Calgary Alternate Jet Heading

Post-Implementation Review

A 180 day review of operations and noise impacts following implementation of the alternate jet headings off of runways 17 R and 17 L at CYYC.

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Executive Summary

In partnership with the Calgary Airport Authority, NAV CANADA commenced a trial in 2019 of alternate departure headings for aircraft departing runways 17L and 17R at Calgary International Airport (CYYC). The trial was extended several times through 2021 and 2022 due to the impact of the COVID-19 global pandemic. The trial evaluated a second set of departure headings to be applied tactically when conditions permit based on the flight plan of the departing aircraft as an alternative to those already in place that serve as the predominant departure headings. This report examines the calendar year following the implementation of the alternate departure headings.

Through increased overflight of non-residential land, we expected a continuation of a reduction in the cumulative noise exposure for many communities south of the airport, while ensuring a safe and efficient operation. The alternate headings target areas of commercial use land on initial take off and allowing aircraft to gain more altitude before they are directly above residential areas when compared to the existing heading.

Following a consultation period, all input received was assessed and considered; many residents provided feedback about the greater impact of the trial during the overnight period. Based on the overall benefits of reduced track mileage and the associated reduction in GHG emissions, permanent use of Alternate Departure Headings for departures from runways 17L and 17R should proceed but their use will be discontinued daily between the hours of midnight and 6:00 a.m. (0000–0600) local time.

NAV CANADA continues to collaborate with the Calgary Airport Authority and the Airport Community Consultative Committee on aircraft noise topics, including those that were raised during the consultation.

Context

This post implementation report comes following the publication of the final Airspace Change Community Consultation Report which is found here.

As a part of the process, NAV CANADA committed to a Post Implementation Review that examines the 180 days following implementation of the alternate departure headings – and any changes that came as a result of the consultative process, going beyond that commitment, this review looks at the calendar year from September 2022 – September 2023.

What changed

Here is a brief overview of the alternate departure headings which were implemented. outline of the actual change. For a much more detailed description and accompanying visual aids, please consult the (link above).

In addition to existing headings for departures, the trial evaluated a second set of headings to be applied tactically when conditions permit as shown in Figure 3 below. Air traffic controllers will be able to assign heading 135° for departures from runway 17R and heading 185° for departures from

runway 17L based on the flight plan of the departing aircraft. The track of aircraft varies depending on factors such as aircraft type/performance and atmospheric conditions like wind.

