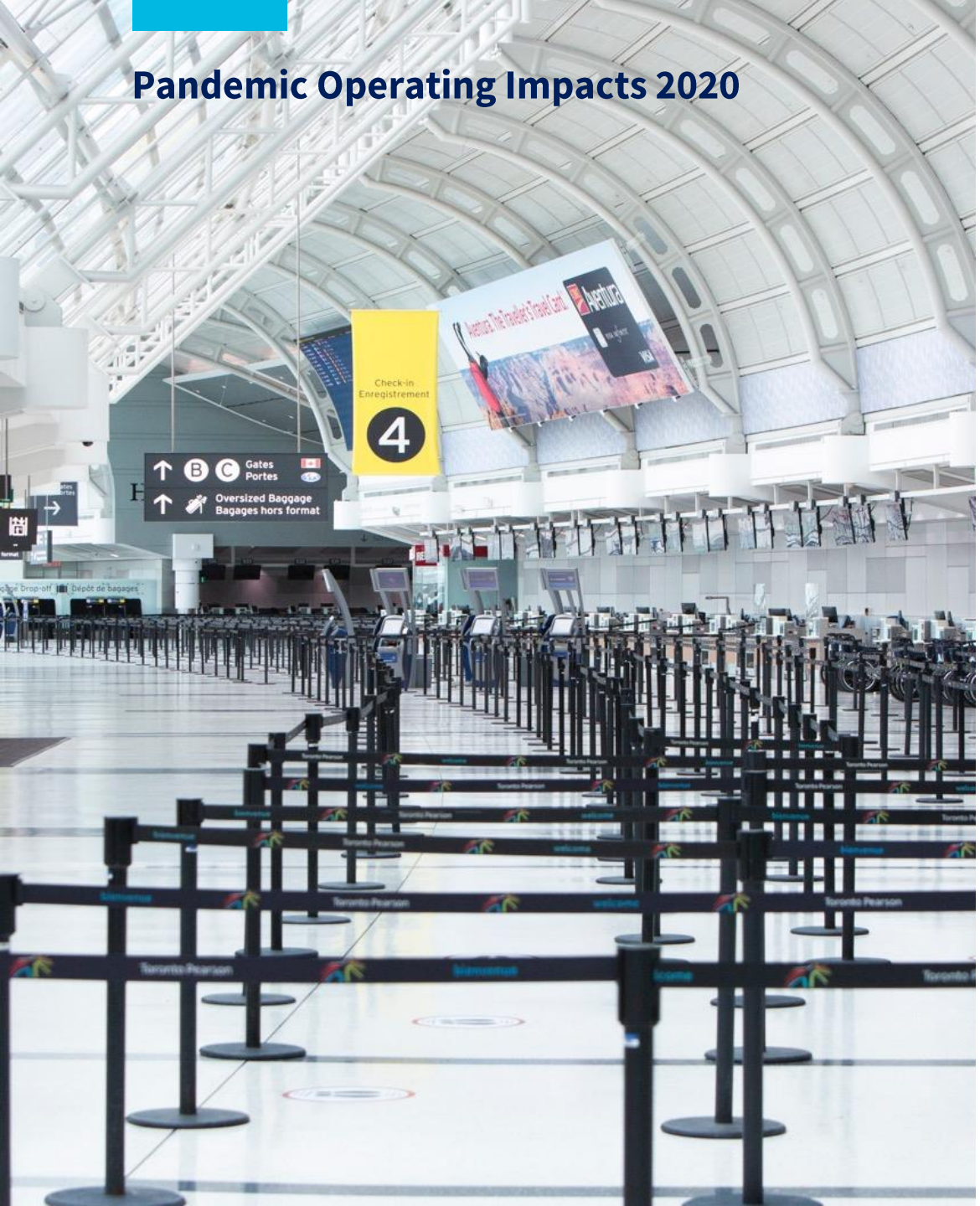
- Digital tool to confirm test results and vaccination status
- There is strong support from travellers: 4 of 5 surveyed by IATA would use an app, subject to sufficient data protections
- Two-thirds believe a quarantine is not necessary for those who test negative or have been vaccinated

Common international standards:

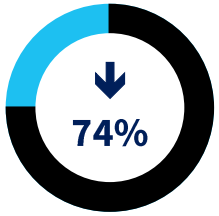
- ICAO, IATA and ACI are aligned on need for global harmonization for testing standards & health credentials to enable interoperability and seamless travel

Airport Operations 101

Introduction to Toronto Pearson and Our Operations



Pandemic Operating Impacts 2020

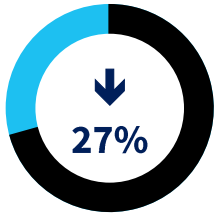


Passenger Traffic Trends

In 2020, we saw 13.3M passengers, year over year reduction of 73.6%. Resulting income loss of $383.4M, a decrease of 374.2% compared to 2019.

Airports Revenue Trends

Globally, airports are anticipating a loss of $110 billion in revenue



GTAA Workforce Impact

In 2020, major restructuring and a **workforce reduction of 27%,** or 500 positions. Business partners have had to lay off 13,500 people

HEALTHY AIRPORT

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

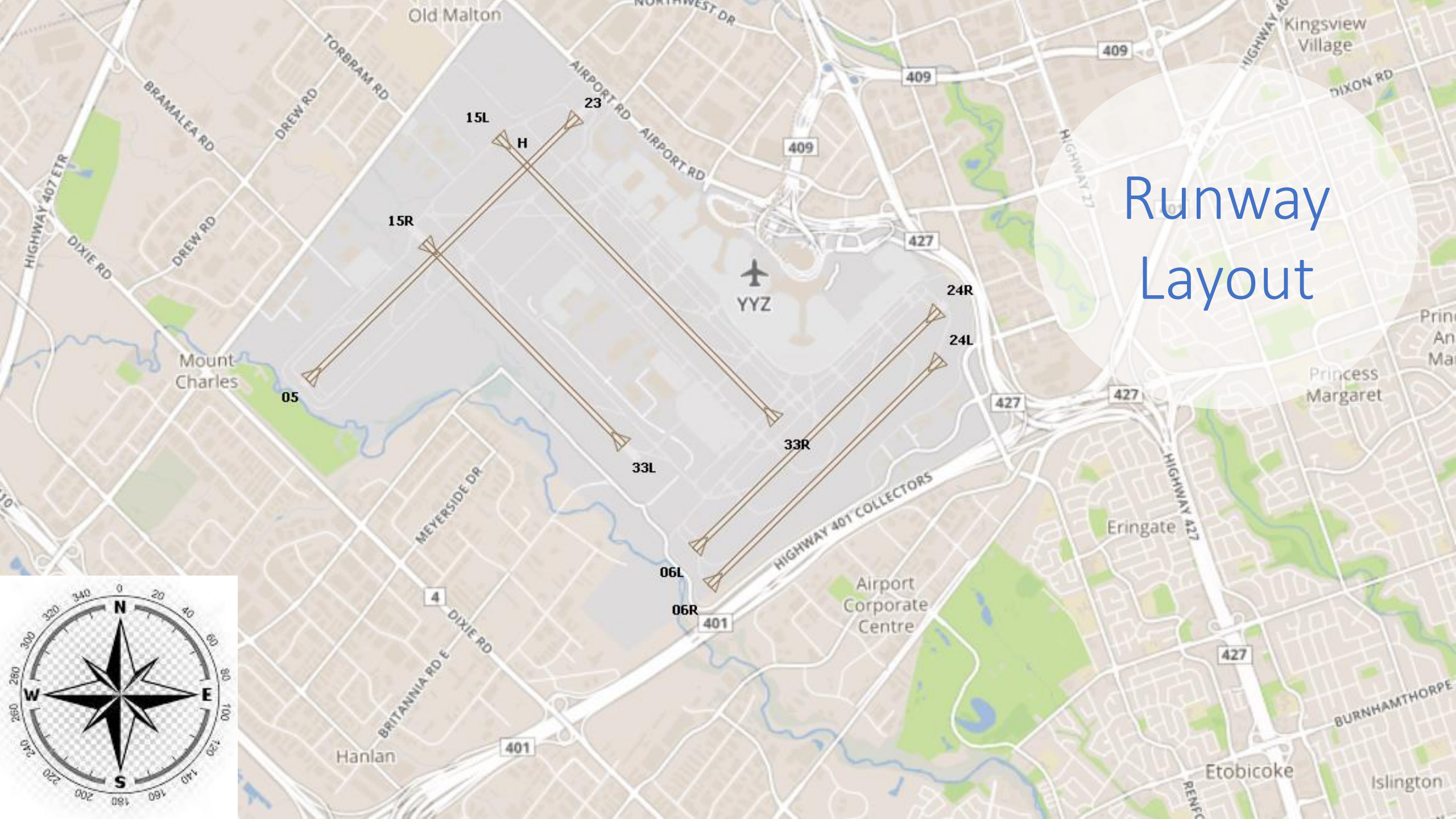
Restricted Hours (12:30 to 6:29 a.m.): governed by a Night Flight Restriction Program which limits number of movements. Runs from Nov 1 to Oct 31. Annual budget increases with passenger growth

Operations & Complaints Trends - 2020

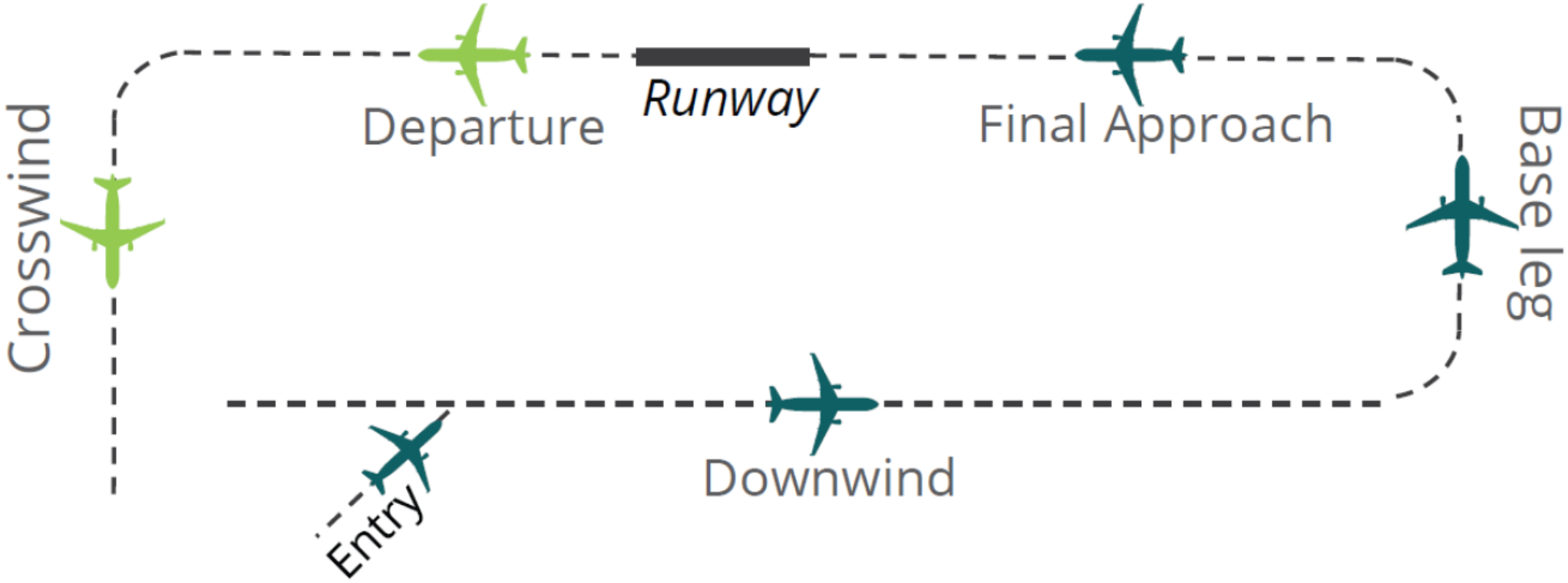
Year	Operations	Complaints	Individuals
2019	452,083	115,462	1,167
2020	174,215	42,674	468
YOY	Down 61% compared to 2019	Down 63% compared to 2019	Down 60% compared to 2019

