

THE REGIONAL MUNICIPALITY OF DURHAM

Pickering

Airport Study

Why Invest in Pickering?

Project Number: 60562615

May 2018

Regional Municipality of Durham

Pickering Airport Study

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1. Introduction

The Greater Golden Horseshoe (GGH) is one of the largest regions in North America and one of the most popular places to live, travel for leisure, and conduct business operations. The GGH population is expected to grow from 9 million today to more than 13.5 million people in 2041. The GGH is also an important economic engine, generating one quarter of Canada's Gross Domestic Product (Ontario Ministry of Municipal Affairs and Housing, 2018). The successful development of the GGH relies, in part, upon an efficient and effective air transportation network that connects the GGH to surrounding regions and countries around the world.


Lester B. Pearson International Airport (Pearson) is a key component supporting the GGH's air transportation network. Pearson is expected to serve 85 million passengers by 2037, up from 47 million today (Greater Toronto Airports Authority, 2017). However, by the early 2040s, air travel demand in the GGH is expected to exceed 100 million passengers annually. As a result, notwithstanding planned investment at Pearson, the GGH's airport capacity will soon be facing a capacity shortfall.

Given these circumstances, the federal government responsible for airport capacity in the GGH must decide between two courses of action:

1. Maintaining the status quo in terms of planned airport capacity and governance;
 2. Enabling the development of a multi-airport system to accommodate additional demand and to support improved global air connectivity and associated economic development opportunities for the GGH.
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Under the status quo, passengers facing crowded facilities and fare increases are likely to fly less, resulting in significant economic losses to people travelling in the GGH. Congestion at Pearson may also make the airport less attractive to airlines, which may relocate routes to other airports, compromising air connectivity of the region and the status of Pearson as a major global hub.

The second option consists of developing a multi-airport system comprised of Pearson as the primary airport and of the emergence of a second airport acting as a reliever to Pearson. Under the appropriate business model, this system may not only provide the much needed capacity relief, it could also increase the attractiveness of the GGH for investors and creative talent. Increasing air connectivity could also improve the



competitiveness of local businesses through improved service quality and frequency as well as lower fares.

The Region of Durham is seeking to advance the case for an airport investment at the Pickering site to meet future demand for air travel. Pickering presents clear advantages as a successful secondary airport for the GGH and as an employment hub by virtue of its size and strategic location in close proximity to Pearson and to downtown Toronto.

Studies commissioned on future aviation capacity in the last decades have concluded that the Pickering Lands should be kept and protected for future aviation needs. These studies have not, however, clearly articulated all alternatives available to decision makers, such as regulatory/business models, strategic directions for investing in the airport, and the implications for the economy and competitiveness of the GGH.

This report articulates the strategic rationale for proceeding with a Pickering airport investment and highlights the urgency of taking action in order to address looming airport capacity constraints as well as critical competitiveness issues for the aviation sector and the economy of Southern Ontario.

The report specifically addresses the following questions:

- What are the economic implications of maintaining the status quo relative to enabling the GGH and Southern Ontario to develop into a global multi-airport system?
- Why is a new airport at the Pickering site superior to other alternatives for handling the excess commercial traffic at Pearson?
- What is the most suitable business model for the operations of the new airport? What are the additional economic gains associated with that model for the GGH?
- What are the aviation services suitable to Pickering airport?
- Why does enabling development of airport lands for industry clusters alongside the new airport represent opportunities to improve the GGH region's competitiveness?
- What are the timelines and steps required to further fortify the case for the development of a greenfield airport in Pickering and why is it important that a federal announcement is made now?



2. Airport Capacity Constraints and Options

Demand for air travel in Southern Ontario has been rising rapidly in the last decade. The total number of annual passengers enplaned and deplaned at international airports in the GGH grew 6.6% per year between 2010 and 2016 from 32.4 to 47.6 million, with Pearson handling over 93% of the traffic (Statistics Canada, 2018; Hamilton International Airport, 2017; Region of Waterloo International Airport, 2017).

Demand for air travel is expected to continue rising over the next several decades. The 2017 Pearson Master Plan (GTAA, 2017) projects 71 million passengers in 2030 at Pearson alone, as compared to the 63 million anticipated that same year in the 2008 Master Plan. The revised forecasting model assumes a 3.1% average annual growth rate based on accelerated population growth as well as economic and demographic factors, which affect demand for air travel.

Applying the 3.1% growth rate to the current demand for air travel in the GGH suggests that demand for commercial passenger traffic could reach 110 million passengers by 2043. By contrast, information retrieved from the most recent master plans for Pearson, Billy Bishop, Hamilton International and Region of Waterloo International airports indicate that the Southern Ontario airport system will be able to accommodate approximately 90 million passengers in the late 2030s, resulting in a 20 million passenger capacity shortfall before the mid-2040s (GTAA, 2017; Ports Toronto, 2017; Hamilton International Airport, 2017; Region of Waterloo International Airport, 2017).

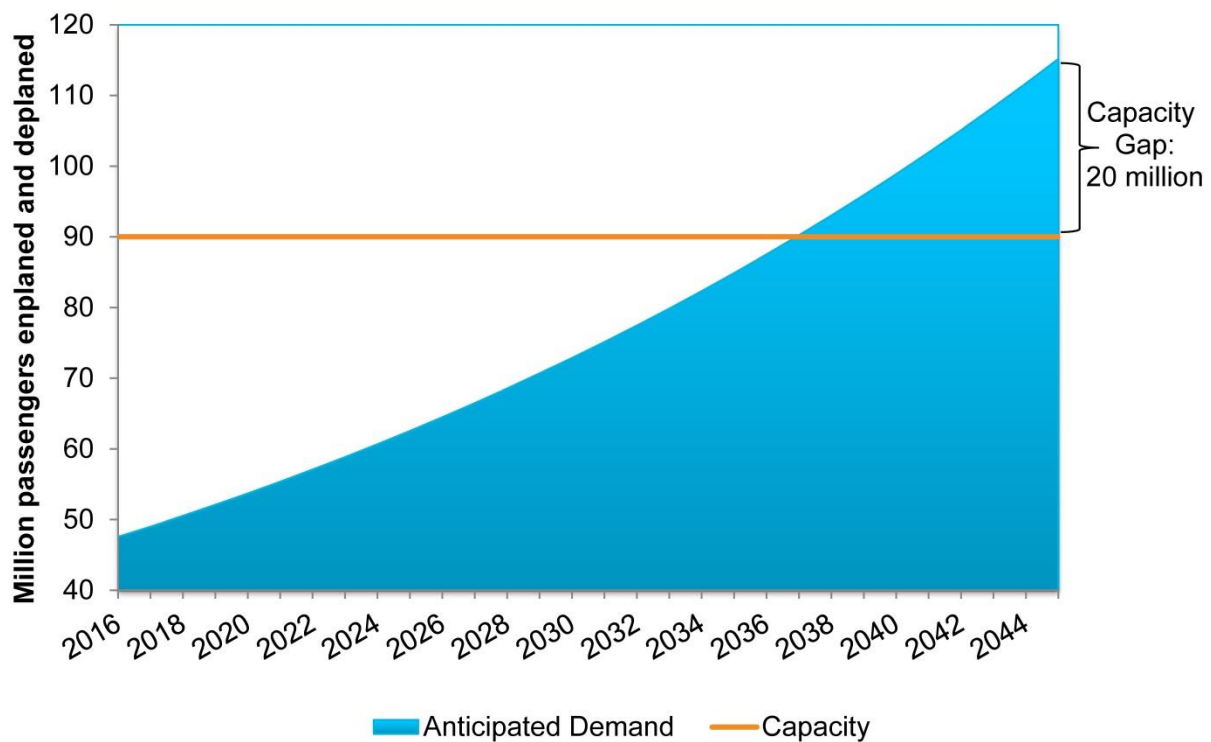
In addition to the passenger capacity gap, the rapidly growing population in the GGH will place additional strains on belly/mixed cargo, freighters, and integrated cargo logistics. Cargo shipments are expected to grow 4.1% annually over the next two decades from 450,000 tonnes today to close to one million tonnes in 2037. While the existing cargo and courier infrastructure at Pearson and Hamilton International airports can serve the western portions of the GGH, there will be raising needs to accommodate freight shipments originating from the northern and eastern portions of the GGH.