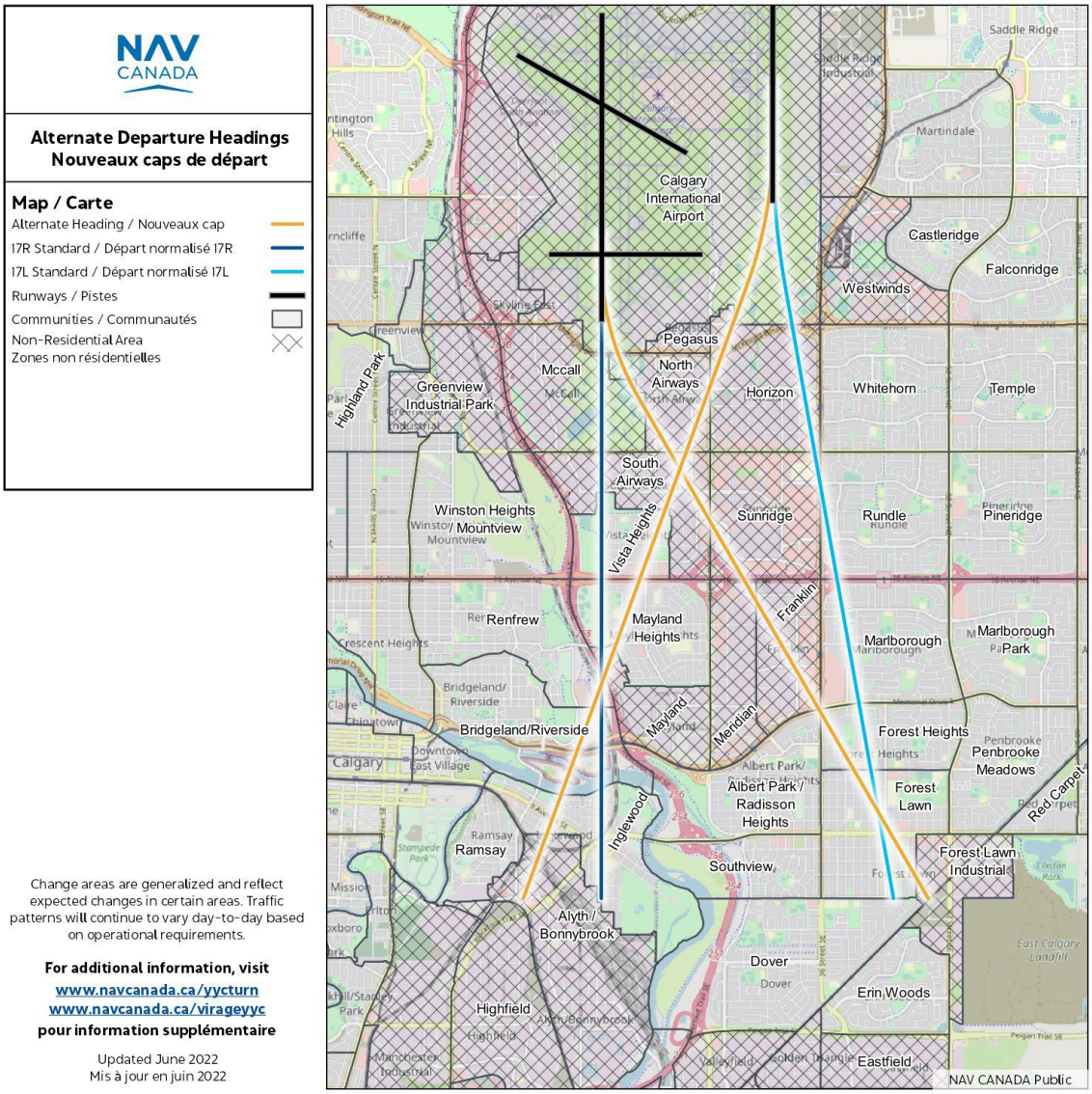


Figure 3: Alternate departure headings

Aircraft departing runway 17R heading toward eastern destinations were more likely to utilize the new heading (turning left on departure). The alternate heading for 17R provides community noise benefits by targeting commercial use land on initial take off and allowing aircraft to gain more altitude before they are directly above residential areas when compared to the existing heading.

Aircraft departing runway 17L heading toward western destinations were more likely to utilize the new heading (turning right on departure). The alternate heading for 17L also results in aircraft over commercial use land on initial take off. Since the runway is further north compared to 17R, aircraft will gain more altitude before they are directly above residential areas that would typically observe departures from 17R.

Operational Feedback and Usage

According to NAV CANADA staff at the Calgary Tower, this initiative has “achieved everything we’ve expected and anticipated it would do for us. In certain traffic scenarios, controllers are able to

reduce operational complexity which in turn increases safety and efficiency. This is achieved all while containing aircraft noise within the prescribed corridor."

CYYC RWY 17R/17L Jet Alternate Headings

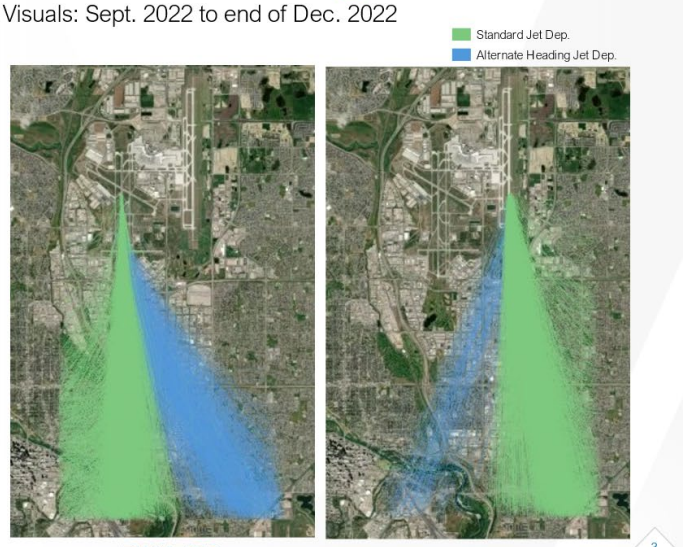
Results: Start of Sept. 2022 to start of Sept. 2023, Visuals: Sept. 2022 to end of Dec. 2022

Percent (%) on Alternate Headings

Criteria

- Jets
- Between 0600 and 0000
- Start of September 2022 to start of September 2023

RWY	Pre-Trial Estimate	Actual During Trial	Actual Sept 2022 to 202
17R	30-50%	27-49%	27-45%
17L	5-10%	3-11%	3-10%



