

Viability Assessment of Commercial Service at Niagara District Airport

PREPARED FOR
Niagara Region

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Glossary of Terms

Airport Codes:

BUF: Buffalo Niagara International Airport
IAG: Niagara Falls International Airport (US)
YCM: St. Catharines/Niagara District Airport
YHM: John C. Munro Hamilton International Airport
YKF: Region of Waterloo International Airport
YOW: Ottawa Macdonald-Cartier International Airport
YTZ: Billy Bishop Toronto City Airport
YUL: Montreal Pierre Elliott Trudeau International Airport
YVR: Vancouver International Airport
YXU: London International Airport
YYC: Calgary International Airport
YYZ: Toronto Pearson International Airport

Other Terminology:

Code-share: An agreement between air carriers to allow passengers the ability to purchase multi-stop itineraries on more than one carrier, using the same carrier code. For instance, a code-share between Air Canada and Lufthansa allows a passenger the ability to purchase a single ticket from Air Canada with two segments and two air carriers: Edmonton to Vancouver on Air Canada, followed by Vancouver to Frankfurt on Lufthansa, all on the same carrier code.

Interline: An agreement between air carriers to allow a passenger the ability to fly a multi-stop itinerary on more than one air carrier without having to retrieve baggage at connecting airports. Interline agreements can be one-way only, and often differ from code-shares as interline tickets purchased will be on flights with differing carrier codes.

Local traffic: Passenger traffic that flows between two points and does not connect. For instance, on a service from YYZ (Toronto) to Vancouver (YVR) a passenger who originated in Toronto and is destined for Vancouver would be considered a local traffic passenger.

Connecting traffic: Traffic that will be connecting onward to another airport after stopping at a mid-point airport for a connecting flight. For instance, a passenger travelling YVR-YYZ-JFK will be a connecting passenger at YYZ.

Origin-destination (O/D) demand: Passenger demand estimated between two points, regardless of itinerary. For instance, a person travelling from Vancouver to New York may purchase an itinerary for YVR-YYC-YYZ-JFK, and will be counted as an O/D passenger for Vancouver-New York. This measure is used to estimate the number of passengers flowing from one city to another – using air travel – without regard to how they are getting there.

Enplaned-deplaned (E/D) passengers: Enplaned passengers are those passengers that board an aircraft at a given airport. Deplaned passengers are those that disembark an aircraft at a given airport. An airport will count the sum of the enplaned and deplaned passengers to measure total E/D traffic for a period.

1 Introduction

1.1 About InterVISTAS

InterVISTAS is a company of Royal HaskoningDHV, an independent, international project management, engineering, and consultancy service provider. Ranking globally in the top 10 of independently owned, non-listed companies and top 40 overall, Royal HaskoningDHV's 7,000-person staff provides services across the world from more than 100 offices in over 35 countries. It carries out more than 30,000 projects every year in aviation, planning, transport, infrastructure, water, maritime, industry, energy, mining, and buildings. As part of the Royal HaskoningDHV team, this alliance complements InterVISTAS' portfolio with services in infrastructure development, engineering, design, and program management in the aviation sector.

InterVISTAS has extensive experience in strategic airline route and fleet planning, great familiarity with the Canadian aviation landscape and globally recognized industry experts. Furthermore, InterVISTAS has extensive expertise in using a number of network analysis and planning tools and databases. InterVISTAS has worked with airlines and airports all around the world, including Air Canada and WestJet and nearly all major Canadian airports.

1.2 Project Background

Niagara District Airport (YCM) has no commercial service despite the region being a global tourism destination and home to a large primary catchment population. The lack of service is driven by YCM's close proximity to multiple competing airports in both Canada and the United States including Canada's busiest airport, Toronto Pearson (YYZ) as well as airports in Hamilton, ON (YHM), Buffalo, NY (BUF), and Niagara Falls, NY (IAG). The 5,000 foot runway at YCM also limits the scope of potential markets that could be served from the airport. Given the market's size and characteristics, commercial service may be viable, and attractive to certain carriers.

1.3 Project Objectives

The objective of this project is to first provide the Region of Niagara with background material on airline planning practices and current industry trends followed by an objective assessment of the commercial viability of scheduled airline service at YCM.

The study has been carried out based on the following components:

- Overview of route development and airline planning process
- Industry developments and market situation
- Assessment of current market demand in the region
- Assessment of potential airlines & routes
- Implications of commercial service for the community and airport
- Concluding remarks