General aviation is also expected to grow, specifically by 1.6% per year to 240,000 movements by 2032 (Transport Canada, 2012). The 2017 Pearson Master Plan (GTAA, 2017), also highlights growing needs for secondary airports offering flight training. Meanwhile, the long-term availability of general aviation facilities in the GGH is uncertain. For example, Oshawa Executive Airport has noise restrictions due to the

surrounding residential development and has runway capacity constraints. Billy Bishop is slot-controlled with a majority allocated to airlines. There is thus likely to be a growing need in the near future for facilities that can act as a corporate aviation reliever and a training ground.

Figure 1 shows the unconstrained forecast demand for passenger movements in the GGH relative to currently planned airport capacity.


Figure 1: Unconstrained Demand for Air Travel and System Capacity Comparison



Sources: Greater Toronto Airports Authority, 2017 and 2015; Ports Toronto, 2017; Hamilton International Airport, 2017; Region of Waterloo International Airport, 2017.


There is little doubt that the GGH and Southwestern Ontario’s airport system will reach capacity in the near future. However, multiple factors influence the timing at which the GGH will reach capacity.

1. In order to achieve its planned capacity, Pearson will need to cease many short-haul flights (e.g., Toronto-London) (GTAA, 2017). In practice this is a carrier



decision, however, as slots become more difficult to obtain and expensive, airlines may well decide to abandon some of their less profitable routes at Pearson and look for alternatives in the GGH or elsewhere. Hence, the need to accommodate short-haul flights will arise much sooner than the anticipated airport system capacity shortfall.

2. Additional capacity may also be required long before capacity is reached due to peak period congestion and the growing impacts of climate change. For instance, the 2017 Pearson Master Plan indicates that capacity at the airport may be significantly reduced during hot summer days when aircraft are restricted to less weight than usual to be able to take off and hence can carry fewer passengers.
3. Airports in the proximity of U.S. border crossings such as Buffalo/Niagara Falls, NY could accommodate a portion of the excess demand in the GGH. The magnitude of the shift will depend on exchange rate fluctuations, relative prices and access times to airports for Canadian travellers. However, travellers departing from these airports may sustain longer access driving times and distances contributing to increased greenhouse gas emissions.
4. Technological advances may defer the year in which additional capacity is needed as they will allow airports to accommodate a greater number of passengers in existing facilities (i.e., self-service check-in and bag drop, more efficient security screening and border control processes, etc.)(GTAA, 2017). Some of these advances have already been implemented at Pearson, but there may be room for further efficiency.
5. Future alternative surface transport systems such as High Speed Rail (HSR) or High Frequency Rail (HFR) may potentially divert some short-haul trips. The 2011 feasibility study for the Quebec-Windsor HSR forecasted more than 10 million passengers in 2031, of which close to one million would divert away from air travel (MTO, 2011). This shift may delay the need for additional airport capacity by a few years; however, it does not remove the need to provide additional aviation capacity since it will not address many of the key drivers for aviation growth at Pearson such as growing demand for connecting passengers.



The federal government responsible for airport capacity in the GGH have two alternatives to address the looming airport capacity constraints:

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1. Maintain the status quo in terms of planned airport capacity. Given the anticipated airport capacity constraints in the GGH discussed above, the status quo would mean that excess demand for air traffic is either suppressed or redistributed to other airport hubs outside the GGH and possibly to other emerging modes of travel.
 2. Enable the creation of an integrated network of airports, with Pearson remaining the primary airport and with the emergence of a secondary airport to handle excess traffic. The 2017 Pearson Master Plan supports this scenario, stating that “over the next 20 years we expect other regional airports in Southern Ontario to serve some of the needs Pearson currently accommodates.”(GTAA, 2017)
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The next section presents an estimate of the economic costs associated with the status quo.



3. The Economic Costs of the Status Quo

If the status quo prevails in terms of airport capacity in the GGH, this will entail substantial economic costs, which in turn will translate into reduced competitiveness for businesses in the region. These economic costs depend on:

1. the number of air travellers that are unable to fly to their destination; and
2. the difference between the values they attach to those flights (i.e., their willingness to pay for them) and airfares.


The status quo is defined as a scenario in which there is no increase in airport capacity over and above the improvements already proposed in the recent Master Plans for Pearson, Billy Bishop, Hamilton International Airport and Region of Waterloo International Airport. Based on the air travel demand projections discussed in Section 2, this would lead to a capacity shortfall by the early 2040s.

By 2042, air travel demand is expected to exceed the airport system capacity (90 million passengers) by 15 million passengers. This is the number of air travellers that will be unable to fly to their destination from or to the GGH.

The second component of the economic cost is the difference between the value that the above travellers attach to the flights they are unable to take (i.e., their willingness to pay for those flights) and prevailing airfares. Based on the slope of the demand curve for air travel, the willingness to pay for a typical flight is up to \$257 in 2017 dollars while the prevailing airfare is \$230.¹ The difference between these two values represents the economic loss for air passengers unable to fly due to airport capacity constraints. This loss amounts to \$202.5 million for the 15 million passengers that are unable to fly in 2042.

In practice, passengers may not suffer the full loss if they are able to make other arrangements which are similar in cost and service quality, such as using another mode of travel for a short-haul flight. Yet, given the high value of time of air travellers and the

1. The slope of the demand curve is derived using the price elasticity of demand, which measures the sensitivity of the demand for air travel to changes in airfares when other influences on demand are held constant. It is represented by the percentage change in quantity demanded resulting from a given percentage change in fare. The analysis assumes an elasticity of -1.4 based on InterVISTAS (2007).



longer travel times associated with surface travel options, it is unlikely that economic losses can be mitigated significantly.

As demand approaches and exceeds capacity, this can provide airlines with an opportunity to raise airfares as a way of pricing off excess demand for air travel without actually losing business (since they are capacity constrained). This is especially likely on direct flights to and from congested airports as opposed to connecting flights, which are more valuable for carriers.

If airlines raise airfares by the full amount required to price off the excess 15 million passenger demand, airfares would need to rise by 12% to \$257.²


As a result, the remaining 90 million passengers who are able to secure a seat are now worse off or out of pocket by an additional \$2.4 billion in that year. This represents the loss that air travellers would bear if higher fares are used to ration excess air travel demand. Given the prevalence of yield pricing (i.e., charging different fares to different customers in order to maximize profit) in the airline industry, this is a plausible scenario (barring economic regulation of airfares). Appendix A provides a detailed description of the approach supporting this analysis.

In addition the GGH is also likely to suffer losses in competitiveness for local businesses that go beyond to the losses in air traffic demand and reduced global air connectivity. Failure to relieve the airport capacity constraint will lead to increased airport congestion (airside and landside), a higher incidence of travel delays, and a reduced ability to recover from weather events and other disruptions and higher airfares (as carriers take advantage of the excess demand to raise prices). These adverse impacts are similar to those experienced at London Heathrow airport over the last few years (see box on the next page).

The impacts for Southern Ontario can be further described as follows:

1. As Pearson becomes more congested, airlines may face additional crew and operating expenses due to the increased incidence of delays, which are likely to be transferred to passengers. Delays are magnified when the airport experiences constraints due to weather events as the capacity of the airport to recover is limited if infrastructure is fully utilized.

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2. The change in airfare is also estimated using an elasticity measure of -1.4. This elasticity measure is said to be elastic, which means that relatively small increase is required to price off the excess demand for air travel.