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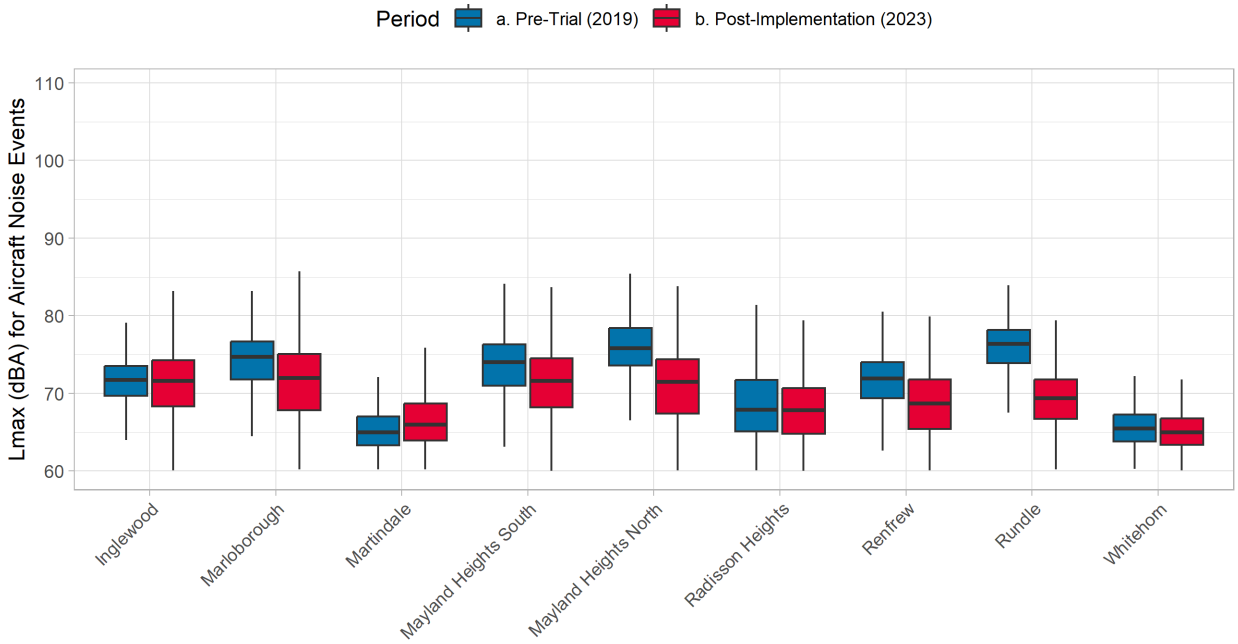
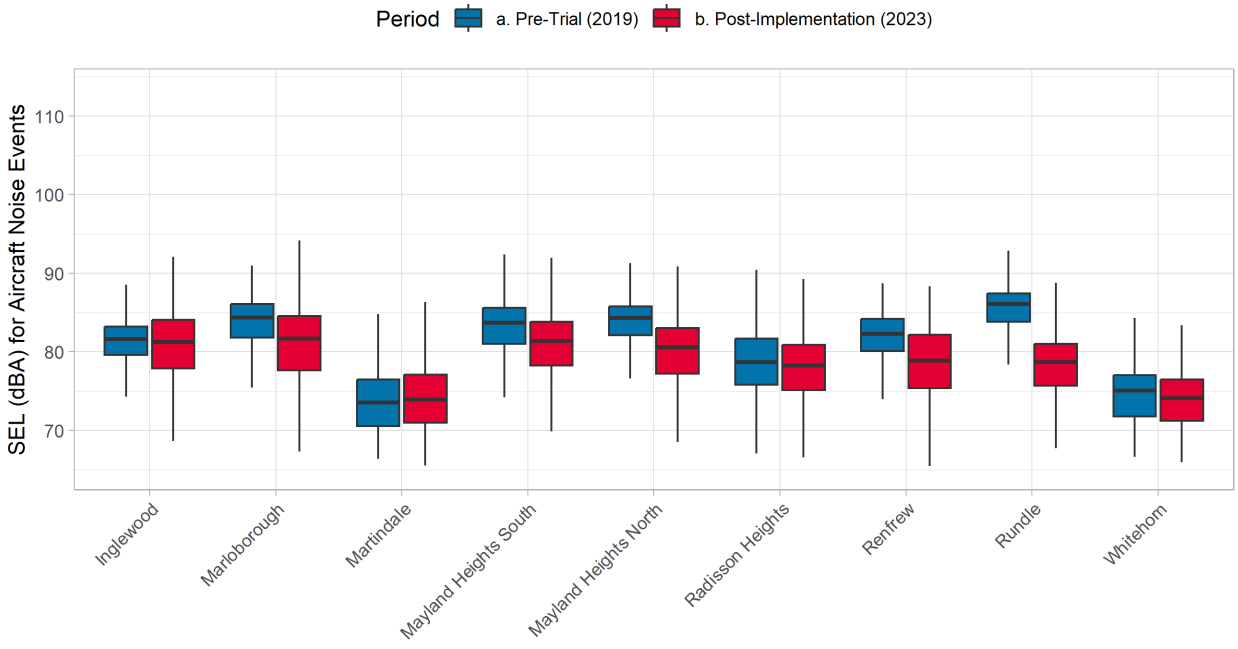
Noise Update

Here are some statistics provided by the Calgary Airport Authority. These graphics display measured noise levels in neighbourhoods affected by the alternate jet headings.





The goal of this initiative was to equalize and lower noise in the neighbourhoods listed in the preceding graphics. As you can see, both in terms of SEL and Lmax (two differing forms of noise measuring[i]), we have a decrease in measured noise levels when comparing pre-trial and post-implementation numbers.

Conclusion

Overall, utilization rates and measured noise levels are in line with those communicated during consultation, with both operational and environmental benefits being realized. Analysis of the procedures show that many aircraft are flying procedures that better avoid populated areas where feasible, while the quantity of complaints attributable to the changes have been low.

[i] https://www.fhwa.dot.gov/Environment/noise/resources/fhwahep17053.pdf