2 The Route Development Process

2.1 The Path to Successful Air Service

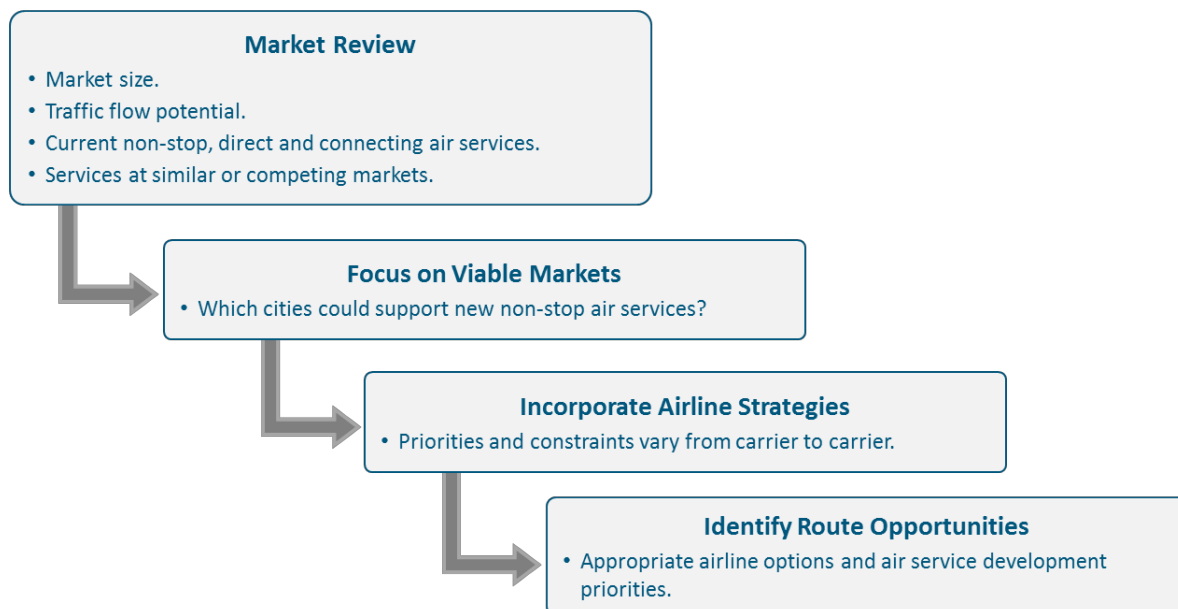
The route development process for an airport must be approached as a multi-step, long term process if it is to be successful. It has several key components, including:

- **Market Research:** Required to quantify the true market potential of the airport.
- **Route Development Strategy:** A high-level review and analysis of potential route opportunities, taking into consideration market sizes, competition, aircraft restrictions, etc. aims to understand the range of opportunities from an airline's perspective.
- **Detailed Route Analysis:** Helps to understand the expected viability of new flights, as well as any impacts on existing services.
- **Presenting the New Route Business Case:** The market's qualitative and quantitative strengths must be clearly communicated to prospective air carriers to generate interest.
- **Risk Sharing Options:** Utilizing incentives and fee reductions to entice airline participation at the airport through new routes or increased frequencies.

Route development efforts must take into account both market needs and airline objectives. Airlines in particular will assess whether business cases presented by airports will have taken an 'airline first' approach, and are seeing things from their perspective.

A typical route development strategy would be conducted as outlined in Figure 1 below.

Figure 1: Route Development Strategy



Cities and regions want easy access and price-competitive options for inbound visitors as well as for outbound residents. Airlines will only fly to an airport if they receive a positive and acceptable rate of return. However, airline business cases should also be tailored to the type of air carrier being approached, whether it is a network or low-cost carrier, a charter carrier, a Canadian airline or American. It is also worth noting that the presentation of a business case to an airline should coincide with their planning schedules. Airlines generally develop schedules for two seasons, summer and winter, with the planning process starting 12 months in advance of actual operations. For example, to pitch a new service that would launch in summer 2017, the discussions with the airline would need to begin in the summer of 2016. Decisions to launch service are usually made at least 6 months in advance of the launch date. As such, in our example of a potential service for summer 2017, the decision would need to be made by late fall 2016.

3 Airline Commercial Planning Process

3.1 Aligning Airline and Airport Objectives

When considering the correct route development strategy to apply, care must be taken to understand the audience. In the case of YCM, the likely airline audience will include Air Canada, WestJet, Porter and possibly others, but those are the main players in the Canadian regional market.

Route development is a marathon, not a sprint, and will determine how the airport develops over a period of years. It will also define how the airport is perceived by airlines. Route development initiatives may take varying amounts of time, from six months to several years.

Airlines operate within planning cycles, where schedules are finalized 6-12 months in advance of service. In general, and airline planning process looks something like this:



An airline will plan using measurable financial metrics. An aircraft is a mobile asset worth somewhere in the range of \$30-\$300 million. In order to be successful, airlines must generate a sufficient return on these investments. Financial return is driven by load factor (passenger volume) and yield (average fare). Airlines might accept a lower volume of passengers if they are able to charge higher fares on a segment – this is often the case for business travel. Conversely, if fares are low, airlines will require high load factors (a full or nearly full plane) in order to achieve the same results.

Since aircraft are relatively easy to re-deploy to other routes, airlines will generally add new markets based on expected financial performance, unless there is a strategic reason for an alternative route.

It is also worth noting that it is essential not to be discouraged if an airline is unable to fly a route that you have pitched. In our experience, it can take several planning cycles of continuous pitching before an airline is capable and willing to commit to a given route. It may be operational, such as a runway that is too short (as may be the case at YCM), or there could be interest but a lack of available aircraft in that season, for instance. In any case, it's important to approach airlines with their best interests in mind, and with a view to reducing airline risk as much as possible.

4 Industry Developments & Trends

There are a number of key developments and trends taking place in the Canadian and global aviation markets that have an impact on the potential for service at YCM.

4.1 Aircraft Technologies

4.1.1 Small Regional Aircraft

Smaller, propeller aircraft currently serving regional markets will undergo changes in the next 5 years. Currently, Air Canada and its regional partners operate a fleet of 26 Dash 8-300s, 34 Dash 8-100s and 17 Beechcraft 1900s.