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2. Passengers facing crowded facilities, fare premiums and difficulty finding seats may decide to travel from/to other regions, use an alternative mode of travel, or reconsider travelling altogether.
 3. Congestion may increase on local infrastructure including roads and ground transportation systems, imposing additional access times for travellers and further exacerbating the productivity losses of travellers.
 4. Valuable air travel activity, such as interlining traffic, may divert to other airports in other regions. Interlining traffic supports services to more destinations and greater frequencies. As airports become more constrained, airlines are likely to drop connection-heavy routes in favour of routes with high point-to-point demand. In other words, airlines may offer more flights but fewer destinations. This would affect Pearson's hub status adversely relative to hub airports in Canada and the U.S.

Investment in additional capacity is thus required to minimize delays and losses of potential services as operations continue to grow and the region reaches capacity.

However, many questions remained to be answered. Where should the infrastructure investment occur? What business model delivers the best value for money for the region? What types of aviation services are amenable for transfer to a secondary airport? The next section explains why Pickering is the superior option for developing a secondary airport for Southern Ontario.

Adverse Impacts of Capacity Constraints at London Heathrow Airport

London Heathrow Airport has been at capacity for over a decade now. The Greater London Area has been able to postpone investment in additional runway capacity over those years, suggesting that airport capacity can be increased with innovation and investment (e.g., with larger aircraft). However, the negative effects of constrained airport capacity are now starting to materialize. “Heathrow has been effectively full for many years, and Gatwick is operating at more than 85% capacity and is completely full at peak times. This makes it more and more difficult for airlines to operate efficiently, particularly long-haul carriers who are reliant on the high volumes of demand that can only be achieved at the country’s biggest airports. The resulting delays, cancellations and unreliability cause frustration and have a direct economic impact on airlines and their passengers, and ultimately on UK productivity” (London Airports Commission, 2015).

The most noticeable impacts associated with airport capacity constraints in London include the following:

1. Capacity constraints affect the extent to which airlines can serve demand. As slots become scarce, domestic services get priced out by more profitable long-haul routes, impacting the potential growth of the economies of neighbouring regions, particularly the North of England and Scotland. In 2012, the average price of a direct flight to or from Heathrow was more than three times that of nearby Gatwick. Moreover, while traffic forecasts indicate that Heathrow should have handled nearly 15 million more passengers than it did in 2013, other airports in the region captured only about half of the excess demand (McKinsey. N.D.). The London Airports Commission (2013) suggested that failing to alleviate capacity constraints could cost users up to £20 billion over the next 60 years.
2. Airports operating at capacity are less resilient during adverse weather events. Heathrow Airport suffered 60 days of delays due to inclement weather conditions whereas Gatwick suffered no such incidents as they were able to use their spare capacity to recover from delays (CAA, 2009).
3. Airport capacity constraints also impact the extent to which airlines can serve demand and create significant barriers for new carriers attempting to enter the market, putting pressure on the level of fare particularly in the long-haul market.
4. Capacity constraints have an impact on the UK’s connectivity. “With no room for additional flights at Heathrow and less and less capacity available at Gatwick, long-haul connections are increasingly focused on the most profitable routes, preventing the development of new links to emerging markets and affecting UK business growth and productivity in those regions. Heathrow’s status as an international hub for aviation is also being eroded. To be able to grow its route network it needs to attract significant levels of international transfer traffic to supplement local demand. But declining domestic connectivity, pressures on fares and limited resilience are causing difficulties for the airport in attracting these transferring passengers” (London Airports Commission, 2015).



4. Why is Pickering Superior to Other Options for a Secondary Airport?

The Pickering site lands were acquired by the Government of Canada and protected for the provision of future airport capacity in the GGH. The designated lands are a desirable location to develop a secondary airport along with an employment and innovation corridor on the surrounding lands. However, this alone is not enough to explain why an investment at Pickering is superior to other locations for developing a multi-airport system for the GGH and Southern Ontario.


The 2011 Needs Assessment Study prepared by the GTAA identified the following features in order for an airport to serve as a secondary airport in a Southern Ontario multi-airport system:

- Facilities to accommodate 10+ million passengers and potential for expansion
- Proximity to market
- Groundside access and connectivity to downtown Toronto and Pearson
- Limited aircraft noise impacts and curfew

A review of current master plans and individual airport characteristics suggests that without major expansion, the existing airports serving commercial traffic cannot accommodate all the expected demand for air travel in the GGH or serve as a second airport either due to limitations to expansion (i.e., Billy Bishop) or proximity to Toronto downtown (i.e., Hamilton and Waterloo).

Billy Bishop Toronto City Airport (Billy Bishop): Located adjacent to downtown Toronto, Billy Bishop is the only airport with scheduled service east of Pearson. In 2016, the airport served 2.7 million passengers (Ports Toronto, 2017). The Toronto Port Authority's 2012 Master Plan indicates that the airport has a capacity of 140,700 annual movements, which corresponds to approximately 4.2 million passengers annually, based on current loading factors.

According to the Toronto Port Authority (2012), Billy Bishop is close to reaching this capacity. Activity increases beyond this figure could likely only be achieved if additional movement slots were allocated to the airlines (air carrier operations are currently limited



to 202 movements per day). Billy Bishop also has a curfew that is strictly enforced and prohibits commercial aircraft movements between 11:00 p.m. and 6:45 a.m. (Ports Toronto, 2017).

John C. Munro Hamilton International Airport: This airport served 333,000 passengers and 438,924,000 kg of cargo in 2016 (HIA, 2017). The airport has a passenger terminal capacity of 1.5 million, leaving spare capacity to handle excess demand at Pearson. However, the airport attracts limited passenger services due to its distance from downtown Toronto (80 km driving distance). Over recent years, Hamilton attracted increasing cargo volumes, specializing in cargo/courier, likely due to night flight restrictions at Pearson. Lastly, the airport is situated on approximately 568 hectares (1,404 acres) of land owned by the City of Hamilton. Additional lands would be required, which would have cost and potential expropriation implications, which is both time consuming and contentious.

Region of Waterloo International Airport: The existing terminal at Waterloo Airport has an annual capacity of 240,000 passengers and the 2016 passenger numbers were approximately 130,000. The Airport sits on approximately 1,000 acres of land in the southern Woolwich Township (Region of Waterloo International Airport, 2017). Located more than 100 km away from downtown Toronto, the airport is too far from the Toronto market to serve as a second passenger airport.

None of the existing airports can be developed to act as a secondary airport for the region. Alternatively, the Pickering Lands present clear advantages as a successful secondary airport for the region and as an employment district by virtue of its size, features and strategic location.

Facilities to Accommodate 10+ Million Passengers

The Government of Canada has preserved 9,600 acres of land for the establishment of an airport at the Pickering site. The site is more than sufficient to construct up to three runways; one of them over 3,000 metres long. This would provide the airport with the flexibility to engage in various aviation activities from catering to smaller airplanes/jets to larger aircrafts, making it a truly versatile operation.

Transport Canada is currently updating the Pickering airport site designation and Zoning Regulations. These regulations aim to ensure land use and development adjacent to and in the vicinity of the airport site does not interfere with safe aircraft operations (Transport Canada, 2018).



Innovative and Sustainable Operations

Developing a greenfield airport within the GGH is a major undertaking. However, starting from scratch also provides unique benefits in terms of being able to develop a more sustainable airport terminal and improved connectivity to the adjacent employment and innovation corridor and the GGH as a whole.

With today's advancements in technologies, a greenfield airport development provides the opportunity to develop innovative and enhanced facilities that can achieve higher processing and efficiency rates than older facilities. Higher efficiency would in turn benefit the companies and end users from a logistical and revenue standpoint.

A new innovative and sustainable airport can also increase efficiency in resource and energy consumption, reduce waste, improve liveability around the airport site, and enhance engagement with the local community.

Proximity to Market, Groundside Access and Connectivity

The site is located close to growing markets in the eastern and northern regions of the GGH/Southern Ontario, which are not currently served by an international airport. The population of the GGH is expected to grow to approximately 13.4 million by 2041 with the Regional Municipality of Durham accounting for almost 1.2 million (Government of Ontario, 2016).