Our Runways

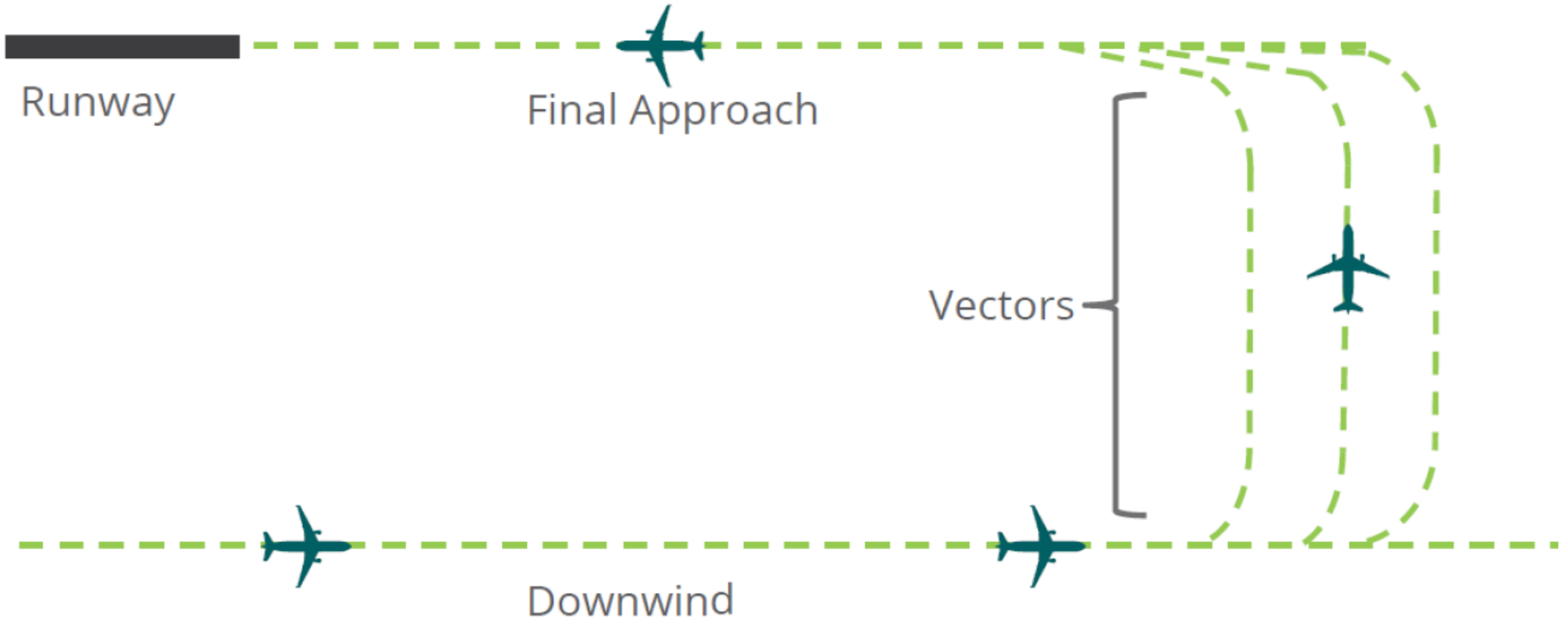
- Toronto Pearson has five runways
- Two runways go in the north-south direction:
  - Runway 15L/33R
  - Runway 15R/33L
- Three runways go in the east-west direction:
  - Runway 05/23
  - Runway 06L/24R
  - Runway 06R/24L
- Runways can be used from both ends, so while there are five runways, there are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


Runway Layout
15L
23
H
15R
05
33L
33R
24R
24L
06L
06R
YYZ
Old Malton
Mount Charles
Hanlan
Airport Corporate Centre
Eringate
Kingsview Village
Princess Margaret
Etobicoke
Islington
Burnhamthorpe
AIRPORT RD
DIXIE RD
DREW RD
TORBRAM RD
BRAMALEA RD
HIGHWAY 407 ETR
MEYERSIDE DR
BRITANNIA RD E
HIGHWAY 401 COLLECTORS
HIGHWAY 427
DIXON RD
409
427
401
4
N
E
S
W

Runway Circuit Pattern



Runway Circuit Pattern

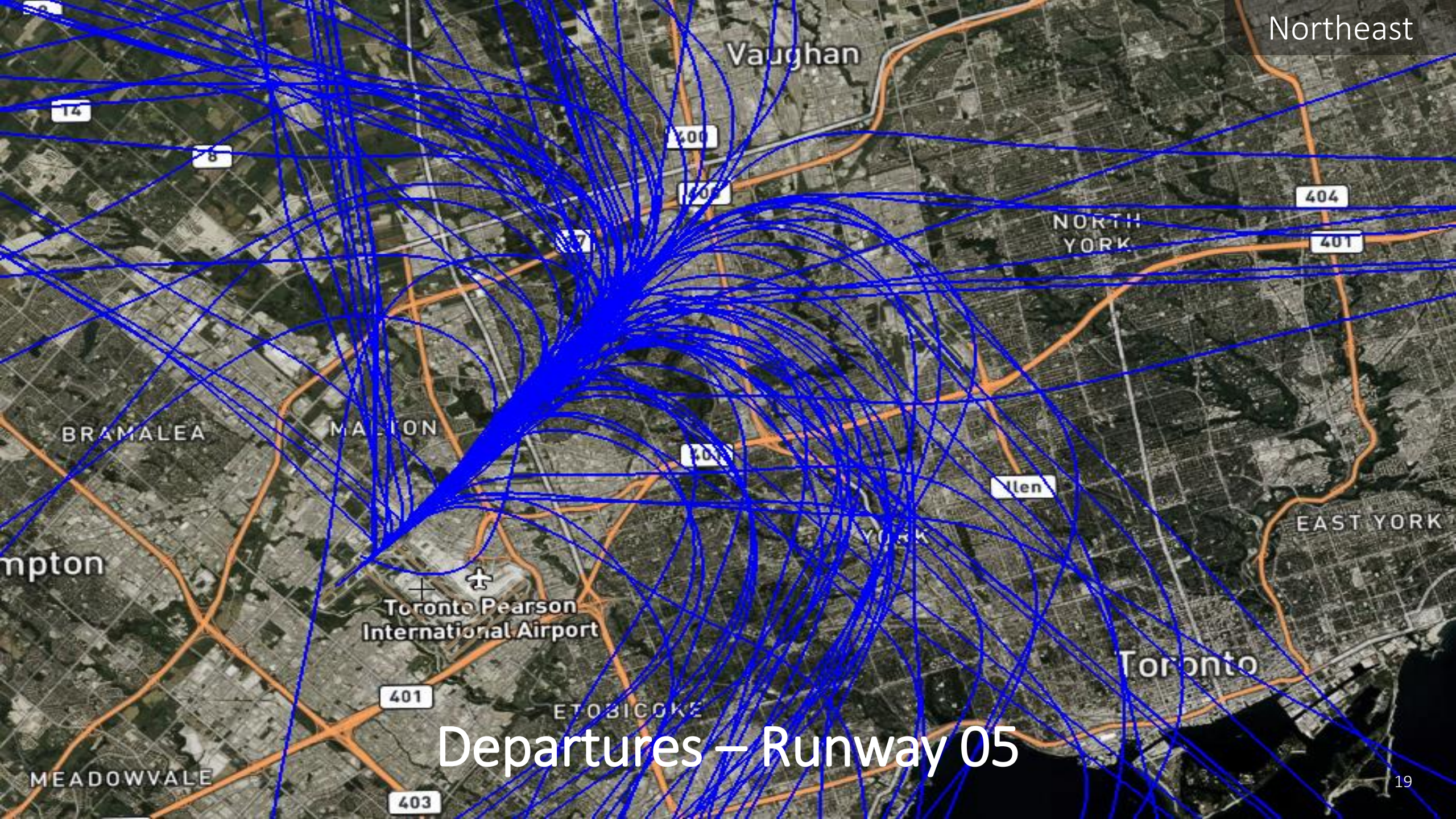


Arrivals Runway 23
Departures Runway 05

Communities impacted:

Maple/Vaughan, Richmond Hill, Thornhill, Rexdale


Northeast
400
6
50
400
Richmond Hill
Bolton
27
Kleinburg
7
8
Vaughan
14
400
8
400
17
410
410
BRAMALEA
MALTON
401
Arrivals - Runway 23



Departures – Runway 05

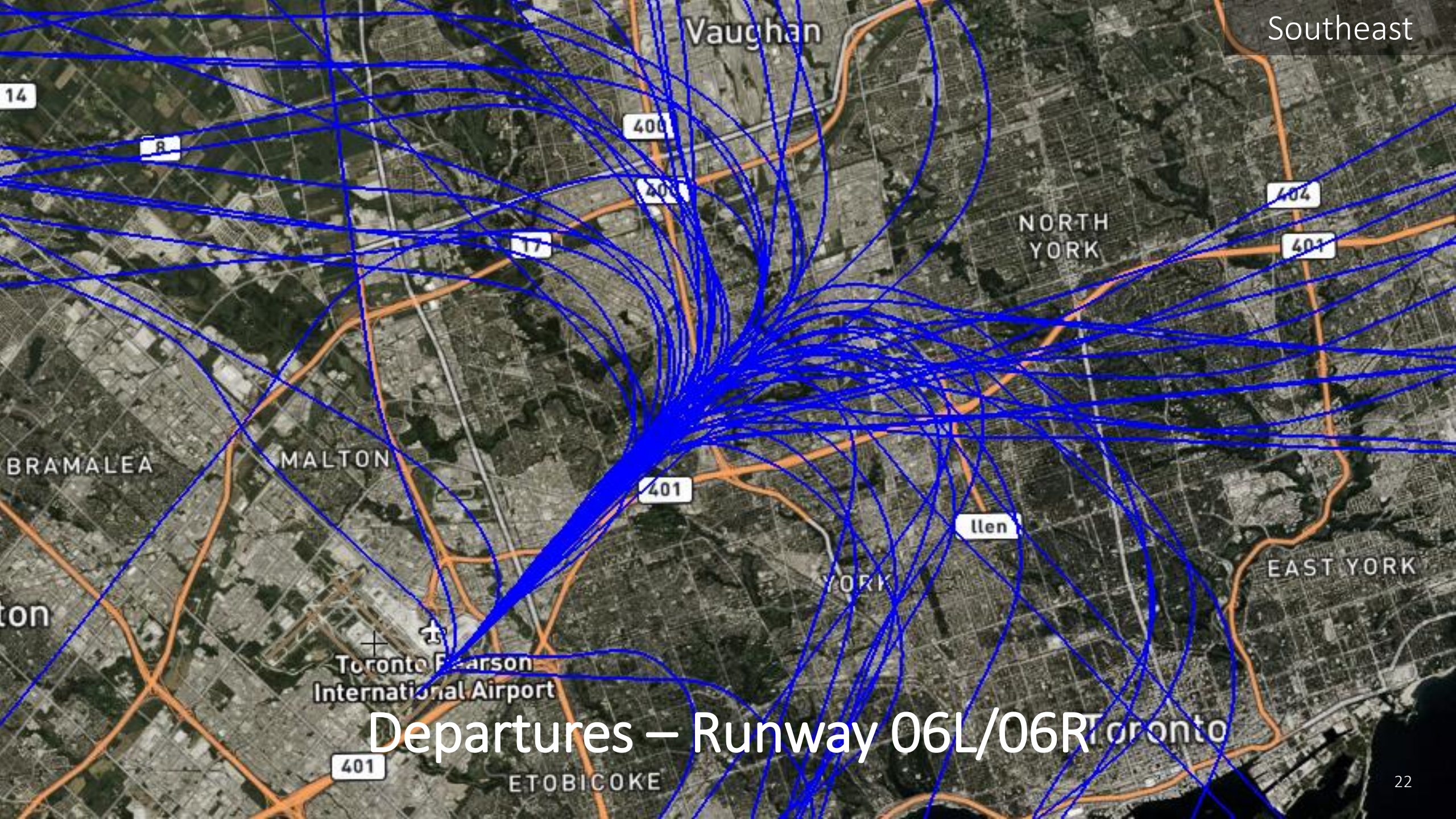
Arrivals Runway 24L/R
Departures Runway 06L/R

Communities impacted:

Midtown Toronto, North York, Weston, Markham

Arrivals - Runway 24L/24R

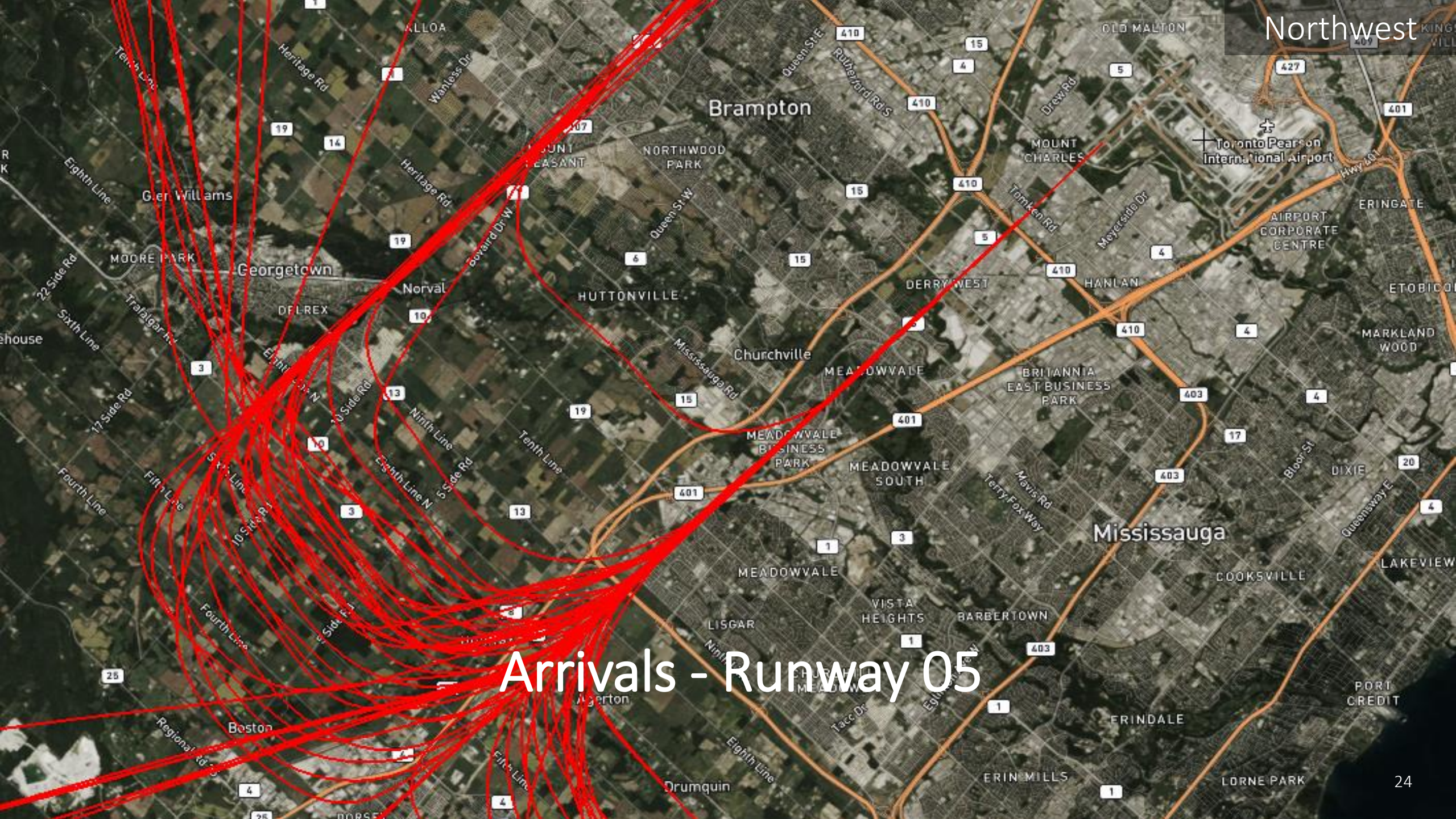
21

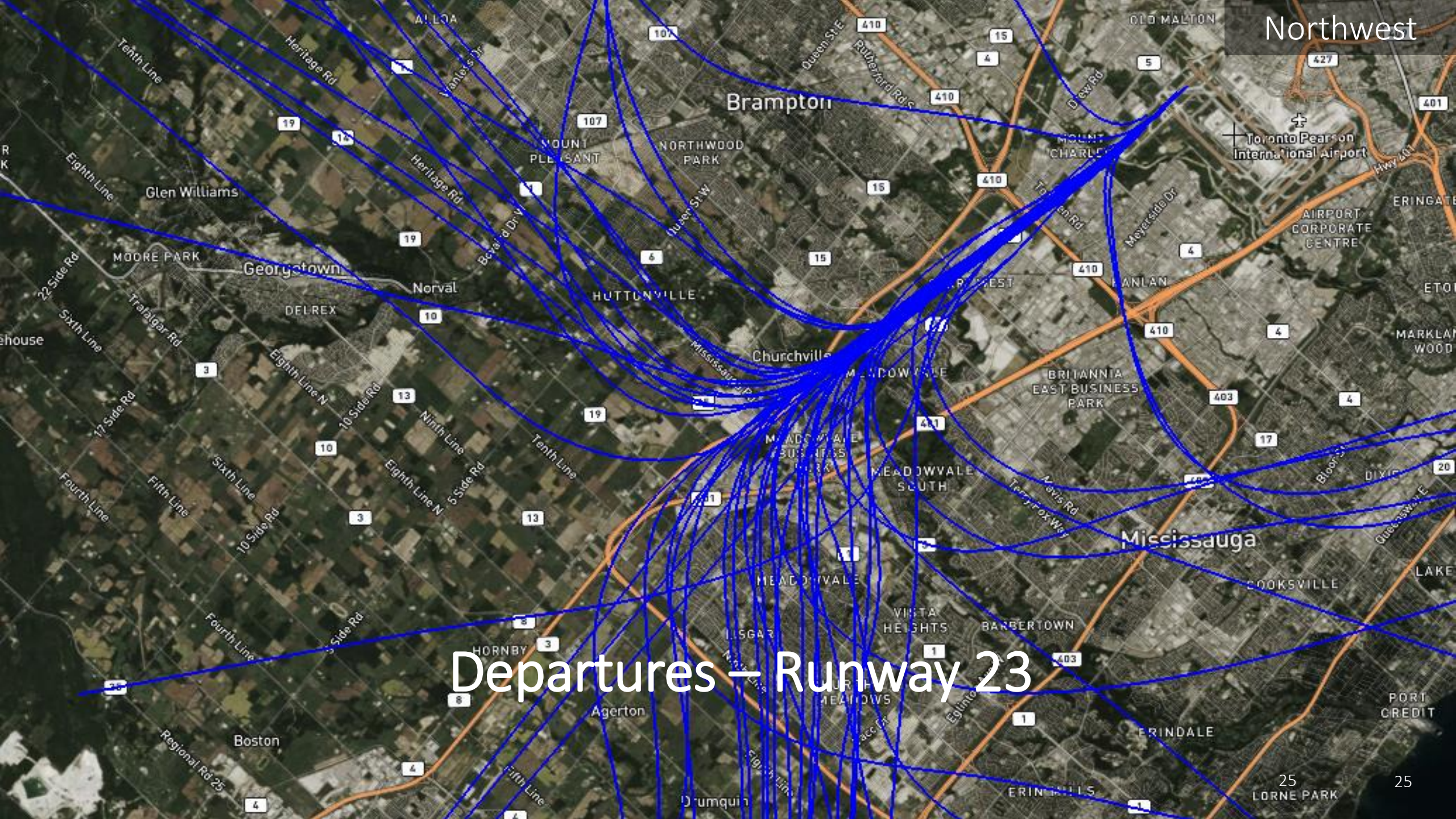

Southeast
Vaughan
NORTH YORK
BRAMALEA
MALTON
EAST YORK
ETOBICOKE
Toronto Pearson International Airport
Departures – Runway 06L/06R

Arrivals Runway 05
Departures Runway 23

Communities impacted:

Brampton, Georgetown, Milton, Meadowvale, Streetsville


Northwest
Brampton
Georgetown
Norval
HUTTONVILLE
Churchville
MEADOWVALE
MEADOWVALE BUSINESS PARK
MEADOWVALE SOUTH
BRITANNIA EAST BUSINESS PARK
Mississauga
COOKSVILLE
LISGAR
VISTA HEIGHTS
BARBERTOWN
ERINDALE
ERIN MILLS
PORT CREDIT
LORNE PARK
DIXIE
HANLAN
AIRPORT CORPORATE CENTRE
Toronto Pearson International Airport
MOUNT CHARLES
NORTHWOOD PARK
OLD MALTON
ERINGATE
MARKLAND WOOD
ETOBICOKE
MOORE PARK
DELREX
Boston
Drumquin
Arrivals - Runway 05

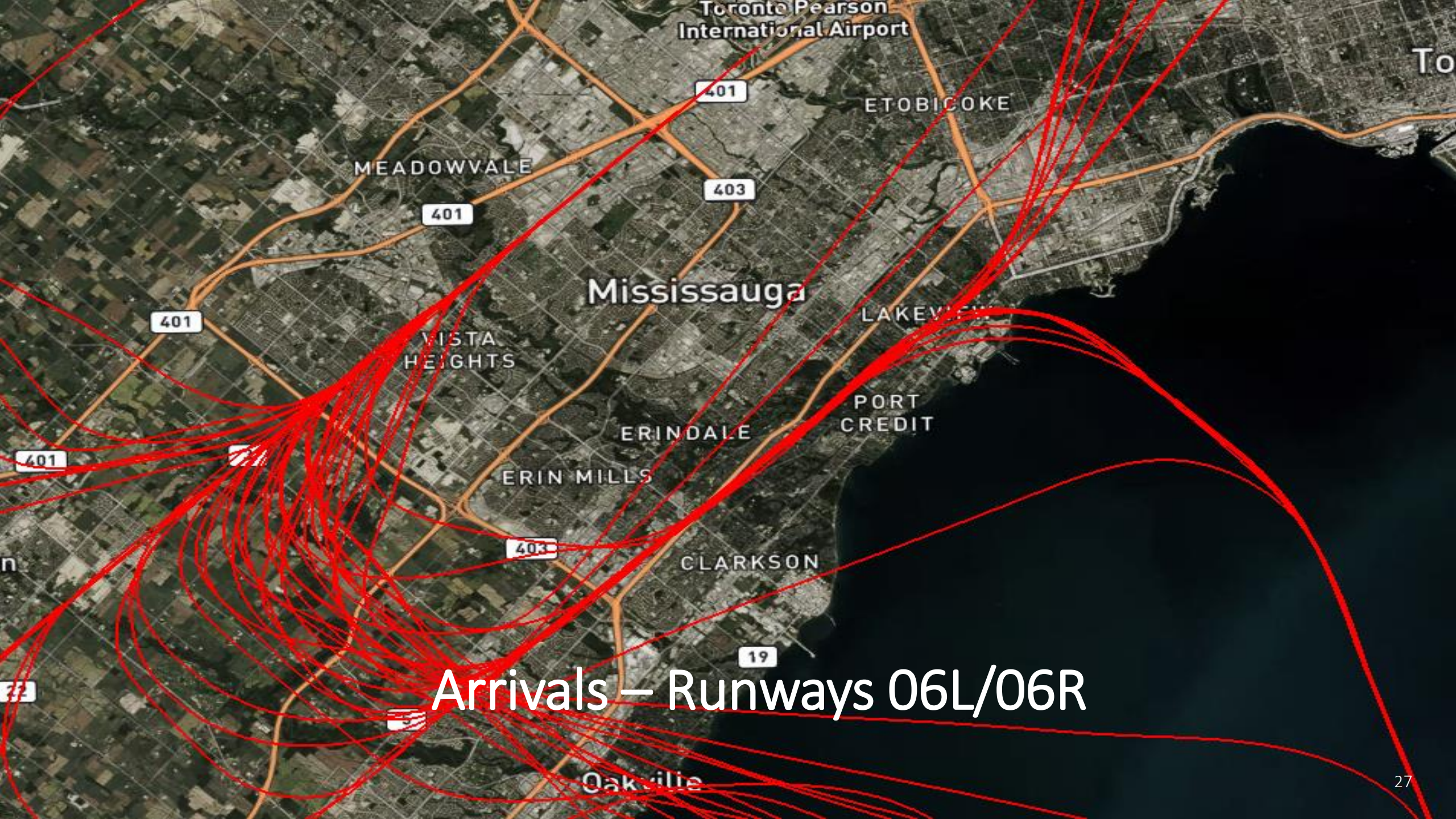

Northwest
Brampton
Toronto Pearson International Airport
Mississauga
Georgetown
Norval
Glen Williams
MOORE PARK
DELREX
HUTTONVILLE
Churchville
MEADOWVALE
MEADOWVALE SOUTH
BRITANNIA EAST BUSINESS PARK
AIRPORT CORPORATE CENTRE
COOKSVILLE
ERINDALE
PORT CREDIT
LORNE PARK
Agerton
Boston
HORNBY
BARBERTOWN
VISTA HEIGHTS
Departures – Runway 23

25

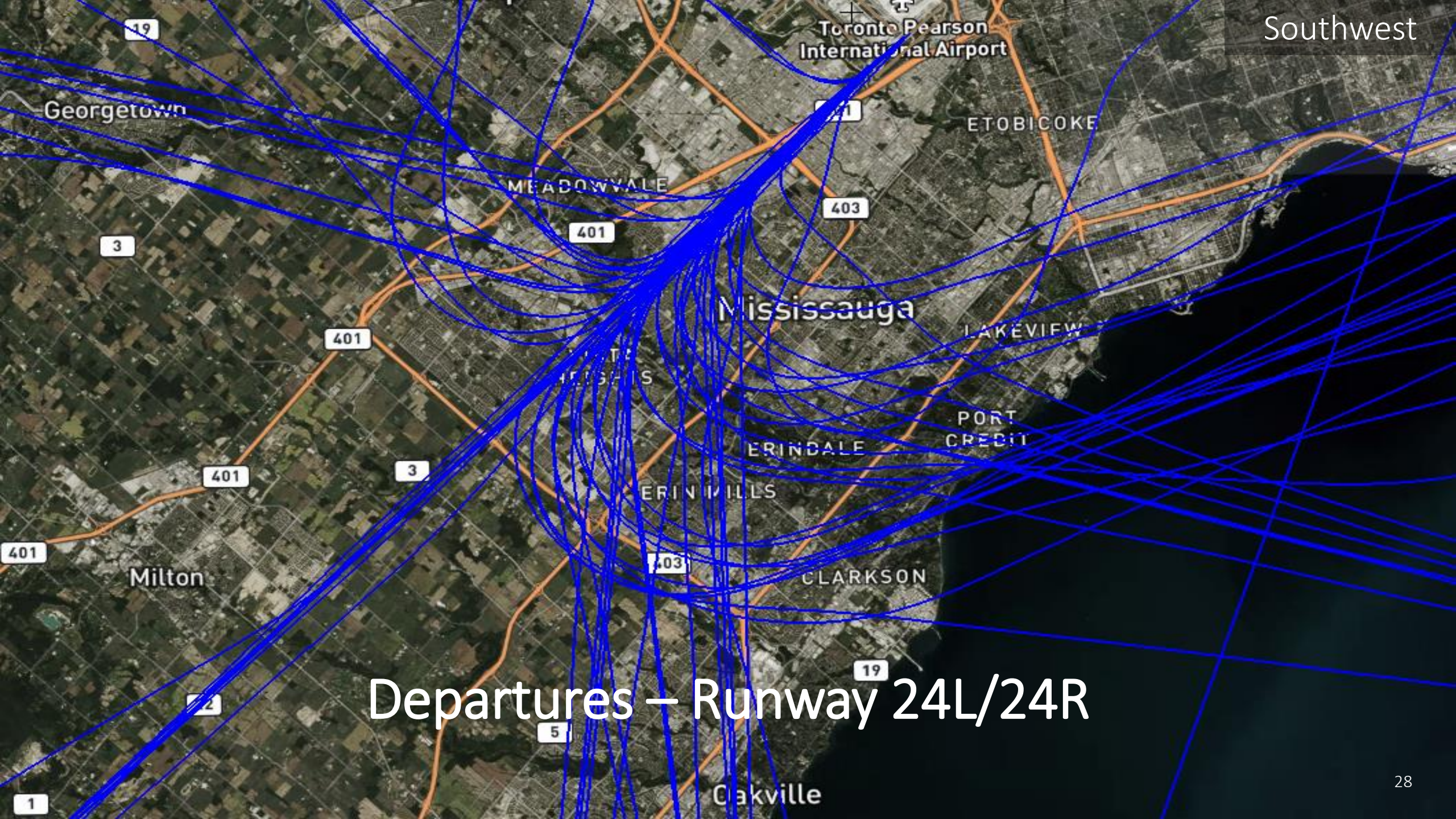
Arrivals Runway 06L/R
Departures Runway 24L/R