Air Canada Express Fleet	Beechcraft 1900	Dash 8-100	Dash 8-300
No. in Fleet	17	34	26
Seat Capacity	18	37	50
Average age	18 years	28 years	26 years

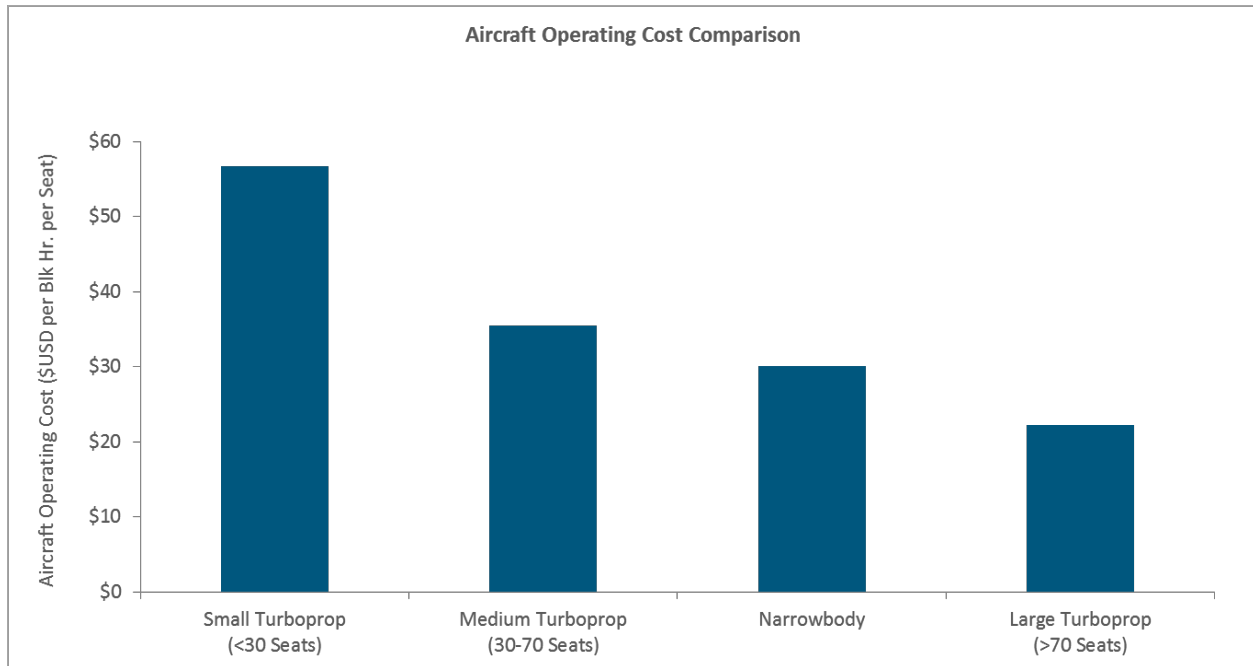
The Dash 8-100 aircraft have an average age of 28 years old and are nearing the end of their service life. As such, Air Canada is planning to retire 9 of these 37-seat aircraft in 2016, with the rest to be phased out within the next 5 years. Currently, Air Canada does not have any plans to replace these 37-seat aircraft with similarly sized aircraft; instead, the airline is opting to fly more of the larger 74-seat Bombardier Dash 8-400 (Q400) aircraft.

As Air Canada's regional fleet mix moves to larger aircraft, airports may experience route cancellations or a reduction of frequencies on regional markets. Going forward, it will be even more important to ensure that flights are timed in such a way to optimize connections. This will help ensure there is sufficient demand for these flights to maintain a profitable operation on larger regional aircraft. Similarly, the larger 50-seat Dash 8-300 variant has an average age of 26 years. These aircraft will also be phased out in the near term.

The average age of Air Canada's Beechcraft 1900 fleet is 18 years. While the Beechcraft 1900 aircraft are younger than the Dash 8-100/300 fleet, they are currently no longer in production and Air Canada has no current plans to replace them with a similarly sized aircraft.

The main reason for the elimination of these smaller aircraft is that they are not cost competitive with larger aircraft on a cost per seat basis. As shown in Figure 2 below, the cost per block hour per seat increase significantly as aircraft size falls below 60 seats.

Figure 2: Operating Costs by Aircraft Class



Source: Airline submitted via US Department of Transportation Form 41, Schedules P-5.1, P-5.2 and T-100 data.

WestJet's smallest aircraft is the Q400 (Dash 8-400), operated by WestJet Encore and configured at 78 seats. They have expressed no plans to operate smaller regional aircraft in the medium term.

In North America, there are very few 50-seat or smaller commercial aircraft that are still in production and suitable for replacement in the Air Canada fleet. The ATR-42 aircraft (42 seats) can be seen as a suitable replacement but the only Canadian operator of this aircraft is First Air (who primarily operates in Northern Canada). Currently, there are no plans for Air Canada or WestJet to obtain this aircraft.

Although it appears that Air Canada and its partners will eventually transition these smaller aircraft out of their fleets, there may be third tier regional carriers that decide to continue operating with these aircraft. As such it may be still possible to have service with smaller aircraft, but without the network of a major airline to provide connectivity the potential for these types of services is limited.

4.1.2 Large Regional Aircraft

The next generation of large regional aircraft will provide significant improvements in terms of economic performance and operational range. With capacity in the 100 to 150-seat range, these aircraft are smaller than narrow-body aircraft (e.g. Boeing 737 and Airbus A320). This will create an opportunity for new service on thinner longer routes.