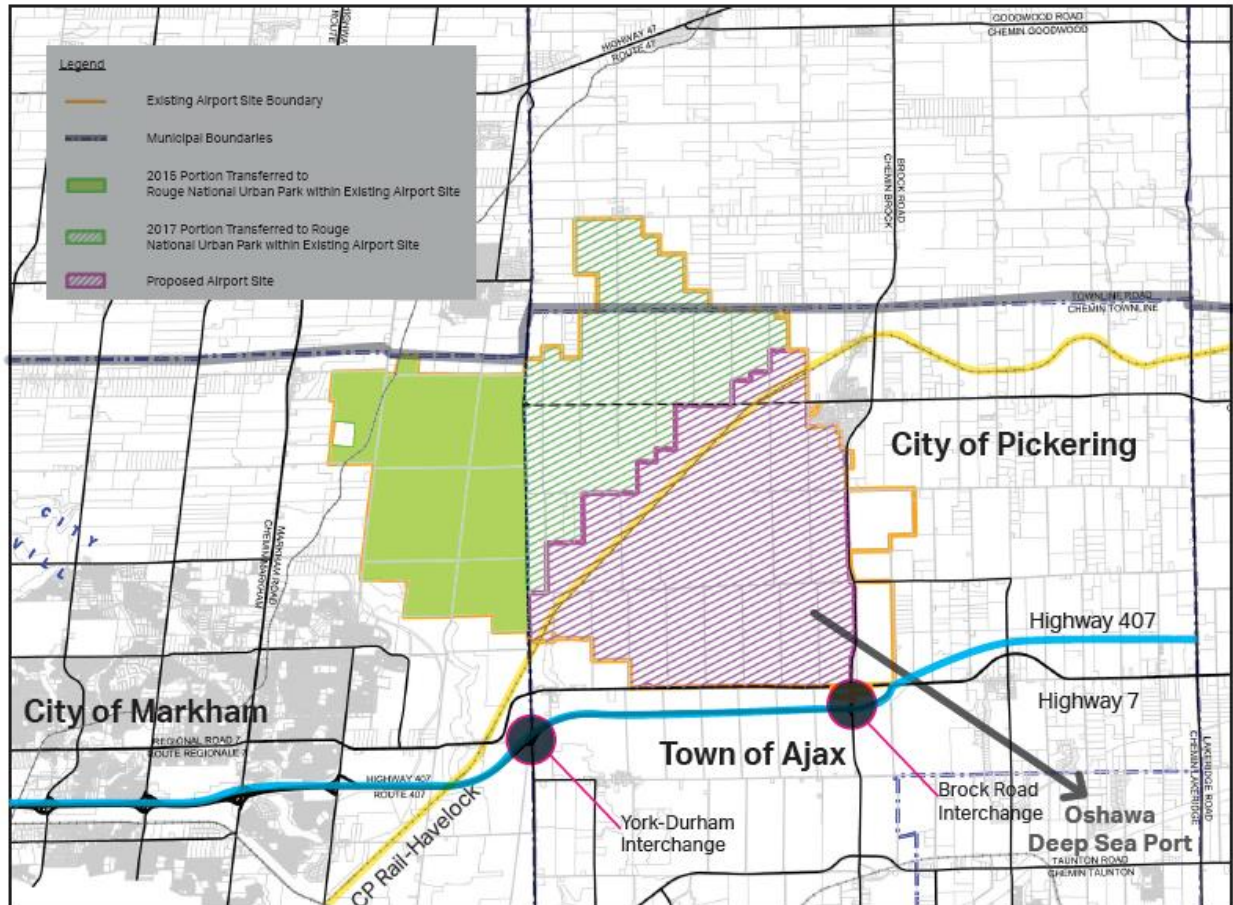
Pickering is located less than 50 km away from Pearson and 35 km from downtown Toronto, facilitating connecting traffic between Pearson and the Pickering airport relative to existing airports, and establishing a favourable location for business travellers destined to the downtown core. The site is connected by a network of 400-series highways to facilitate logistics between the airport and the metropolis. The Pickering lands are also in close proximity to two existing rail lines, each potentially capable of providing transit access to downtown Toronto. In addition, the 2041 Regional Transportation Plan for the GTHA (Draft) includes a future rail service to the Seaton area, which could serve the Pickering airport as well (Metrolinx, 2017).

Aircraft Noise Impacts and Curfew

Due to the size and location of the land and the presence of the Rouge National Urban Park in its vicinity, Pickering is the least disruptive site to surrounding developments in terms of aircraft noise pollution. In addition, this would foster minimal curfew and flight restrictions that would otherwise be imposed on other airports.

In addition, developing a greenfield airport offers the flexibility and features to plan and design a new secondary airport facility that would optimize and integrate technological and environmental features at the outset.

Figure 2: Pickering Airport Lands



Pickering Airport Lands are bounded by Pickering's Innovation Corridor along Highway 7 to the south, Brock Road to the east, Townline to the north and the York-Durham Line to the west. Base Map Source: Transport Canada (2018)



5. Aviation Services Suited to Pickering Airport

As a secondary airport for the Southern Ontario multi-airport network, Pickering airport is expected to accommodate the excess commercial passenger services. New and enhanced facilities combined with a lower cost structure relative to Pearson could provide more operational flexibility, thereby stimulating new demand for aviation services (Transport Canada, 2011). This is likely to include new entrant carriers, general aviation services, and cargo and courier services.

The extent to which traffic segments can be attracted to Pickering depends on two factors: (1) the “push factor” of Pearson traffic which cannot be accommodated due to capacity limitations, and (2) the “pull factor” of traffic segments where Pickering might have a competitive advantage. The two factors are not mutually exclusive.

Commercial Passenger Traffic

The most pressing need is undoubtedly an adequate alternative to Pearson to accommodate flights that will no longer be served at Pearson due to airport capacity constraints. In that respect, Pickering airport will serve as an adequate alternative and allow the GGH to maintain its air connectivity and Pearson to protect its status as a global hub.

In addition to serving as a reliever airport for existing airlines, Pickering could also attract new airlines wishing to serve the GGH, without competing directly with Air Canada or WestJet. For example, the Pickering airport could be an ideal location for low-cost or ultra-low-cost carriers looking to develop competitive services in the GGH. Major carriers could include Spirit and Frontier from the US.

Alternatively, Pickering could serve as a spoke to other hubs. Delta Airlines (with hubs in Detroit, Minneapolis and Atlanta) and American Airlines (with hubs in Chicago and Dallas) could initiate spokes to their major hubs in order to develop a competitive advantage for scheduled traffic to/from the northern/eastern GGH.



General Aviation

The Pickering airport could potentially become a primary provider of general aviation services in the GTA. The availability of new and enhanced facilities (i.e., longer runways) for the general aviation community would not only accommodate growing traffic, but could generate new demand (Transport Canada, 2011). Also, as noted by GTAA (2017), there are expected to be fewer general aviation facilities available in the near future contributing to the demand for additional capacity, especially with regard to flight schools. Factors such as uncertainty related to airport operation at Buttonville airport, noise and expansion restrictions due to the surrounding residential development at Oshawa Executive Airport and limited availability of slots for planes at the Billy Bishop airport could also influence the emergence of Pickering airport as a viable option for general aviation services.

Cargo/Courier


The Pickering airport has many of the features required to attract cargo and courier services.

1. Modern logistics and storage facilities can achieve higher processing and efficiency rates relative to older facilities at Pearson and Hamilton, which is an appealing factor for shippers in such a highly competitive and innovative sector.
2. Given the significant investments made by integrated carriers at Pearson and Hamilton, it is unlikely that they would split their operations by starting a sizeable operation in Pickering. However, Pickering could potentially serve the northeastern portion of the GGH market through a modest integrated carrier operation (Transport Canada, 2012).
3. Available land around Pickering and the extensive multimodal infrastructure in its vicinity offer shippers an opportunity to expand their storage facilities and logistics for current and long-term requirements and end-user demands.

Charter Aviation

Charter carriers are generally limited to point-to-point traffic and are very price sensitive. As such, a lower cost structure at Pickering would be attractive for these types of carriers.