Communities impacted:

Meadowvale, Alderwood, Erin Mills, Streetsville, Clarkson, Port Credit, Oakville



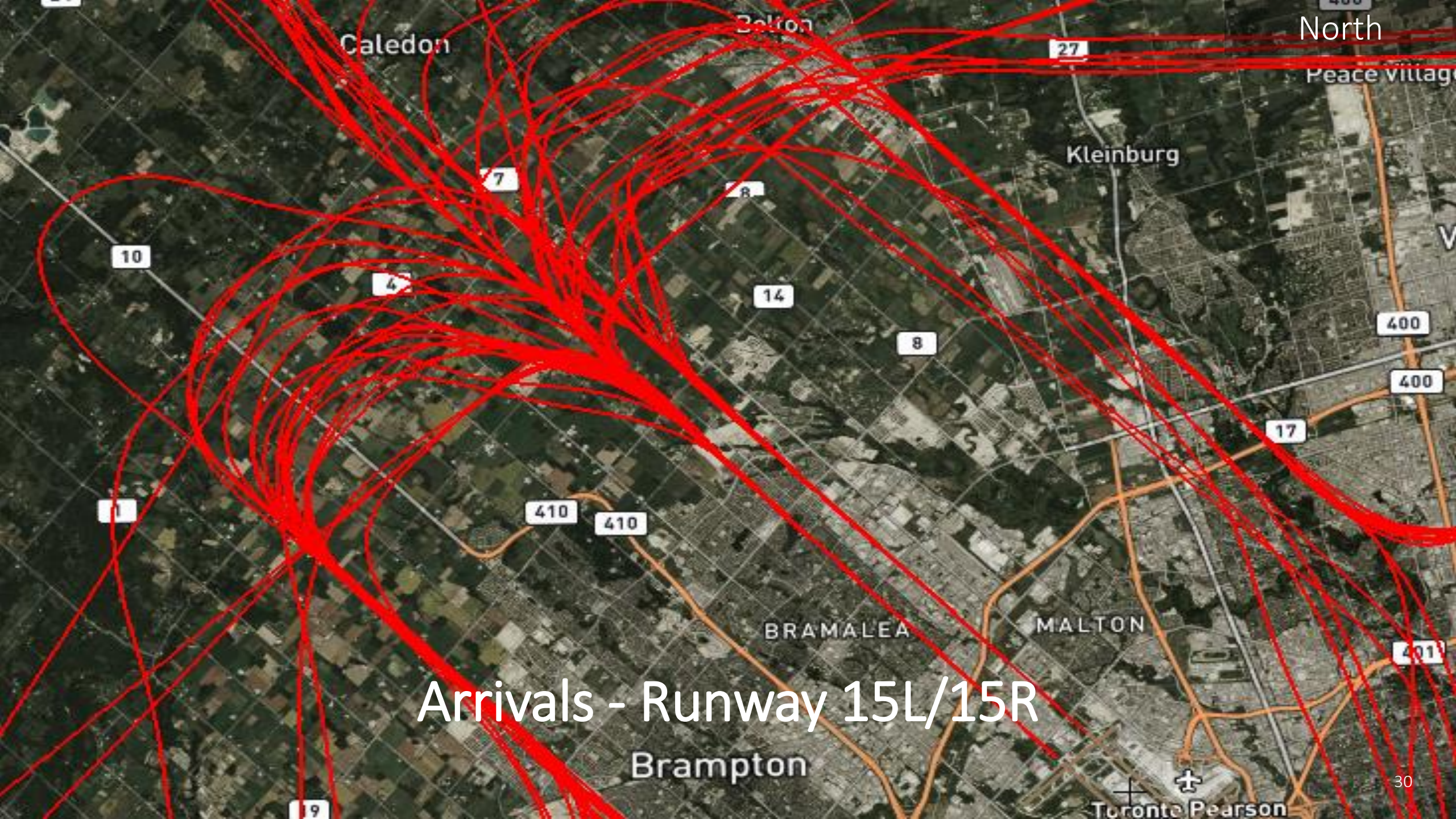
Arrivals – Runways 06L/06R


Southwest
Toronto Pearson International Airport
Georgetown
ETOBICOKE
MEADOWVALE
401
403
3
Mississauga
LAKEVIEW
PORT CREDIT
ERINDALE
ERIN MILLS
Milton
CLARKSON
Oakville
19
5
1
Departures – Runway 24L/24R

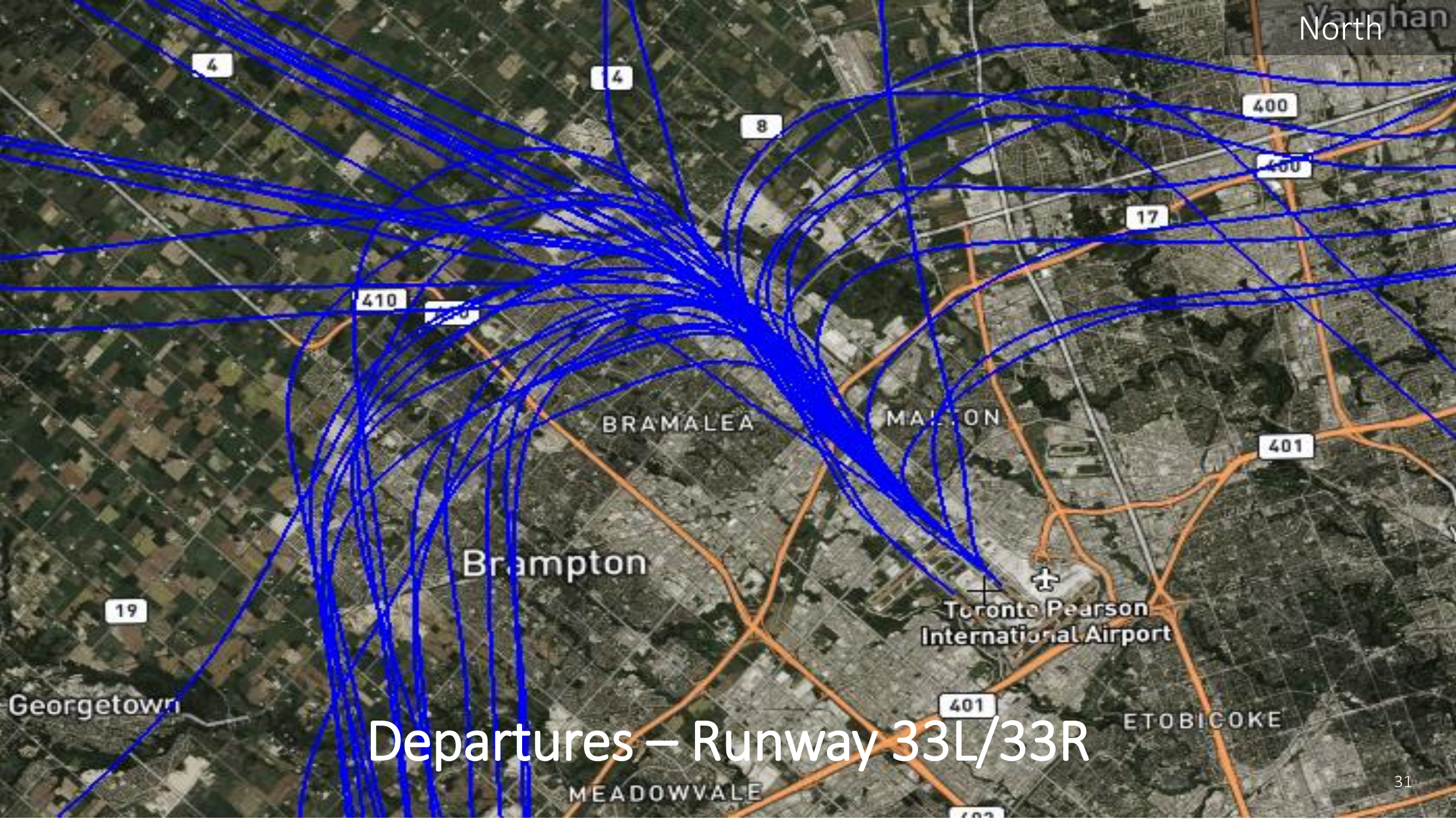
Arrivals Runway 15L/R
Departures Runway 33L/R

Communities impacted:

Brampton, Malton



Arrivals - Runway 15L/15R

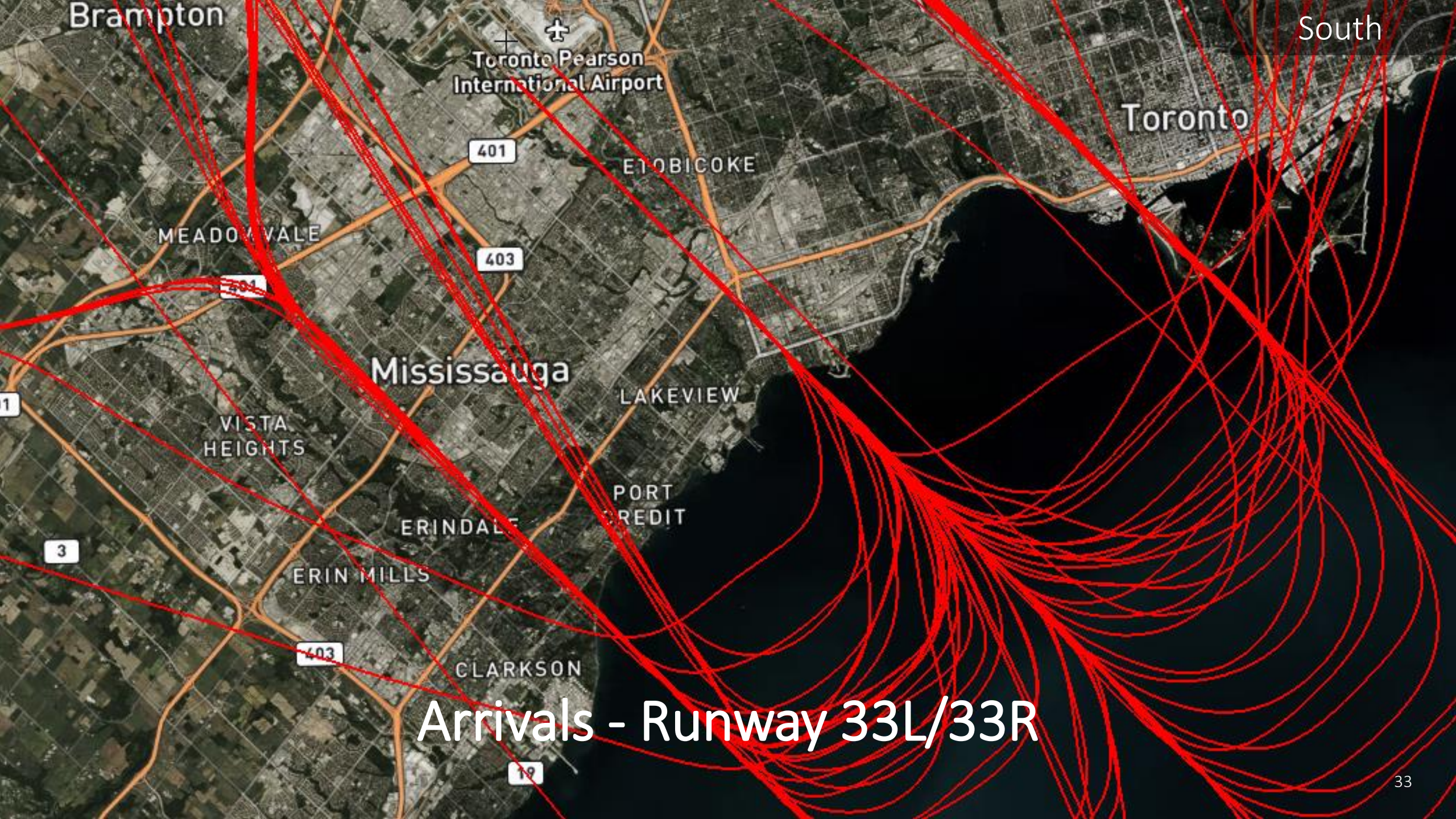


Departures – Runway 33L/33R

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

Communities impacted:

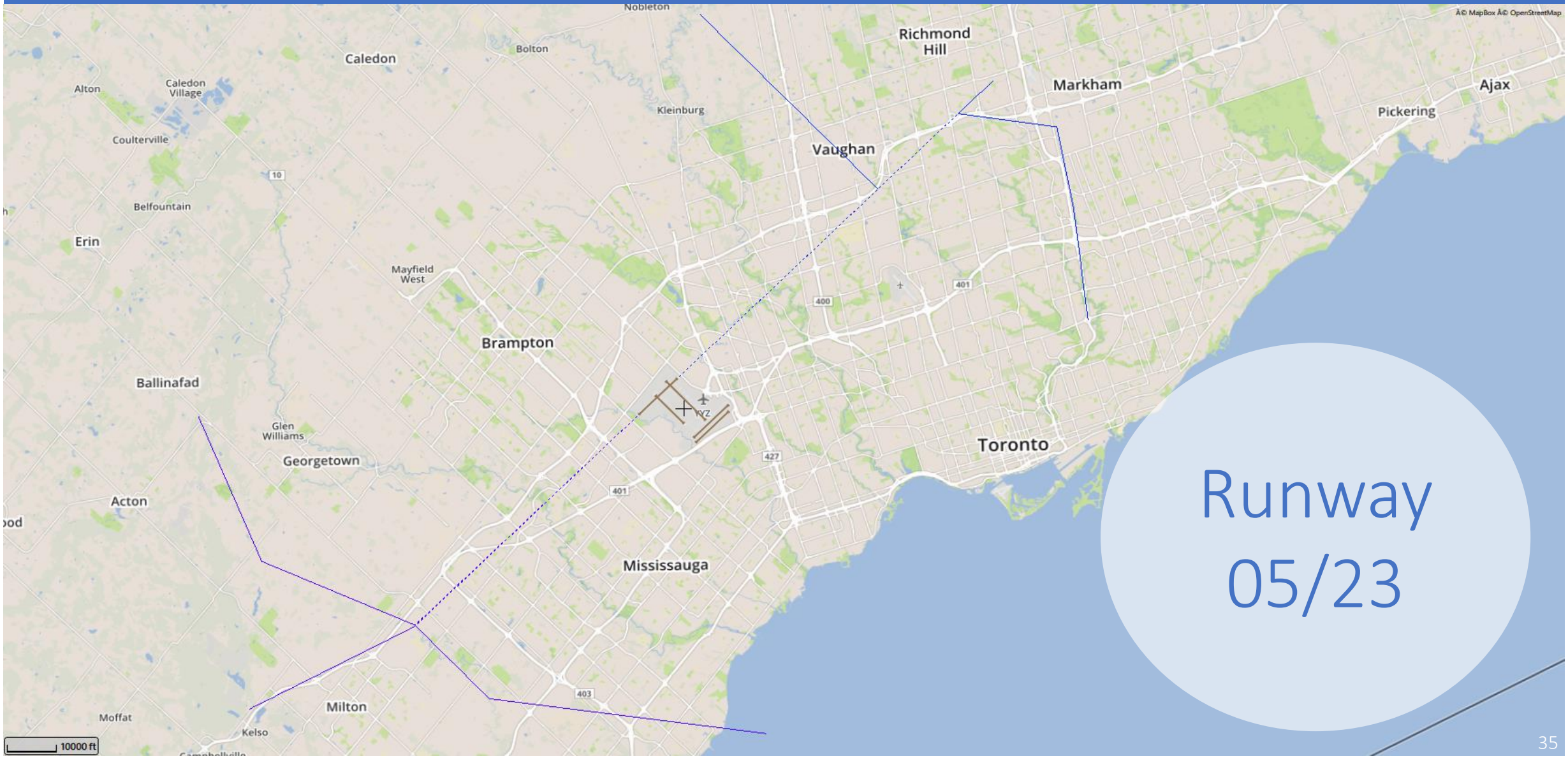
Etobicoke-Lakeshore, Alderwood, Long Branch, Markland Wood



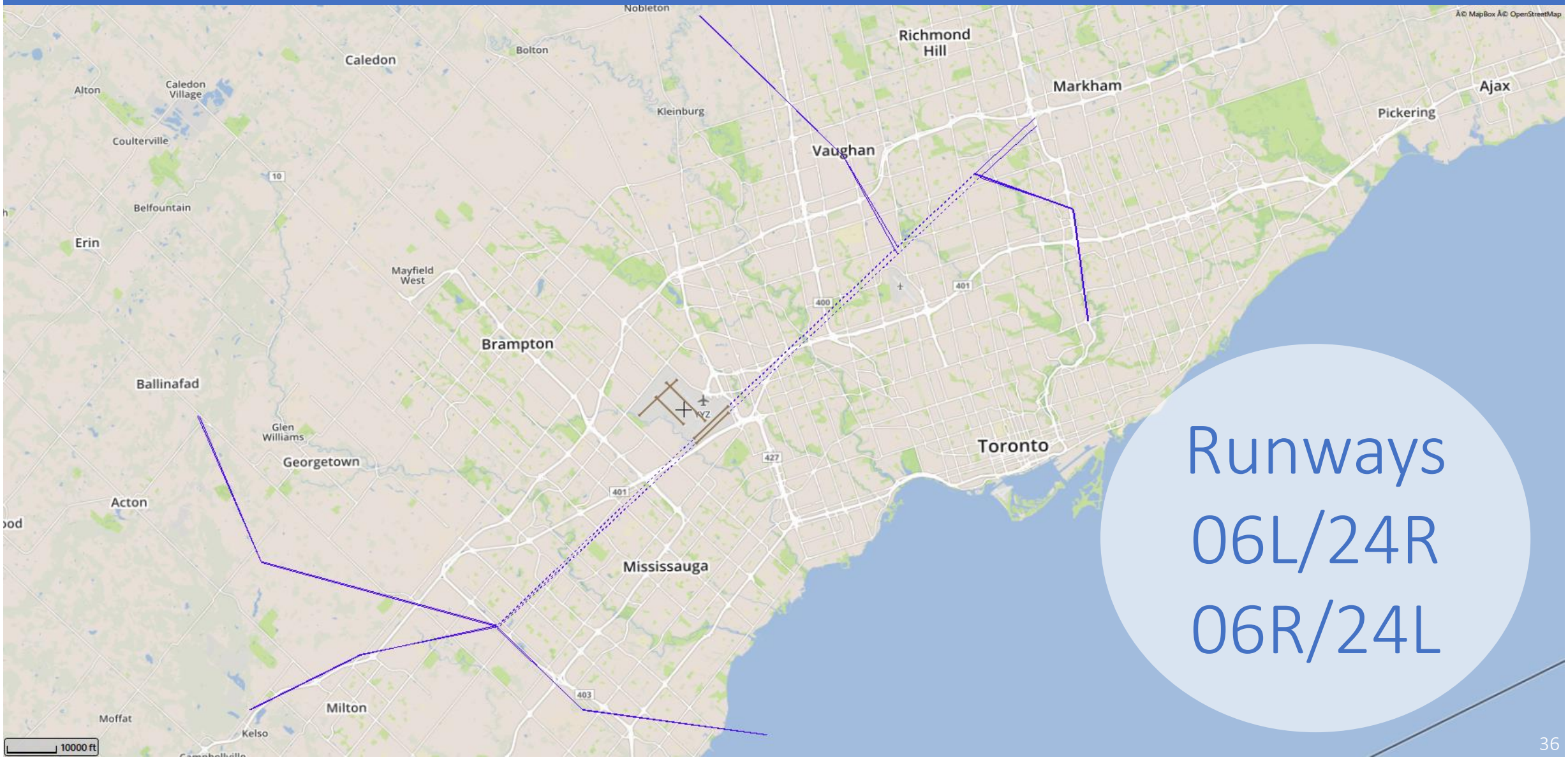
Arrivals - Runway 33L/33R

Departures – Runway 15L/15R

Nighttime Arrival Procedures – RNAV X

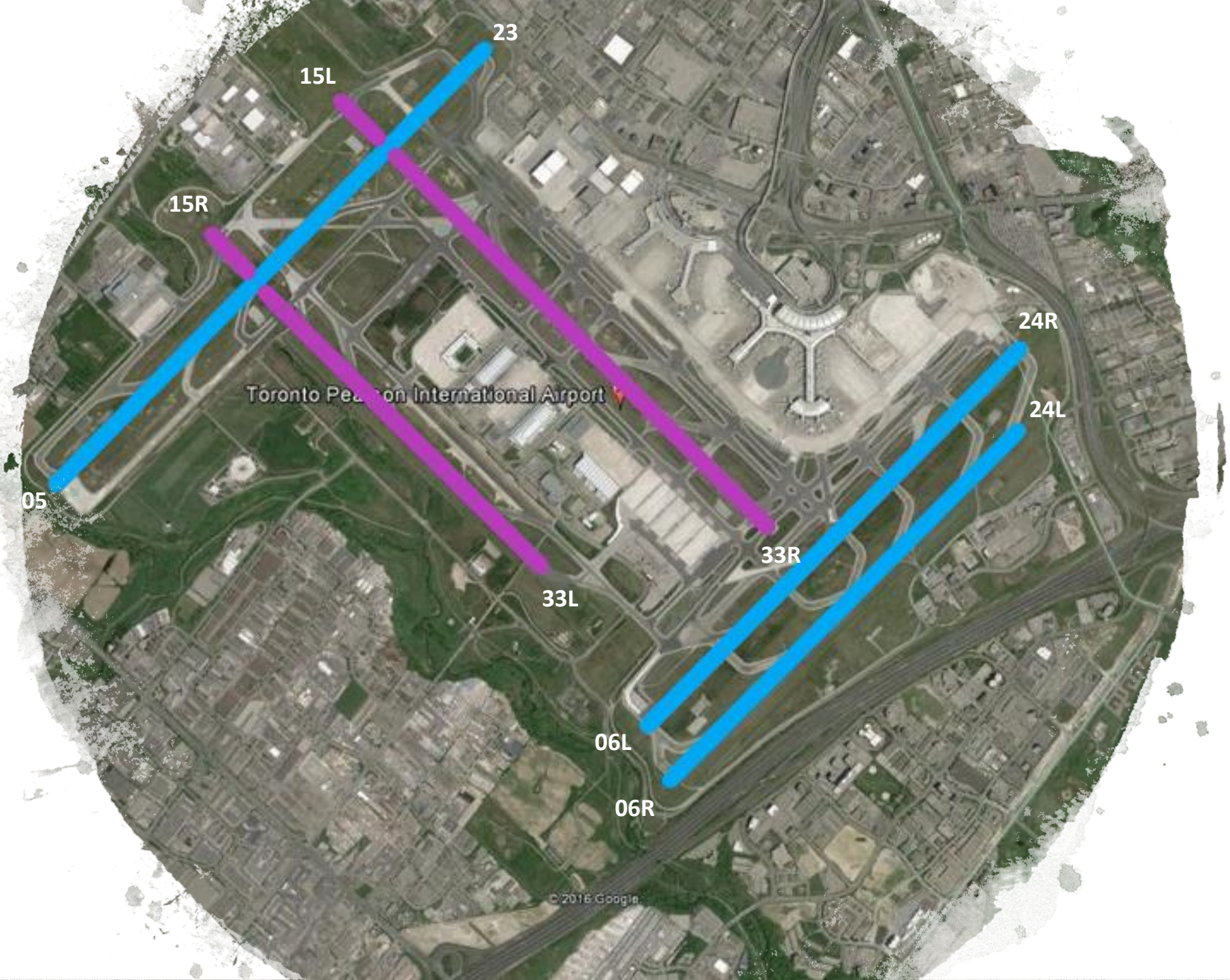


Nighttime Arrival Procedures – RNAV X



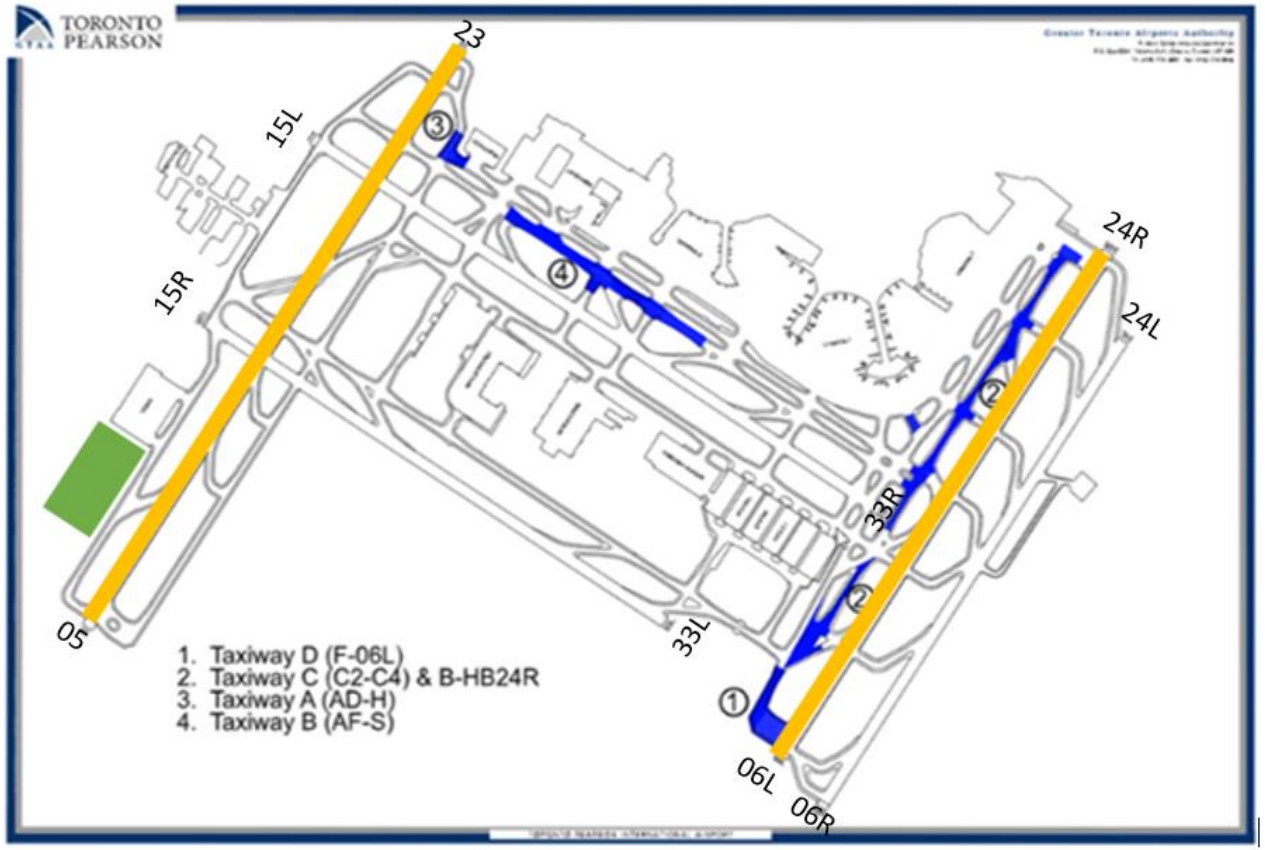
GTAA Updates

Maintenance Updates



East-West
North-South

Ongoing Maintenance Work



As we are not conducting major work and traffic levels are low, we will communicate any planned maintenance work through our website.