One prominent example of improved regional jet technology is the Bombardier CSeries. With improved fuel efficiency and reduced maintenance costs, this aircraft is expected to provide a 15% cash operating cost advantage over competing in-production aircraft. Furthermore, due to cutting-edge technology, such

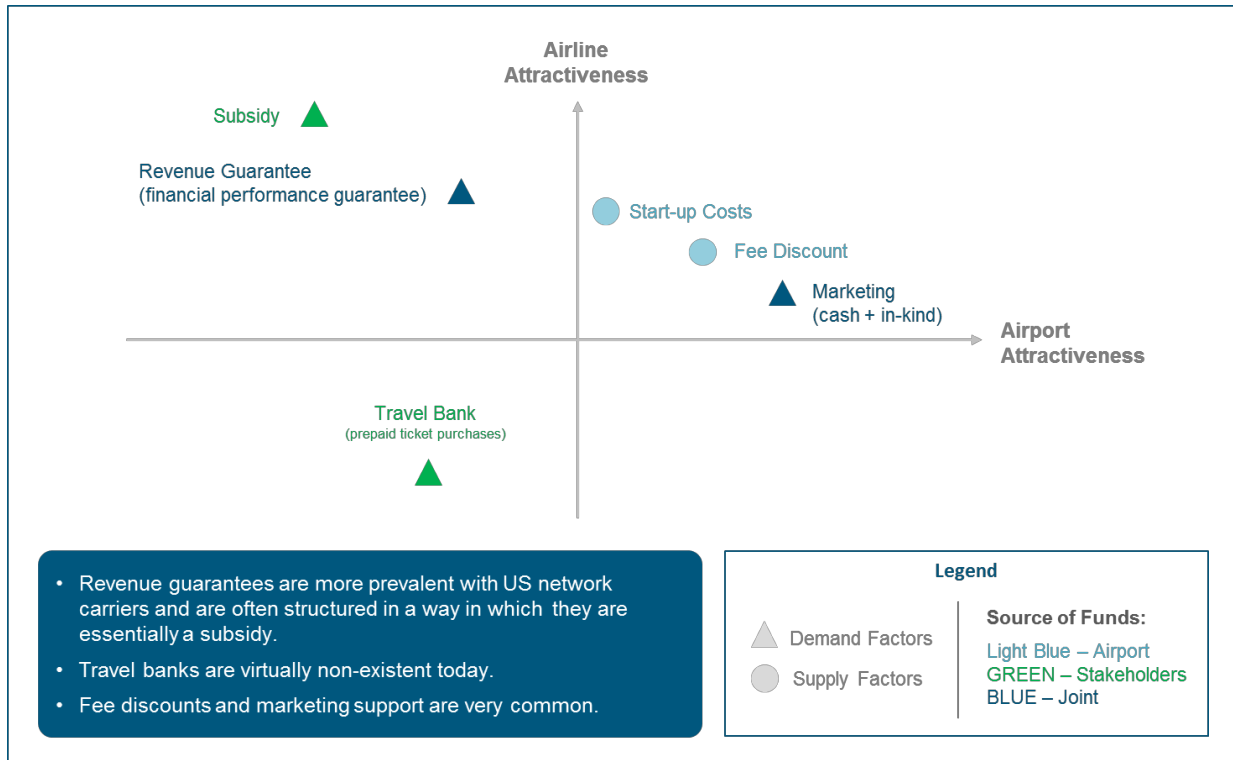
as the use of light-weight composite materials, the CSeries is expected to have excellent airfield performance with the ability to operate off short runways. Specifically, Bombardier indicates that CS300 will be capable of operating off a 5,000 foot runway. This is a significant improvement over current in-production regional jets such as the Embraer E190. With the improvement in operational capability, a YCM medium-range operation could be possible. Air Canada currently has 45 CSeries aircraft on order plus options for another 30 and they are expected to enter service in 2019. With the CSeries not yet in commercial service, it is important to note that runway requirements are based on manufacturers' estimates which tend to be optimistic for new aircraft.

4.2 Airport Incentives

As airlines face more and more pressure to decrease costs, incentives policies are growing in popularity and magnitude around the world. In today's difficult operating environment, airlines have become increasingly risk-averse. Many airlines now require risk-sharing incentives in order to commit to a new air service. Based on InterVISTAS experience, it is estimated that over 90% of all commercial airports in Canada offer incentives in one form or another.

Incentives have often been a source of concern for airport operators, but if used properly, incentives can be a sound investment. Airports should understand their risk before entering an incentive-sharing agreement. To begin, detailed route analysis helps determine if incentives are appropriate and what impact they may have on existing services. In terms of the specific structure of the incentives, it is important to recognize that different carriers want different types of incentives. The key is to ensure that the structure is both attractive to the airline and makes financial sense for the airport. Common incentive structures and their degree of attractiveness for the airlines and airport are outlined in Figure 3.

Figure 3: Types of Service Incentives



In terms of the sources of funding for incentive programs, community stakeholders (e.g. private entities, government, tourism entities etc.) are playing an increasingly important role. Inter VISTAS estimates that on average about 40% of the incentive funding in Canada comes from non-airport sources.

Incentives are now a key part of attracting new service. Incentives need to be designed in a way that is both attractive to the airline and supportive of the airport's strategic objectives (e.g. financial, route development, etc.). Increasing cases of non-airport funding sources are raising the bar for incentive packages. To remain competitive airports need to leverage support from their community partners.

In terms of the dollar amounts provided as incentives, it is important to understand that the cost of operating an air services route is usually in the tens of millions of dollars. As such, incentive packages generally have to be quite large in absolute terms to have a meaningful impact for the target airline. A publically available example of this is the Region of Waterloo International Airport commitment to provide American Airlines with up to \$1.4 million (this included \$150,000 from local businesses).