The Pickering airport would also serve as an opportunity for businesses to establish and/or relocate to Durham Region. With relatively lower real estate costs than other



regions in the GGH area, the Pickering airport can support an increase in business aviation demand through that would inevitably be associated with businesses in the vicinity and the wider region.

The development of Pickering airport represents the best option for regional airport expansion. But Pickering airport will have to develop appropriate promotional programs to ensure that the new service opportunities are realized in practice.



6. Business Model Options

The success of Pickering as a secondary airport will inevitably depend on its ability to attract passengers and air carriers. In order to build a sizeable clientele, the airport will need to offer competitive prices for travel. The airport owner and operator will play a significant role in the success of the airport, as they are responsible for investment decisions, cost controls and overall management.

Asset Ownership


With the exception of Billy Bishop and Fort McMurray, all larger airports in Canada are owned by Transport Canada, which in turn leases them to airport authorities in exchange for an annual rent (Transport Canada, 2018). The analysis assumes that Transport Canada will retain the ownership of the land and the infrastructure. This model is unique in the world and differs somewhat from the increasingly common privately owned business model. In theory, this business model is expected to keep costs down. In practice, evidence shows that this model can result in higher costs. For instance, in 2013, Toronto Pearson paid the equivalent of 11.5% of its gross revenue in rent to Transport Canada (Government of Canada, 2016). As a result, Canadian airport authorities are “demanding the elimination of this rent, the cancellation of the 80-year leases (60 + 20 years) and the outright transfer of the real estate assets to the local airport authorities, as has been the case for several small airports transferred to certain provinces or municipalities” (Institute for Governance of Private and Public Organizations (IGOPP), 2014).

Airport Operation

While it is premature to speculate on the final business model for a Pickering airport, there are alternatives that could be considered for the operations of the airport including a private or semi-private operator, not-for-profit airport authority, and municipal or local public operator.

Private or Semi-Private Operator

Privatizing the airport operations through a concession or management contract is an attractive option to manage operations at Pickering. The private or semi-private approach can provide new funding sources to meet financial requirements and the most degree of independence in setting prices.



A private entity has access to debt and equity, with a portion or all the equity owned by private investors. Under this model, shareholders looking to make a return on their investments, are likely to exercise pressure for the board of directors to pursue new opportunities, cost control and more efficient management. In order to control costs and achieve competitiveness, the privately-operated airport is also more likely to prioritize investments with higher returns and unlikely to over invest in airport developments as can be the case for not-for-profit entities that are not allowed to retain net revenues. However, a privately-operated airport may require economic regulations to create incentives for efficiency improvements and to ensure that these gains are shared with passengers.

Not-for-Profit Airport Authority


A second option would be to divest the airport operation to a not-for-profit airport authority such as the GTAA, which operates Pearson, or one created for the sole purpose of operating Pickering airport.

This option has the potential to limit the airport's capacity to reduce fees and attract airlines and passengers for several reasons. Not-for-profit, non-share capital corporations are allowed to set fees, take on debt, and operate subsidiaries. The revenue from this model comes from three main sources: landing fees paid by carriers, airport improvement fees paid by passengers and other ancillary revenues (rental of commercial spaces, parking fees, etc.). By nature, not-for-profit organizations are not allowed to retain net revenues and must reinvest all profits in airport development potentially resulting in unnecessary investment or "gold-plating". Conversely, the lack of equity capital limits the airport authority's ability to finance needed investment and may force it to increase user fees. These additional user costs reduce the competitiveness of airports relative to other jurisdictions, especially U.S. border airports.

Moreover, "this formula, as opposed to a tax on profits, creates a disincentive for airport authorities to invest in low-margin business opportunities such as retail and other services to travellers that might otherwise be profitable and defray costs that travellers would otherwise need to pay" (Robins, 2017).

Municipal or Local Public Operator

The airport could be municipally or regionally controlled, as are many airports in the U.S. In this model, Pickering City Council or Durham Regional Council would be the ultimate decision makers. The main benefit of this scenario is the ability to co-ordinate business development in adjacent lands as part of any regional program. This model



also provides an opportunity for more emphasis on regional conditions and co-ordination with other regional/municipal bodies. However, this scenario constrains funding sources, because local governments have limited revenue tools.

Additional Economic Gains with a Private Operator at Pickering Airport

A Pickering airport model with private participation could attract 16 million additional passengers within 5 years and generate \$2.6 billion per year in additional economic gains if airfares dropped by 10%.

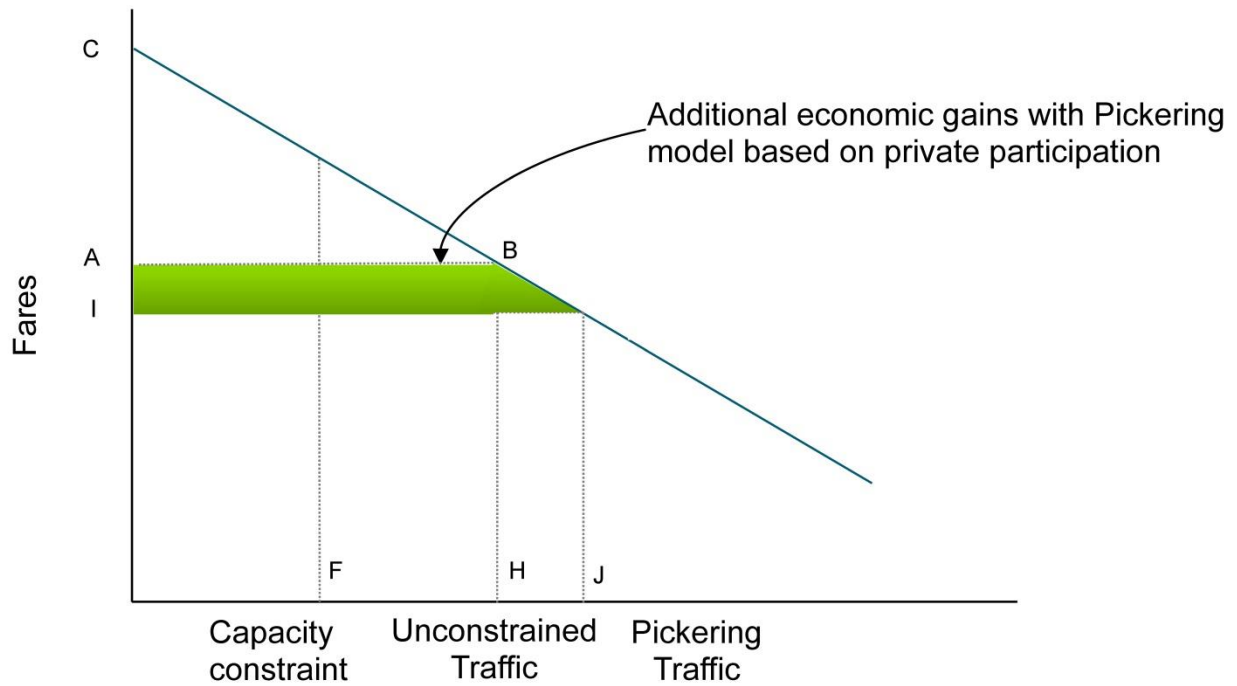
These benefits result from the combination of cost savings for users and airlines at the region-wide levels and increased demand for travel resulting from the reduced fares.

Multiple factors contribute to reducing fares.

1. A semi-private or private airport operator would be more inclined to control operating costs and seek out new airline carriers. This would result in lower airfares for commercial passengers.
2. Reductions in aircraft delays due to congestion at Pearson would alleviate the cost burden on airlines, in terms of additional crew and operating costs. A portion of the cost savings could likely be passed on to customers.
3. When the capacity constraint is removed, new airlines can enter existing routes and this increase in competition can put downward pressure on fares. Evidence from other jurisdictions suggests that low-cost and ultra-low-cost airlines locating at secondary airports within a multi-airport system tend to have a downward impact on airfares and significant positive impacts on passenger traffic. The box on the next page reviews evidence from the entry of Southwest Airlines in the U.S.