- Residents can find the most up-to-date information on the Noise Advisory webpage

Work is taking place on various taxiways on the airfield, which will restrict the usage of some of our runways.

- Closure of Runway 06L/24R
  - Late April to late June
  - Mid-June to mid-October

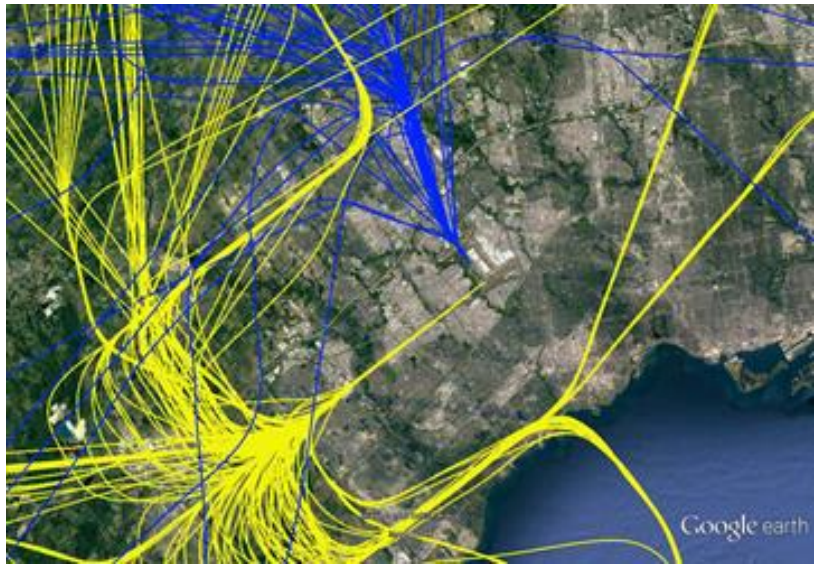
Additionally, Bombardier is constructing a new facility at the north end of Toronto Pearson's airfield (green box on the map)

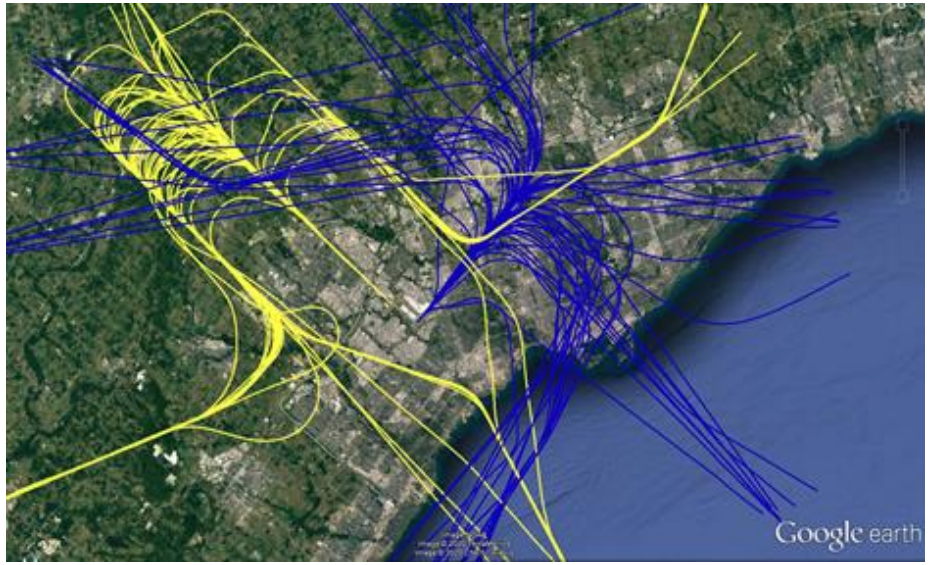
- Impact to flight operations:
- Daytime closures of Runway 05/23
  - Started on February 17, 2021
  - Set to continue until after the summer

Possible Community Impacts

- Closure of Runway 06L/24R
  - Increased use of the adjacent east/west runway on the south side of the airport, Runway 06R/24L
  - Runway 06R/24L, which has been closed during the winter months 2020-21, will reopen and be used for this traffic
  - As 06R/24L is slightly further south than 06L/24R, final approach and initial departure traffic will also be slightly further south
- Closure of Runway 05/23
  - Increased use of the parallel east/west runways 06R/L and 24L/R

Possible Community Impacts





While only one east-west runway is available during peak moments, traffic may:

- Arrive Runway 06L/R or Runway 24L/R and depart off Runway 33R
- Depart Runway 06L/R or Runway 24L/R and arrive onto Runway 15L

Noise Management Action Plan

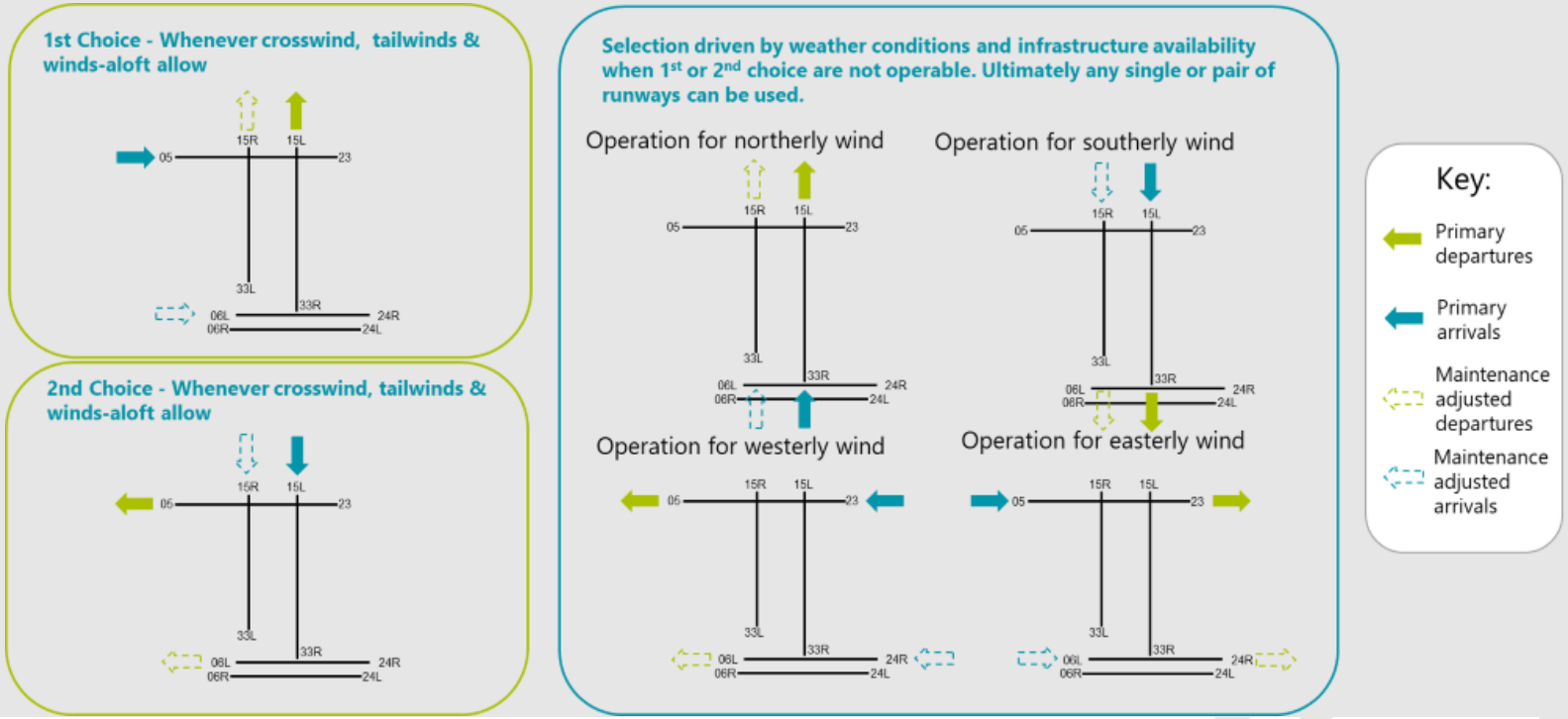
Noise Management Action Plan

- 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

Preferential Runway System Trial

Next Steps: Based on feedback received, the trial will continue until the airport reaches a new normal post-COVID

- Commitment: Review the Preferential Runway Program to ensure it meets objective to fly over the least number possible.
- What we've done:
  - Following technical analysis, proposed a new system as part of the Six Ideas
- Significant improvement in adherence with updated system – 94.2% for trial period vs. 58.3% for the same period in pre-trial
- *Reports available on our website here.*



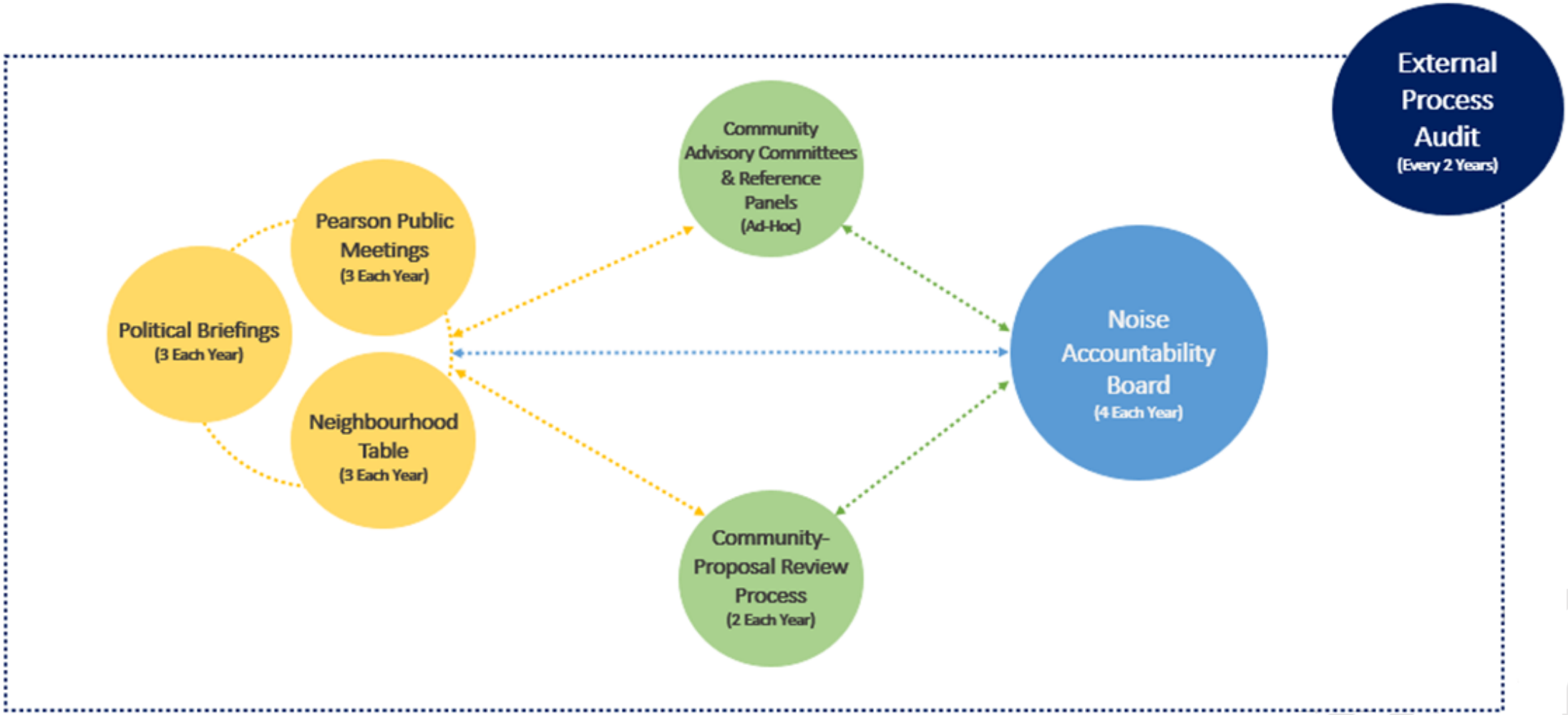
InsightFull Updates

- **Commitment: Launch a new website to help residents better understand our operations and how they are impacted**
- **What we've done:**
  - In March 2020, Toronto Pearson became the first airport in North America to launch InsightFull: airportnoise.torontopearson.com
  - From learning more about what operations are over your area to the latest operations and complaints statistics, InsightFull provides interactive and localized information
  - Over the last year, we have continued to improve the site with new content and reports including how operations and impacts have changed since COVID-19 and added quarterly reports