4.3 Social Factors

4.3.1 Terrorism

One of the main external social factors affecting the aviation industry is the growth of geopolitical instability and terrorism. The terrorist attacks in Brussels on the morning of March 22nd is a stern reminder that these threats not only apply to air carriers, but to all players in transportation, including airports, ground handlers, rail operators, and local metro systems. As such, local, regional and federal

transportation authorities will need to place additional attention and focus on enhancing the security measures already in place today. Specifically, security both inside and at the perimeter of airports will continue to be closely scrutinized to ensure a safe travel experience for the air traveller – from curbside to their departure gate.

Costs of airport security are increasing, and are a particular problem in Canada where not only are our fees higher than the US, the Canadian government makes a net profit from the air travellers security charge relative to the costs of operating CATSA, a point emphasized in the recent Emerson report on Canada's Transportation Act and policies. This, along with other high charges in Canada (border fees, rents, property taxes) contributes to slower growth by reduced competitiveness with US airports.

As such, security will continue to be a primary but ever-changing requirement for YCM to facilitate commercial service. Given that increased complexity may lead to higher fees this may be an impediment to growth at YCM and other airports in Canada.

4.3.2 Carbon Emissions

While Prime Minister Trudeau has committed to joining and signing the Paris Agreement for climate change action in April 2016, any efforts to develop a carbon pricing or cap-and-trade system is independent from the agreement. The Paris Agreement sets a number of long-term climate goals without stipulating what mechanisms are put in place to achieve them.

Even if a Canada-wide carbon pricing or cap-and-trade system was developed, aviation would likely be excluded. Instead, Canada (and the US) have committed to adopting the International Civil Aviation Organisation (ICAO) recommended market-based measure to reduce aviation emissions (i.e. avoid subjecting Canadian aviation emissions to both a Canadian and global scheme).

At the 38th ICAO Assembly that took place in October 2013, member states committed to adopting a global market-based measure (MBM) for international aviation emissions. The overall goal of the resolution is for ICAO and its member states with relevant organizations to work together in an attempt to achieve a medium-term goal of keeping the global net CO₂ emissions from international aviation from 2020 at the same level (i.e. carbon neutral growth from 2020).

A number of ICAO working groups and technical discussions (e.g. Committee on Aviation Environmental Protection [CAEP] and Global Aviation Dialogues [GLADs] on aviation MBM) have taken place and have been actively working since then to develop an appropriate model. ICAO has identified 3 possible market-based measures: 1) levies/taxes/charges; 2) emissions trading (cap-and-trade system); 3) a global compulsory offset scheme. It is expected that a proposed/recommended MBM design scheme will be presented at the 39th ICAO Assembly in fall 2016. Prime Minister Trudeau (along with President Obama) have committed to adopting the recommended measure. If adopted by a sufficient portion of ICAO membership, the aviation MBM is expected to be slated for implementation by 2020.

Reducing carbon emissions will be an increasing focus for airlines and airports in the coming years. New aircraft technology will greatly reduce carbon emissions per passenger but traffic growth will more than offset this advantage. In rough numbers, fully priced carbon at \$30 per tonne, is roughly equivalent to adding a second AIF to the ticket price, and will somewhat reduce growth.

4.4 Canada Transportation Act Review

On February 25, 2016, the Minister of Transport tabled the Canada Transportation Act (CTA) Review Report in Parliament. The Review was statutorily required; however, Minister Raitt accelerated the review in 2014, motivated by issues in the grain delivery system. The purpose of the Review was to conduct a long-term assessment of Canada's transportation system in order to identify priorities and potential actions that would support long-term economic growth. Numerous areas were assessed, including airport governance and airline access.

Regarding airport governance, the Report identifies a number of issues hindering the competitiveness of Canadian airports including federal government rents and taxes, ownership models, land leases and investment in infrastructure and facilities. Of these items, changes to airport ownership structures and investment levels will likely be of most relevance for the Niagara District Airport. Specifically, the Review recommends that in order for airports to be cost-competitive they require adequate levels of investment. This could result from increased government funding and/or private sector equity investment (i.e. privatization or partial-privatization of airports). Additional funding or improved access to capital could help Niagara District Airport finance the facility upgrades needed to accommodate commercial service in the short-term as well as longer-term infrastructure improvements such as a runway extension.

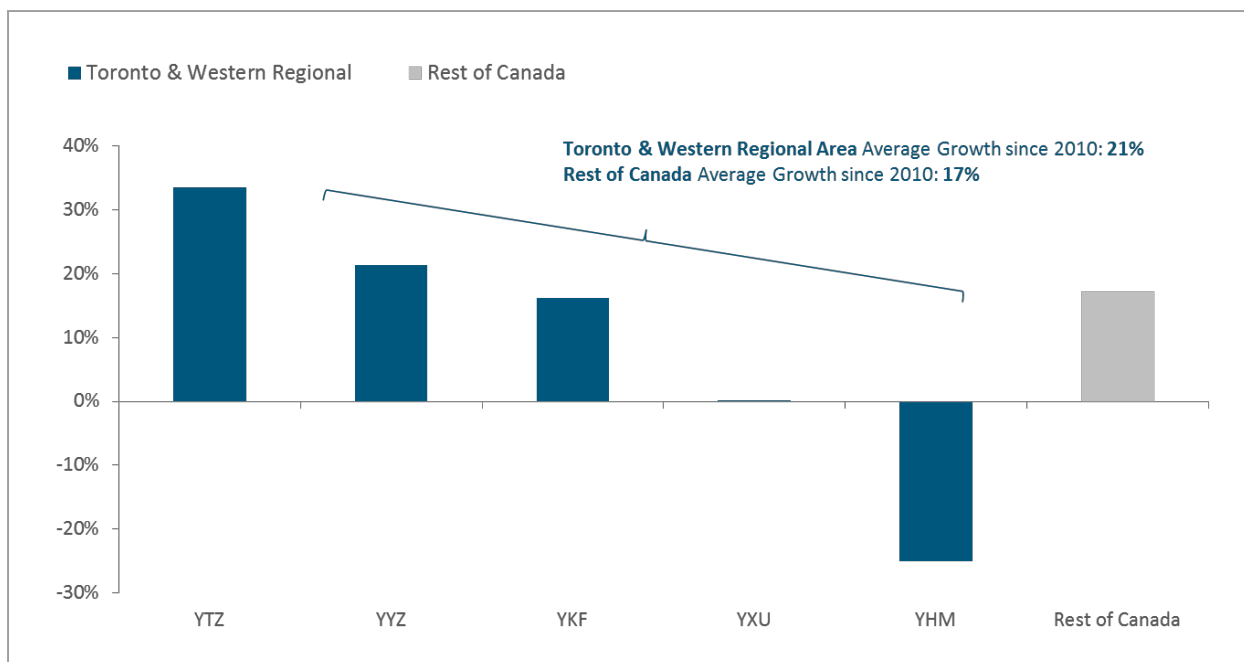
Based on the findings and recommendation of the Report, Minister Garneau is engaging in consultations with the various industry stakeholders. Then, based on feedback from industry stakeholders and the findings and recommendation from the Review, the Government of Canada will move forward with legislation and policy implementations as necessary.