Using a conservative assumption of a 10% reduction in airfares ($A=\$230$, $I=\$207$), an unconstrained demand (H) of 105 million passengers in 2042 and a price elasticity of -1.4, the demand for air travel could increase by more than 16 million passengers per year at Pickering.

These benefits could arise within five years of operation, assuming the airport is operational by 2037, when the region hits its capacity constraint of 90 million passengers. The improved accessibility would translate into economic gains of \$2.6 billion per year for the region (shaded area).



Potential Impacts of Ultra Low Cost Carriers (ULCCs) on Price Competitiveness and Air Travel Demand

The entry of Southwest Airlines on the U.S. market in 1971 had a significant impact on average fares, with declines varying between 8% and 45%, as shown in Table 1. In many of these cases, routes may have been served by one or two airlines prior to the arrival of Southwest Airlines and as such may have started with higher fares, which explains the large declines. Also, in many cases, Southwest operates from secondary airports whereas the other airlines serving those routes are likely to operate from the primary airport in the region.

Bonnefoy (2016) notes that the entry of Southwest Airlines at Boston/Manchester and Boston/Providence had a significant impact on their respective passenger traffic. “At Boston/Manchester, the year-to-year growth in passenger enplanements was on average 6% from 1990 to 1997. After the entry of Southwest in 1998, this average annual growth rate increased to 45% during the two subsequent years. The same phenomenon occurred at Boston/Providence, where the traffic grew on average at 35% per year during the three years following the entry of Southwest” (Beckenstein, A. et al. (2017).

Table 1: Impact of Southwest Airline on Airfares

Route	Before	After	Decline
Nashville – Pensacola	\$224	\$123	-45%
Chicago – Wichita	\$245	\$172	-30%
Chicago – Pensacola	\$203	\$187	-8%
Houston – Memphis	\$214	\$178	-17%
New Orleans – San Diego	\$255	\$217	-15%
St. Louis – Grand Rapids	\$190	\$129	-32%

Source: Beckenstein, A. et al. (2017).



7. Employment and Innovation Hub

Directly adjacent to the future airport is the Pickering Innovation Corridor, comprising up to 320 acres of development lands. The Pickering Innovation Corridor offers compelling advantages to attract new businesses. The site is planned to provide 8.5 million square feet of new office space at generally lower prices than elsewhere in Greater Toronto.

The site is served by an extensive transportation network including a network of highways, a deep-sea port, and railway infrastructure, all of which are key economic development drivers. Anticipated convenient transit connections also make it easily accessible and a compelling location for developing a new sustainable employment hub.


The Region is home to five post-secondary educational institutions which produce a highly skilled labour force. The area also benefits from a high-quality of life and proximity to higher educational institutions – including the University of Ontario Institute of Technology, Trent University Durham, Queen’s University satellite campus, nearby University of Toronto Scarborough Campus, Durham College and Centennial College Learning Site – which produces a highly skilled labour force.

Aeronautics Cluster

Over half of the top 25 aerospace firms, and over 200 companies supplying components to all major aerospace programs globally are situated in Ontario, with some of those establishments in the Durham Region (Ontario, 2018). With the abundance of land dedicated to the airport and new and enhanced facilities, aeronautics firms could be attracted to the Pickering Lands in order to benefit from relatively lower lease costs and the ease of access to airport facilities, thereby expanding facilities at the Pickering airport. In addition, the Government of Ontario’s ‘Invest in Ontario’ initiatives and incentive programs provide opportunities for companies to consider contributing to an aeronautics cluster at Pickering airport (Ontario, 2018).

Transportation and Logistics

According to the Durham Region Work force Authority, the transportation and logistics industry has extensive potential for growth and development. In 2015, the region was home to more than 1,700 firms primarily engaged in goods movement, warehousing



and storage, as well as other ancillary services, with seven of these employing more than 200 people (Durham Region Work force Authority, 2016).


The Pickering Lands would be a suitable location to accommodate future growth in logistics and freight forwarding given its location near multimodal infrastructure such as the CP Rail Havelock corridor, Highway 407ETR, local and regional road networks and the Oshawa deep sea port.

Agri-business Activity

Agri-business is one of the largest industries in Durham Region. Approximately 80% of the region is rural, and almost 300,000 acres of Durham Region are in production (Durham Region, 2017). The proximity of the proposed airport to the agricultural sector would support the delivery of Canadian agricultural products to end markets around the world, and provide an opportunity to create “Growth Centres” supporting the agri-business industry.

With globalization and increasing demand for food sources, innovative farming practices have led to large-scale farms with automated facilities. The number of farms in Durham Region has been decreasing. However, the value of gross farm receipts have increased year over year, suggesting that individual operators farm increasingly large areas (Region of Durham, 2011). Hence, Pickering airport would be an ideal location for food processing facilities, given the proximity to transportation logistics services for domestic or international end markets.

The benefit of promoting the agri-business sector, also known as ‘field-to-fork’, is substantial. The sector currently employs 2.1 million Canadians and represents 6.7 percent of the Canadian GDP, resulting in Canada ranking 5th in agriculture exports and 11th in agribusiness exports. Nevertheless, Canada ranks lower than smaller countries such as Netherlands and less economically advanced countries such as Brazil (Advisory Council on Economic Growth, 2017). The Netherlands supports an innovative market which promotes efficient and effective logistics in exporting agricultural products. Its agricultural Growth Centres are strategically located in close proximity to major markets and infrastructure nodes such as roadways, ports, and airports which is one of the keys to an organized and integrated supply chain and transportation infrastructure (Advisory Council on Economic Growth, 2017). As mentioned, the global outlook for food and an expanding global middle class will benefit Canada’s agri-business significantly (Kharas, 2017). Canada’s exports of niche products such as canola oil increased to approximately 200 percent (2003 to 2015), largely because of high



demand in emerging markets such as China (Government of Canada, 2017). Some of the largest commodities produced in Durham Region that would meet the global demand include dairy, corn, soybeans, grains, fruits, and vegetables (Durham Region, 2016). Building Pickering airport at the proposed location could support transportation and logistics centres similar to world leaders in the agri-business industry such as the Netherlands.

In addition, urban agriculture and micro-agriculture, which do not rely on large tracts of agriculture land for cultivation and growth of crops, may be well suited for the area around the Pickering airport. Such practices would allow the operation of an airport and farming to produce, process and distribute locally grown food to co-exist within the Pickering Lands. The proximity to local communities, availability of a network of transportation options and the flexibility to locate food processing facilities in the vicinity of the agricultural operation makes it a viable option for consideration.



8. Airport Development Timing

Greenfield airport development can take decades to bring to fruition. This is true of a new airport at Pickering, despite the extensive planning and environmental studies which have already been completed. There is evidence from the new Western Sydney airport in Australia, which has been under development for several decades. As a result, it is essential that the Government of Canada indicate its intention to allow for the development of an airport at the Pickering site in the near to medium term. Failure to do so would amount to a de facto acceptance of the status quo (i.e., no airport capacity expansion in GGH) and the economic costs associated with such a decision.

It is imperative that the planning, design, and construction process for the airport start years in advance of the anticipated date for operations.

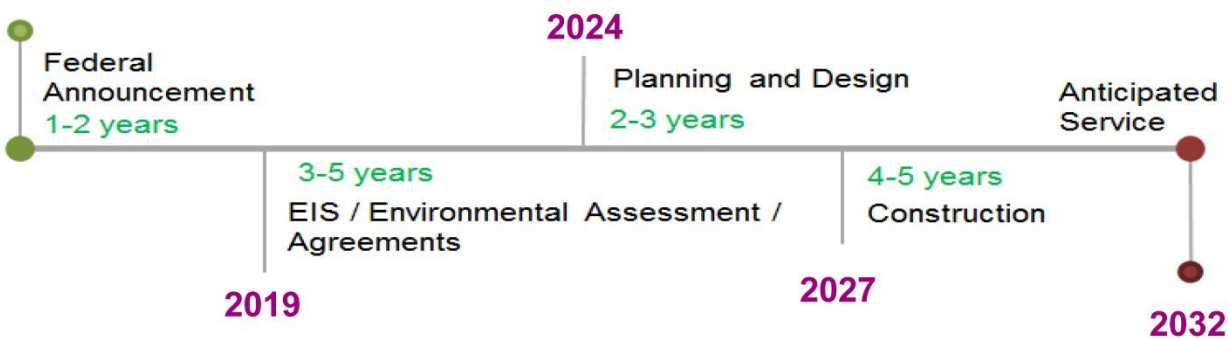
Several factors influence the timing of the entire process including environmental assessments, agreements, planning, design, and construction for the airport.