Updating A320 Status Information

- **Commitment: Launch a Quieter Fleet Incentive Program including an A320 family retrofit program**
- **What we've done:**
  - Audited major operators of A320 family aircraft at Toronto Pearson in 2019 on their retrofit plans
  - Quarterly and annual reports that show usage against the 2019 audit are available at torontopearson.com/nmap
  - The Q1 2021 report found:
    - Airlines continue to use retrofitted A320 aircraft for a higher proportion of operations -- 29% of A320 aircraft that operated were retrofitted, but these retrofitted aircraft performed 60% of A320 movements
    - Airlines are improving their usage of retrofitted A320 aircraft – 51% of A320 operations in 2020 were performed by a retrofitted aircraft, whereas 60% of A320 operations in Q1 2021 were performed by a retrofitted aircraft
  - Working with airlines to update the retrofit status database, so we can report retrofitted A320 usage at Toronto Pearson against the most up-to-date information

Noise Management Forums



Community Proposal Review Process (CPRP)

- **Commitment: Identify new ways for residents to provide their input and make changes to the Community Noise Environment Committee (CENAC) to ensure it meets needs/expectations**
- **What we've done:**
- Launched new Noise Management Forums in 2019
- As part of the Forums, the new Community Proposal Review Process will be a unique way for the airport to engage with noise impacted communities
- Provides residents with an opportunity submit their noise mitigation ideas and have them reviewed by industry experts
- Potential for new initiatives to further mitigate noise
- Ideas must be new (not previously considered) and meet the guidelines set by the Resident's Reference Panel (not introduce new noise over other communities)

CPRP Process & Criteria

Phase 1: Resident

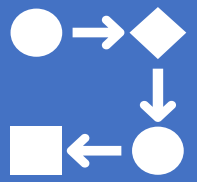
- Residents submitting ideas are responsible to complete the application questions
- Residents may be required to present on, or answer questions related to idea
- Must be a new concept and meet guidelines set by the Resident Reference Panel for noise mitigation

Phase 2: GTAA and NAV CANADA

- GTAA is responsible to administer the process and communicate with residents
- GTAA conducts first review of submissions and reviews those that pass with NAV CANADA
- NAV CANADA conducts second review. If in agreeance, submission goes forward to phase 3

Phase 3: Noise Accountability Board & Neighbourhood Table

- The GTAA will advise NAB and NT of submissions proceeding to phase 4
- Members may request additional information



Phase 4: INMB Assessment

- INMB has technical expertise to assess procedural or other technical ideas
- High level feasibility assessment - operational, safety, financial, potential effectiveness
- Incorporation into workplan of ideas passing the assessment above for further consideration
- NOTE – a pass in this phase does not necessarily mean implementation

Phase 5: Report Back

- The GTAA will report back to the proponent with the decision and details
- Included in INMB update at NAB & Neighbourhood Table meetings

Working with the Community

Out in the Community

We love to connect with the communities around the airport for ‘community coffee chats’ on a number of topics such as: Airport Operations, Art at Toronto Pearson, Wildlife Management, Noise Management, Healthy Airport Initiatives and many other topics of interest to our neighbours

Invite us for a coffee with your community group!

Pearson Airport Explorers Club Virtual Camp

Pearson Airport Explorers camps started last summer continue in 2021.

These camps continue educating and engaging kids in grades 3 – 8 on topics related to Pearson Airport and aviation.

3 camps since January with a total of 338 kids participating. Camps will continue to be held monthly.

Next Camp: April 29, 3:30 - 4:30

NAV CANADA Update

2019-12-04

NAV CANADA UPDATE

Serving a world in motion
navcanada.ca

NAV CANADA

OVERVIEW

- Currently focussed on assessment of deployment of RNP-AR
- Working with the GTAA on technical analysis
- Early consultation concepts being considered, subject to prevalent public health conditions
- Combined with new ICAO standard to deliver noise benefits
- Designed only on the north side

RNP-AR – THE PROJECT

- Leveraging RNP-AR to introduce new procedures to Toronto Pearson
- Flows out of the Helios Report
- Opportunity to reduce the need for the High-Low split
- Delivers CDO and shorter track mileage
- No changes to departures, existing RNAV procedures
- Leverages new ICAO standard

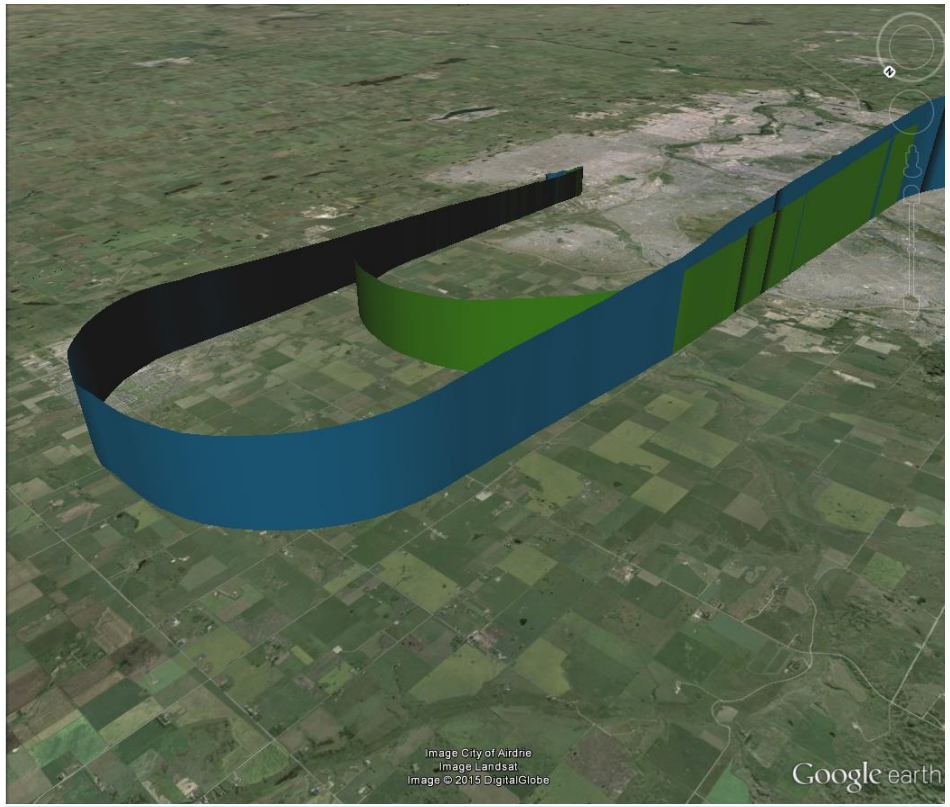
Recommendation 3A: NAV CANADA should design Required Navigation Performance Authorization Required procedures that can reduce the need for a high / low operation, taking due consideration of the location of the tracks, and proceed to consultation to facilitate implementation as soon as is practicable.

Recommendation 3B: NAV CANADA should maximise the use of the Required Navigation Performance Authorization Required (RNP AR) procedure to incentivise those airlines not already capable of RNP AR to invest, as the RNP AR approach route will offer airlines a more fuel efficient arrival route.

WHAT IS RNP?

- Required Navigation Performance (RNP) is a form of Area Navigation
- Uses the aircraft's flight management system and satellite positioning to fly a precise three-dimensional path in the sky.
- RNP makes it easier to design safe efficient, predictable routes.
- It is being used to update approach paths to airports for appropriately equipped aircraft and certified crews.
- Currently implemented at 20 Canadian airports, work in progress at another 10.

WHY IMPLEMENT RNP?



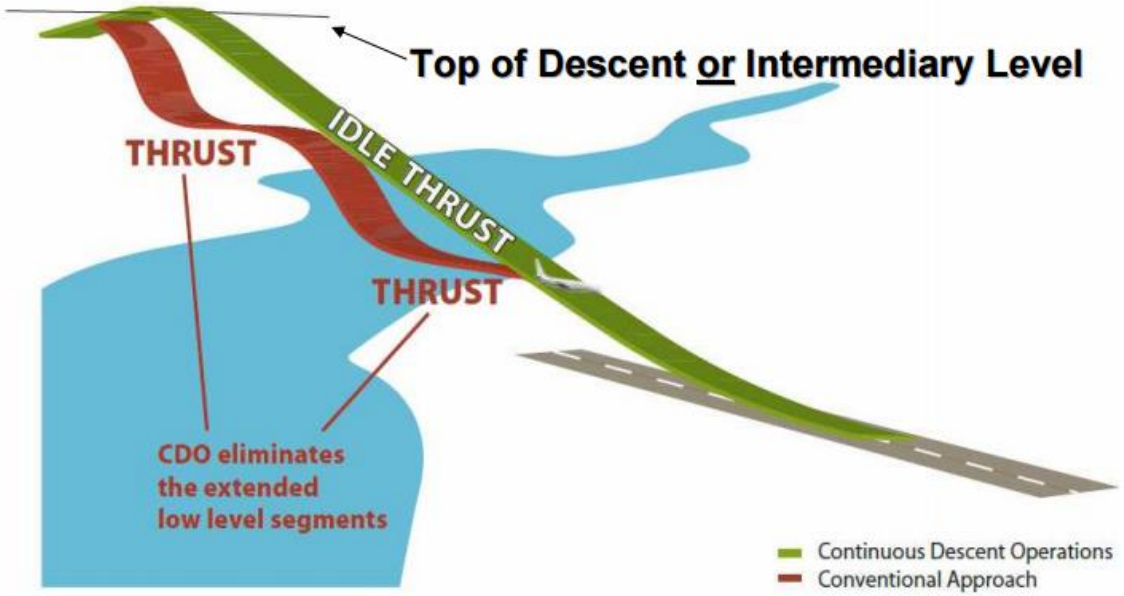
Teal: Conventional RNAV flight path
Green: Shorter RNP approach path

- Reduces track miles for arriving flights.
- Allows for a continuous descent.
- Reduces flight time, fuel burn and related greenhouse gas emissions.
- Reduces radio frequency congestion.

WHAT DOES IT MEAN FOR COMMUNITIES?

Outcomes can include:

- Less variability of flight path location for those aircraft that are equipped to use RNP.
- Better avoidance of populated areas in some instances.
- A “cleaner” aircraft profile (less increases or decreases in throttle, reduced flap use) compared to other approaches.

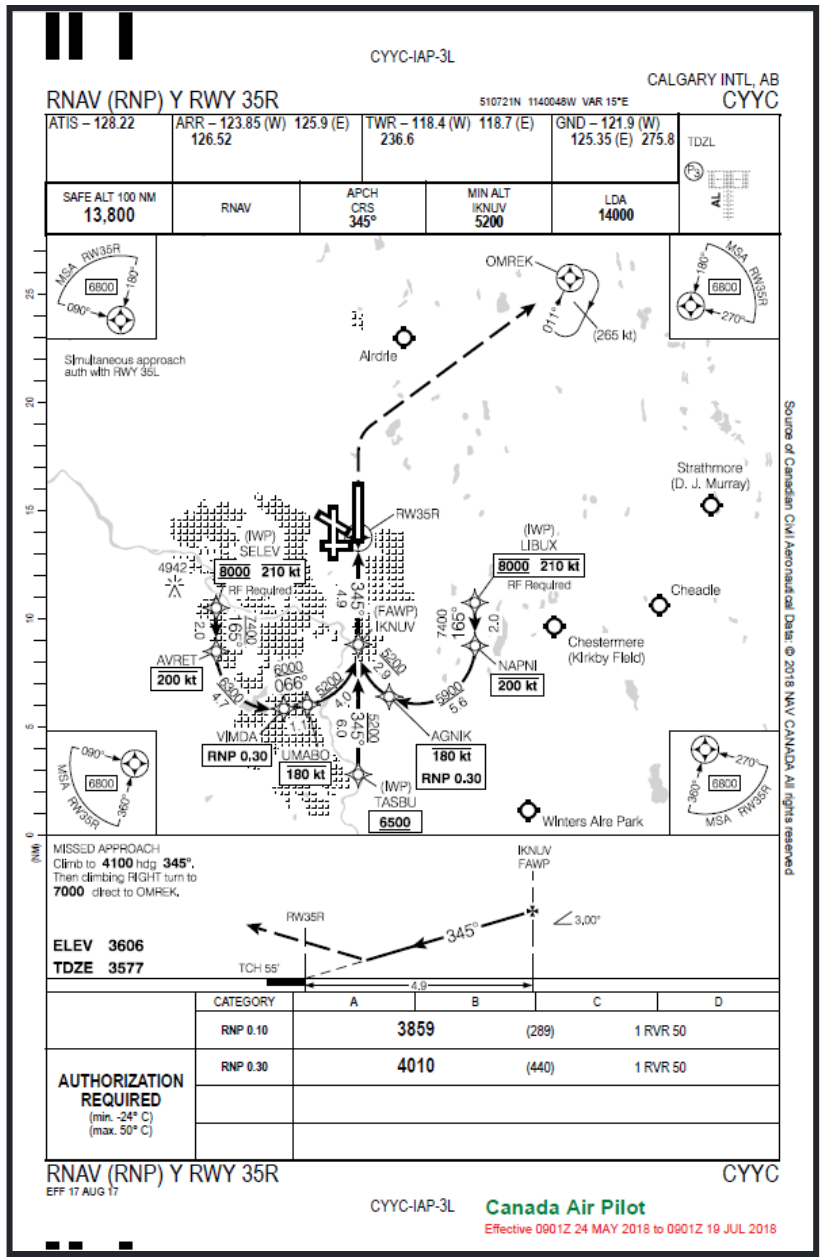


CASE STUDY: YYC

- World-First use of the new ICAO standard
- Implemented November 2018
- 35,000 procedures flown in first year
- Reductions:
  - Flight distance reduction of 250,000 nm
  - 4.1M kg of Greenhouse Gas Emissions
  - 1,400 hours of flight time