5 Market Trends

5.1 Historical Growth of Demand

When assessing the market potential for new air services, airlines will often look at broad growth trends for the region to gauge potential for adding capacity. As such, if the Southern Ontario market as a whole is performing well and growing, airlines are going to be much more inclined to add new services. As shown in Figure 4, the growth rate for the Toronto and Western Toronto regional area has outpaced the rest of Canada over the past five years, and this is a promising indication of air service growth potential in the future.

Figure 4: Market Demand Growth: 2015 versus 2010



Note: YHM has experienced significant cuts from WestJet in the past few years.

Source: Sabre Global Demand Database

5.2 Southern Ontario Aviation Capacity Constraints

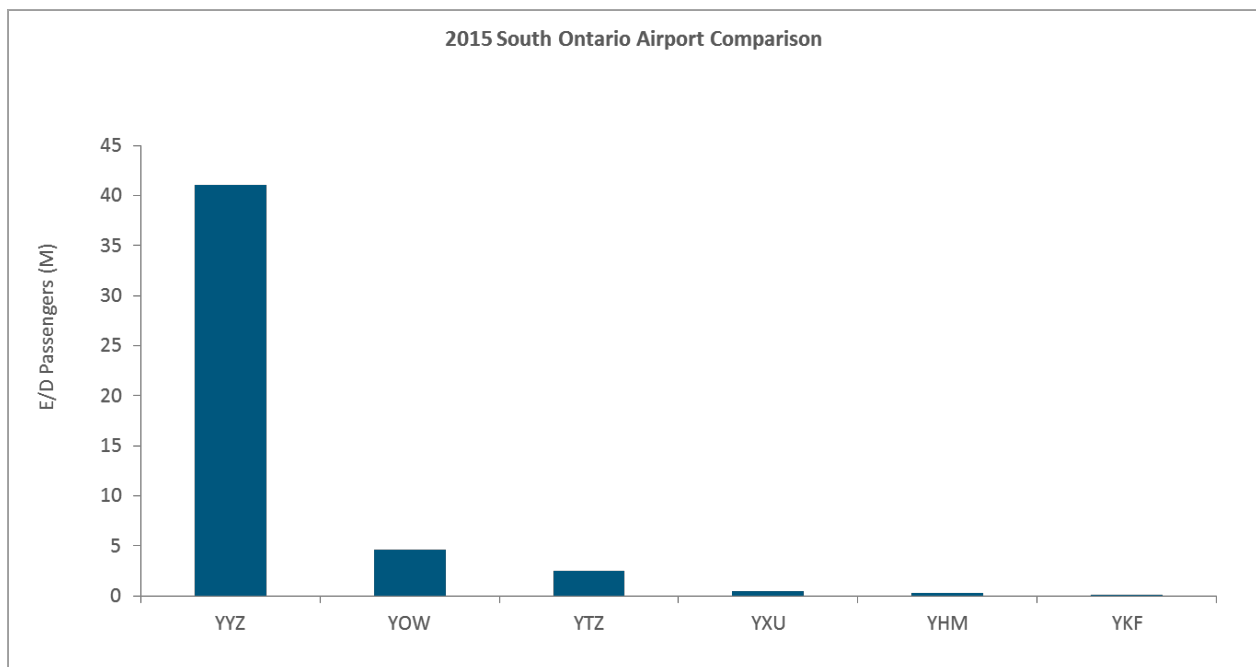
The Greater Toronto Airports Authority (GTAA) released a report in 2015 entitled “Toronto Pearson: Growth, Connectivity, Capacity, The Future of a Key Regional Asset” that was intended to foster a discussion on the future of aviation capacity in southern Ontario. Not since the late-1990s has there been a comprehensive examination of the future of the busiest aviation region in the country. The key driver for the report was the growing capacity constraints at Toronto Pearson, and the ability to meet growing demand. In particular, the role of Toronto Pearson to act as a hub for major carriers such as Air Canada and WestJet could be encumbered.

Although some of the discussion will invariably touch on issues such as the Pickering site, as well as the rapid growth of Billy Bishop Toronto City Airport, there are roles for other regional airports, and it will be important to co-ordinate planning amongst the region's airports. The future potential for road network congestion west of Toronto Pearson (along the QEW/401 corridors) also further complicates access to consumers demanding air travel in the Golden Horseshoe region.