It is not uncommon to see timelines in the 10-to-15 year range from initial environmental statement filings to the completion and operation of an airport or runway. This is exhibited in a number of analogous airport development experiences around the world. The box on the next page summarizes similar experiences at the Western Sydney and London airports.

In conjunction with the environmental assessment process, the proponent of the proposed Pickering airport would need to initiate the planning, development, and design plans. If all preliminary environmental investigations were complete, and did not require additional work or supplementary investigations, then the first key milestone would be a federal government announcement to develop an airport at the Pickering site, followed by Environmental Impact Statement (EIS) → Environmental Assessment → Agreements → Planning and Design → Construction → and Service of the airport.

As shown in the schematic below, the overall timeline for the development of the Pickering airport would likely be in the 10-to-15 year range and possibly longer, given the requirements under Bill C-69.

In addition to the timelines required for airport development, there are additional factors which underline the importance of a federal announcement for Pickering airport in the near future.



Projects such as the Seaton residential and employment community adjacent to the Pickering lands are moving ahead. If there is no clear announcement regarding a future airport at the Pickering site in advance of the Seaton development, this new development could create considerable local opposition.

Initiating planning and design for the new airport early on could help mitigate those impacts on existing and future communities, especially given the size of the land preserved for the airport, which provides opportunities to minimize impacts relative to other potential airport expansion sites that are more constrained.

Lastly, our findings indicate that there could be a demand for airport services at the Pickering site well before Pearson hits capacity, due to impacts of congested air traffic operations on service quality as well as the fact that the GTAA's maximum capacity of 90 million is based in part on the assumption that some short-haul flights will be transferred out of Pearson.



Timelines and Requirements for New Construction and Expansion of Airports: Evidence from Western Sydney and London Heathrow

The Western Sydney Airport, which is of similar size and complexity, is a good example of the timelines required to prepare all the studies required to get approval for the construction of a greenfield airport. The Australian Government recently approved the airport's design and construction process. Australia has a similar Environmental Assessment process to Canada, which is subject to similar requirements and approval (Government of Australia, 2003). Considerable environmental preparation work was already undertaken at the Western Sydney Airport leading up to the final Environmental Impact Statement submission in 2016. From the final submission of the EIS, it was noted that the Western Sydney Airport would require an additional 10 years at a minimum to have the airport completed and operational (Government of Australia, 2017).

Heathrow Airport currently has two runways in operation, where existing capacity is at 98% usage (2018, Heathrow). It has attempted to manage the capacity constraint through various operational innovations as well as through higher fares. Despite doing so, Heathrow has not been successful in managing the excess air travel demand, resulting in lost business and passengers redirecting to airport hubs elsewhere in Europe. It is noted in several reports that the existing capacity issues in the London area are impacting UK's economy as carriers and airlines are looking at alternative airports for connecting flights, and those wishing to fly to/from London are subjected to increased pricing due to a constrained market. Assessing the timelines of the government's initial plans to expand to a third runway in 2003 (DOT, 2003), the airport was already approaching capacity at 96%. Aircraft movements in 2003 were just under 460,000 and in 2007 the airport had already reached capacity

with over 475,000 flights that year (Heathrow, n.d.). In October 2016, approval of the expansion of the airport was finally granted by the government (Heathrow, 2018). However, more than 15 years have passed since, and the result of additional development surrounding the airport has increased resistance and opposition to the airport expansion. The Heathrow example illustrates the need to announce plans for a new Pickering Airport in the near future.



9. Conclusion and Next Steps


A sustainable and innovative airport in Pickering would not only provide much needed additional airport capacity within close proximity to downtown Toronto, it could also enable Southern Ontario to diversify its air service offering and generate new demand for air travel. Together, these factors **translate into significant economic gains, valued at more than \$2.6 billion per year within five years of operations.**

Recent studies have shown that Southern Ontario's airport system will reach its maximum capacity in the mid to late 2030s. If no major investment is made to increase airport capacity, Southern Ontario risks losing global air connectivity as airlines relocate some of their traffic to other less congested hubs. As demand for air travel exceeds capacity, travellers will face crowded facilities, delays and have more difficulty finding seats. As seats become scarce, airlines may also increase airfares. **When the capacity gap reaches 15 million passengers in the early 2040s, travellers could sustain economic losses of up to \$2.6 billion.** These losses represent the impact of higher fares and seat shortages for travellers. As the capacity gap widens over time, so will these economic losses. These impacts justify the need for a secondary airport to serve as a reliever airport to Pearson.

Existing airports such as Billy Bishop, Hamilton and Waterloo are unlikely to be able to fully accommodate the excess demand for air travel given their limited potential for expansion, policy restrictions or location away from downtown Toronto. The combination of available lands, transportation access, and location close to growing markets, make the Pickering Lands the ideal location for the development of a secondary greenfield airport.

A review of different governance models suggests that operations by a private entity would best benefit the region. The benefits stem mainly from access to share capital, increased flexibility in investment prioritization, and efficient management. These factors combined can lead to lower airport fees, thereby increasing its attractiveness relative to other locations.

Various studies suggest that there will be an immediate demand for the Pickering airport once it is operational. This is due to impacts of congested air traffic operations on service quality and the need for Pearson to abandon some short-haul flights in the near future. New and enhanced facilities at Pickering airport could also attract general



and business aviation as well as courier/cargo services. Competitive airport fees could also attract new passenger services and potentially generate additional traffic to the Region.

The Pickering Lands are an ideal location for firms and organizations relying on effective and efficient transportation modes such as airports. Innovative sectors that could benefit from locating near the airport include the aerospace industry, agri-business, and logistics and freight forwarding.

Typical greenfield airport developments require 10 to 15 year lead times. If approval were to be given at the time this report was prepared (April 2018), the airport would be operational between 2028 and 2032. Delaying the federal announcement presents growing challenges. Adjacent projects such as the new Seaton residential community are continuing to be developed, with growing concern and opposition to the proposed airport due to its close proximity. An early announcement of the airport development could help mitigate future local resistance.

These factors point to the need to initiate development of the Pickering airport now. The airport will not only service the demands of air travel, but will also enhance and support the evolution of the GGH as one of the fastest growing regions in North America. Failure to do so in the near term will amount to a de facto choice in favour of the status quo with all the economic costs and foregone economic development opportunities that scenario entails.

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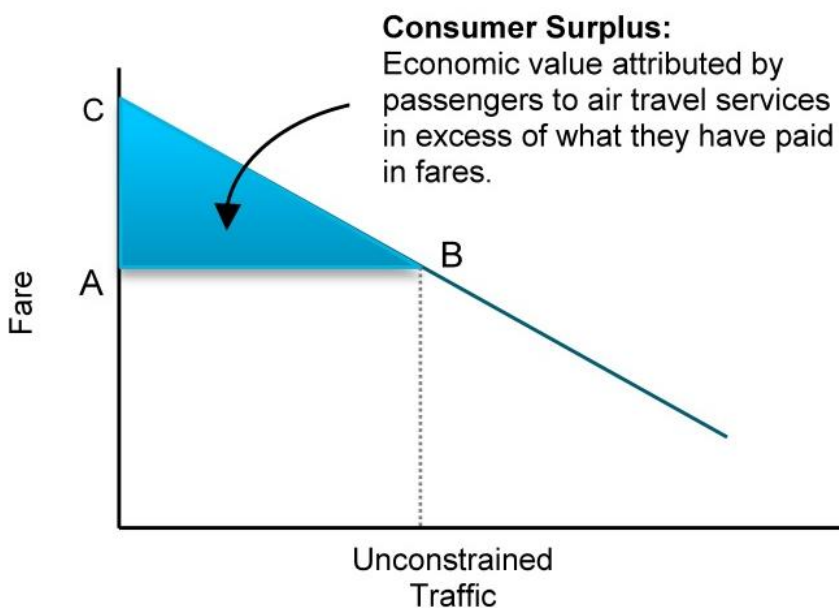
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Appendix A. Approach to Estimating Consumer Welfare Loss

The concept of welfare is an economic measure of the overall well-being of a community. The consumer welfare loss discussed in this report is derived in three steps.