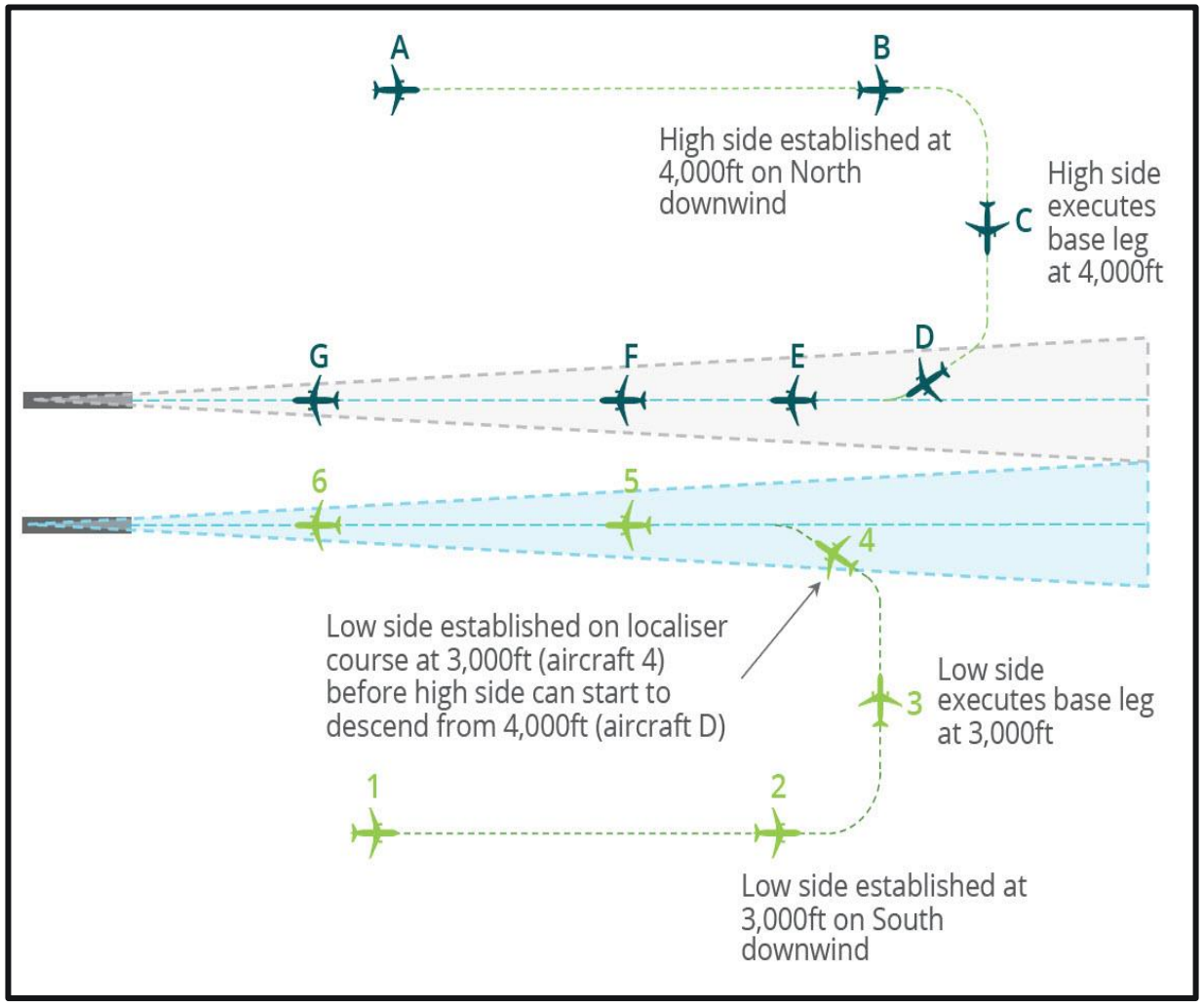
EoR – WHAT IS IT?

- New ICAO separation standard for use in Simultaneous Independent Parallel Operations
- Allows for integration of RNP AR operations into busy parallel runway operations
- Leverages the accuracy of RNP-AR approaches to remove the requirement for a ‘high side’ and ‘low side’ during independent parallel arrivals



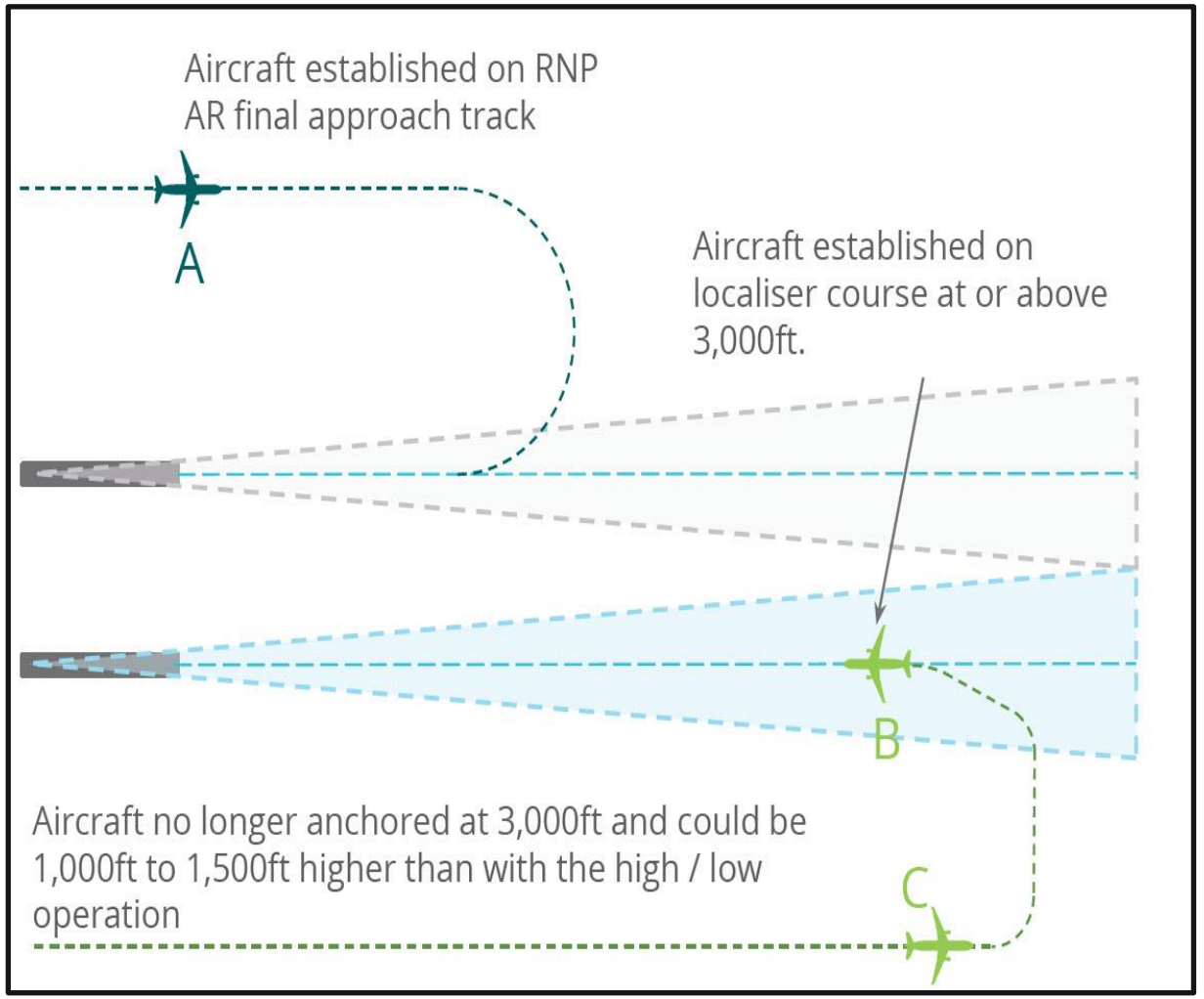
CURRENT PARALLEL OPERATIONS

- Existing simultaneous parallel operations require ATC to apply 1000 feet or 3 nautical miles separation until aircraft are established on the straight in portion of the approach
- "Low" side arrivals required to level off, increasing noise at low altitudes
- Longer downwinds required in "High – Low" ops (20-25nm final common)



EOR PARALLEL OPERATIONS

- RNP AR arrivals considered “Established” at the commencement (IWP) of the procedure
- No “High- Low” requirement between EoR and parallel runway leading to noise benefits for “Low side” downwind
- Significant reduction in mileage, fuel burn and GHG emissions



TECHNICAL ANALYSIS – OUTPUTS FOR CONSULTATION

Noise Modeling

- Single Event Contours
- Cumulative Metrics
- Threshold Metrics

Utilization estimate by transition

- Runway Utilization
- Bedpost used
- Equipage Rate

Altitudes along the procedures

- RNP-AR @altitudes

Track mile/fuel/GHG reductions

- Track mile delta
- Fuel burn savings
- GHG reductions

POTENTIAL TIMELINE

- Technical Analysis and Consultation Planning – Summer 2021
- Pre-Consultation Engagement – Early Fall
- Consultation – Late Fall 2021/Winter 2022
- Implementation – Subject to Consultation

Industry Noise Management Board Update

INMB UPDATE

Sample Recommendations

- Formation of INMB
- Develop Quieter Operations Code of Conduct
- Improve STAR profile to enable CDO and publish performance rates
- New nighttime procedures
- Supporting the GTAA's Summer Weekend Runway Alternation trials
- Install Arrival Manager (AMAN)
- Study higher glideslope
- Study point merge (long term item)

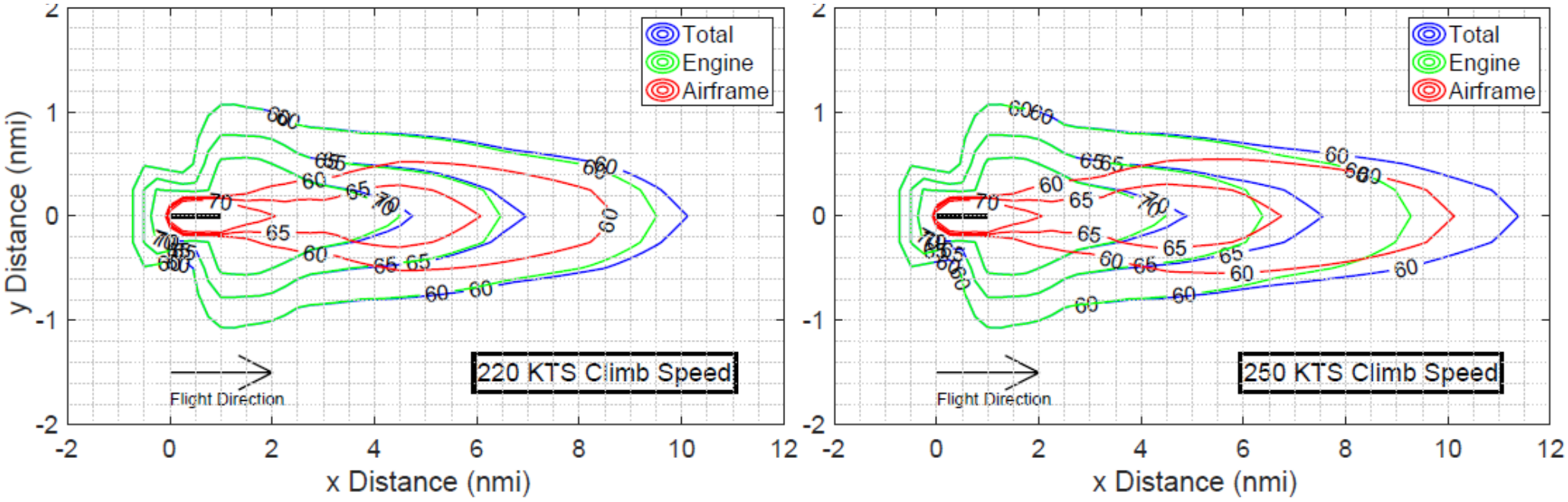
RECENT ACTIVITIES

- **Most recent meeting in March 2021**
- Examining CDO achievement and guidance with the goal of enhancing performance
- Deployment of RNP-AR
- Consideration for Role of INMB in support of Community Proposal Review Process

- **Other Activities**
- Assessment of departure concepts (current and ongoing)
- Review of Terms of Reference to reflect work beyond Helios Recommendations
- Continued monitoring for any noise mitigation concepts

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 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

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THANK YOU

Question Period

Annual Public Meeting

- Each year, in early in May, we hold an Annual Public Meeting to talk about the management, operation, and maintenance of Toronto Pearson International Airport.
- The Chair of the Board and the President and Chief Executive Officer review the year and the Chief Financial Officer gives an overview of our financial performance.
- Our next Annual Public Meeting is happening on **May 5, 2021 at 1:30 p.m**.

  More information — including the 2020 Annual Report and details on how to watch the meeting — will be provided at the link below in the days leading up to the event.

https://www.torontopearson.com/en/community/get-involved/annual-public-meeting

Thank You

Next Meeting: September 23, 2021