For passenger air services, the primary beneficiaries are expected to be facilities such as Hamilton John C. Munro International Airport (YHM) and the Region of Waterloo International Airport (YKF) – subject to improvements in ground access as outlined in reports authored by Urban Strategies for the GTAA. Diversion of flights from Toronto Pearson to a “reliever” airport is likely to be lower margin traffic such as air charters or smaller aircraft.

As seen in the Figure 5 chart below, Toronto Pearson is the dominant airport in the region, and will eventually reach maximum capacity.

Figure 5: Comparison of Southern Ontario Airports



Source: Airport reporting.

6 Market Benchmarking

6.1 Competitive Environment

In assessing the viability of a new market, airlines will typically start by analyzing some simple benchmarking metrics that provide an initial indication of prospective market size and competitive environment. These will typically include looking at population, average income levels and distance to competing airports.

Situated in close proximity to Canada's busiest airport and multiple competing airports on both sides of the nearby Canada-United States border, YCM faces similar dynamics to a number of other secondary airports in Southern Ontario. Benchmarking against these markets can help determine the opportunity for YCM.

Population and Income

When we benchmark the Niagara Region against other centres in Southern Ontario with existing air service, the population clearly demonstrates market potential. Median household income is slightly below the regional and national averages; however Niagara has a distinct advantage over its peers as a major tourism destination. This inbound tourism demand should more than offset any impact that average income levels may have on outbound demand.

Proximity to Competing Airports

Short distances and travel times between competing airports will affect both an airline's decision to serve YCM, and if so, the type of service offered. In particular, carriers will consider the travel time to the hub airport in Toronto, to any other nearby competing airport (Hamilton) as well as travel time to competing cross-border airports (Niagara Falls and Buffalo, NY). The presence of commercial service at other secondary Southern Ontario airports demonstrates that markets of a comparable size have been able to attract and support local service, both linking into Toronto, other hubs and through point-to-point service.

In the case of a spoke service to Toronto, with driving distances of as little as one hour, the potential to attract local traffic is limited. As a result, the viability of such a service will depend primarily on connecting traffic. While YCM is closer to Toronto than any market currently served, this should not immediately preclude Toronto service from consideration. While slightly further, London-Toronto (Dash 8-300 – 50 seats/Q400 – 74 & 78 seats) and Kingston-Toronto (Beech 1900 – 18 seats/Dash 8-100 – 37 seats) are examples of markets operated almost exclusively for their connecting traffic contributions. Services can be viable with very low local traffic volumes where connecting flows are strong at the hub airport.

In the case of point-to-point service, the fact that both Kitchener and Hamilton, situated closer to Toronto, have been able to attract regularly scheduled service outside the region is encouraging. However, Hamilton also draws traffic from the Niagara Region adding an additional layer of competition. On the transborder front, Niagara's close proximity to airports in Western New York makes the prospects of attracting US service challenging. Airports in Hamilton, London and Windsor have historically struggled attracting and sustaining transborder service due to yield pressures from cross border competition.

Figure 6 summarizes the key metrics that would be utilized by airline planners when undertaking an initial benchmarking assessment of the opportunity for service at YCM.

Figure 6: Summary of Benchmarking Assessment Metrics

Market	Population (2015 Est.)	Household Income	Inbound Tourism	Proximity to Competing Airports			Current Air Service			2015 Air Service Capacity	
				Toronto	United States	Toronto	Other Domestic	Transborder	Annual Seats (Departing)	Seats per Capita	
Niagara	408,200	69,500	High	1 hr	< 1 hr	X	X	X	-	-	-
Hamilton	771,700	82,290	Low	< 1 hr	< 1 hr	X	✓	✓	216,176	0.3	
Kitchener-Waterloo	511,300	82,160	Low	< 1 hr	2 hrs	X	✓	✓	90,716	0.2	
London	506,400	75,980	Low	2 hrs	2 hrs	✓	✓	✓	333,107	0.7	
Windsor	335,800	73,440	Low	4 hrs	< 1 hr	✓	✓	✓	213,626	0.6	
Kingston	169,900	82,950	Low	3 hrs	2 hrs	✓	X	X	46,626	0.3	
Samia	129,500	69,079	Low	3 hrs	1 hr	✓	X	X	21,548	0.2	
Average (excluding Niagara)										0.4	