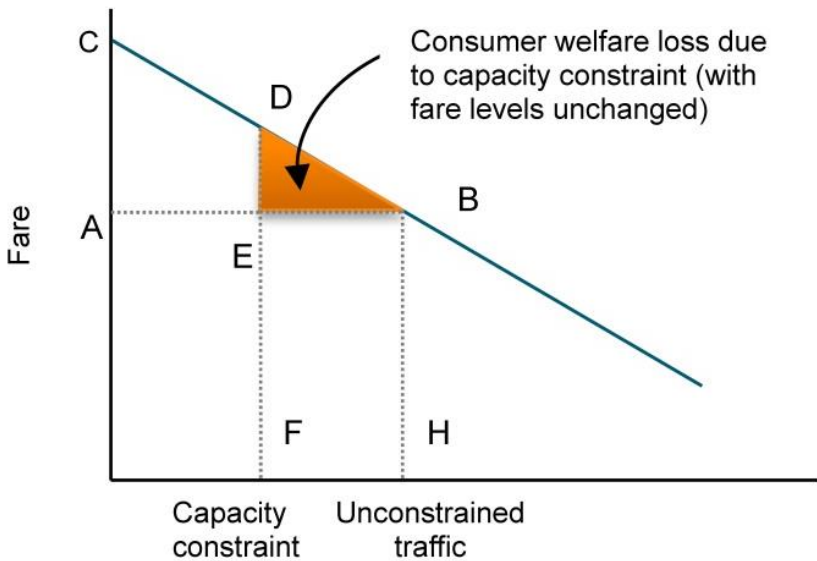
First, assuming the Southern Ontario airport system can accommodate all demand for air travel; passengers (or consumers) realize welfare gains, in the form of a consumer surplus, illustrated by the shaded area in the top chart. This welfare gain takes the form of the value that travellers attach to air travel (i.e., their willingness to pay) less the fare they actually pay (triangle ABC). In other words, under unconstrained conditions, travellers pay less than the maximum they would be willing to pay and everyone gets a seat.



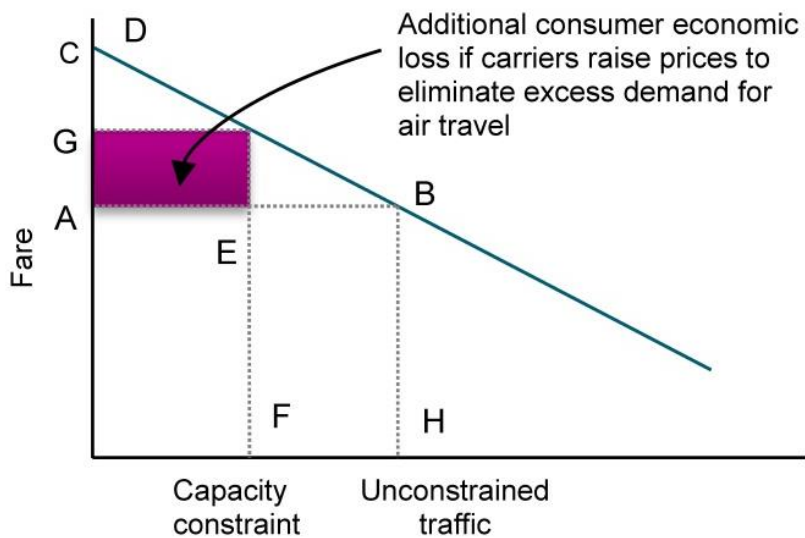
Second, when demand for air travel exceeds capacity, some travellers will not be able to fly and will incur welfare losses as a result. The loss is represented by the shaded triangle in the second chart. In theory, assuming an unconstrained demand of 105 million (H), a capacity constraint of 90 million (F), and an average fare of \$230³ (A), the welfare loss in that year could reach \$200 million. In practice, passengers may not


3. Statistics Canada. Table 401-0041- Domestic and international average airfares for all fare groups, annual (dollars), CANSIM.

suffer the full loss if they are able to make other arrangements which are similar in cost and service quality, such as using another mode of travel for a short-haul flight.



Third, as demand exceeds capacity, airlines are likely to increase fares, especially on direct flights to and from the congested airports. Passengers who were able to secure a seat are now worse off by an additional \$2.4 billion per year. This represents a transfer from passengers to air carriers and hence, a loss to consumers and air travellers in the event that higher fares are used to ration air travel. Given the prevalence of yield pricing in the airline industry, this is a plausible scenario (barring economic regulation of airfares).





The magnitude of the welfare loss for passengers also depends on the sensitivity of air travel demand to changes in fares. The central estimate of the air travel demand elasticity with respect to airfares is -1.4, suggesting that demand is elastic. In this case, a relatively small increase is required to price off the excess demand for air travel. If air travel demand is inelastic (i.e., -0.8 for the lower elasticity scenario), the fare increase required is much larger and so are the economic losses borne by passengers and the region overall. In the high elasticity case (-2.3), only a modest fare increase is required and hence, the associated economic losses are more modest.

Table 2 summarizes the results of the calculations using the different elasticity measures identified in the literature. The first two rows indicate the assumptions retained for the analysis with regard to demand for air travel, i.e. a regional airport capacity of 90 million and a demand of 105 million in the early 2040s, leading to a capacity gap of 15 million passengers. The next row shows the initial airfare. The analysis is based on the 2017 average airfare for Canada. This information combined with the elasticity measures are used to estimate the demand curve for air travel in the GGH. The demand curve then allows us to determine the average fare that people are willing to pay to travel, which corresponds to the higher airfares presented in the table. These baseline assumptions allow us to derive the economic loss for those who cannot travel due to capacity constraints as well as the additional economic losses for passengers if airlines raise their prices, using the method described above. The total consumer welfare loss for that year varies between \$1.6 and \$4.8 billion, depending on the elasticity assumption retained. The central elasticity estimate, the most likely scenario, results in economic losses of \$2.6 billion.

The consumer welfare loss represents only a portion of the change in economic welfare for the region. Under a constrained supply scenario, the total change in economic welfare is the sum of the change in consumer surplus and the change in producer surplus. In this case, the producer surplus can be thought of as the profit margin for air carriers. This study did not attempt to estimate the producer surplus due to the lack of available information, especially with regard to the elasticity of supply with respect to price. Moreover, it is important to note that the additional consumer welfare loss resulting from the increase in airfares is a transfer to air carriers. Hence, this transfer is largely one from air passengers within the GGH (i.e., excluding transfer passengers) to air carrier shareholders and stakeholders, most of whom are outside the GGH.

Table 2: Potential Economic Losses under the Status Quo

Elasticity	-0.8	-1.4	-2.3
GGH Maximum Airport Capacity (F)	90	90	90
Unconstrained Demand (C)	105	105	105
Initial Airfare (\$) (A)	230	230	230
Higher Airfare (\$) (G)	279	257	246
Consumer Economic Loss under Capacity Constraint (M\$)	370	200	120
Additional Consumer Economic Loss if Airlines Increase Fares (M\$)	4,400	2,400	1,450
Total Consumer Economic Loss (M\$)	4,770	2,600	1,570

Sources: AECOM analysis based on InterVISTAS Consulting Services. 2007 and Statistics Canada. Table 401-0041- Domestic and international average airfares, by fare type group, annual (dollars), CANSIM.



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