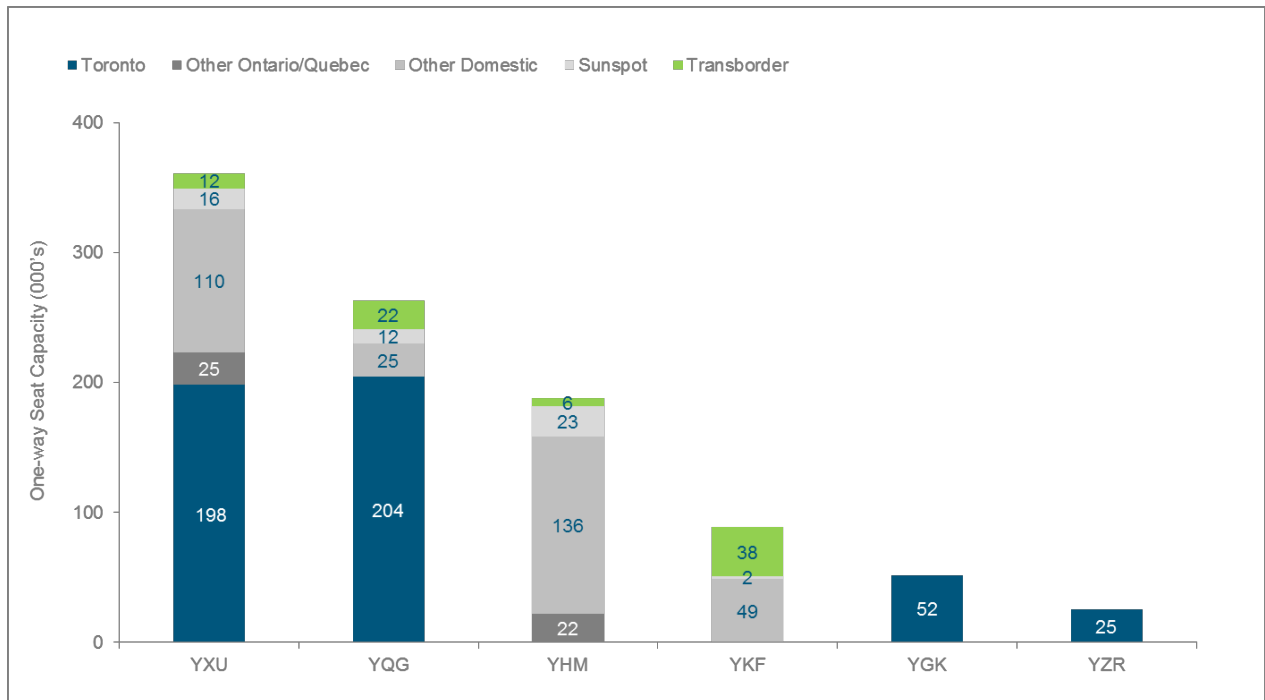
*Population figures based on Statistics Canada 2015 estimates by CMA, income is based on 2013 Statistics Canada data.

*Capacity data sourced using Innovata Schedules via Dilo.

Note: Statistics Canada CMA regions designate Grimsby to the Hamilton area, rather than to Niagara, resulting in the difference in population between the 408,200 shown here versus the 431,346 referenced later in the report.

The majority of seat capacity at smaller airports in the Ontario region is geared towards domestic hub connectivity. As seen below, the region's airports connect primarily to Toronto, Ontario and Quebec, while transborder service is relatively minor.

Figure 7: Seat Capacity by Type of Service (2016)

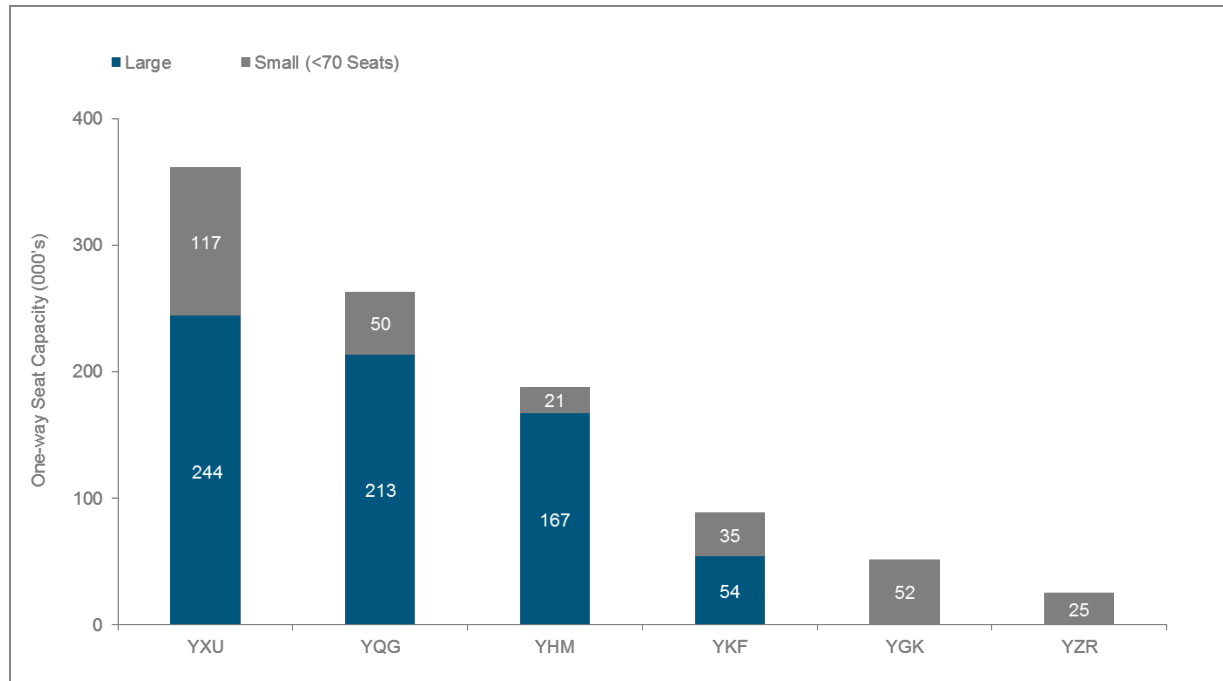


Note: Toronto defined as YYZ and YTZ.

Source: Innovata Schedules via Diio.

With the exception of the very small stations, seat capacity is primarily on larger sized aircraft today. As airlines shift into larger gauges, smaller aircraft (<70 seats) are decreasing significantly.

Figure 8: Seat Capacity by Aircraft Size (2016)



Source: Innovata Schedules via Diio.

Conclusions

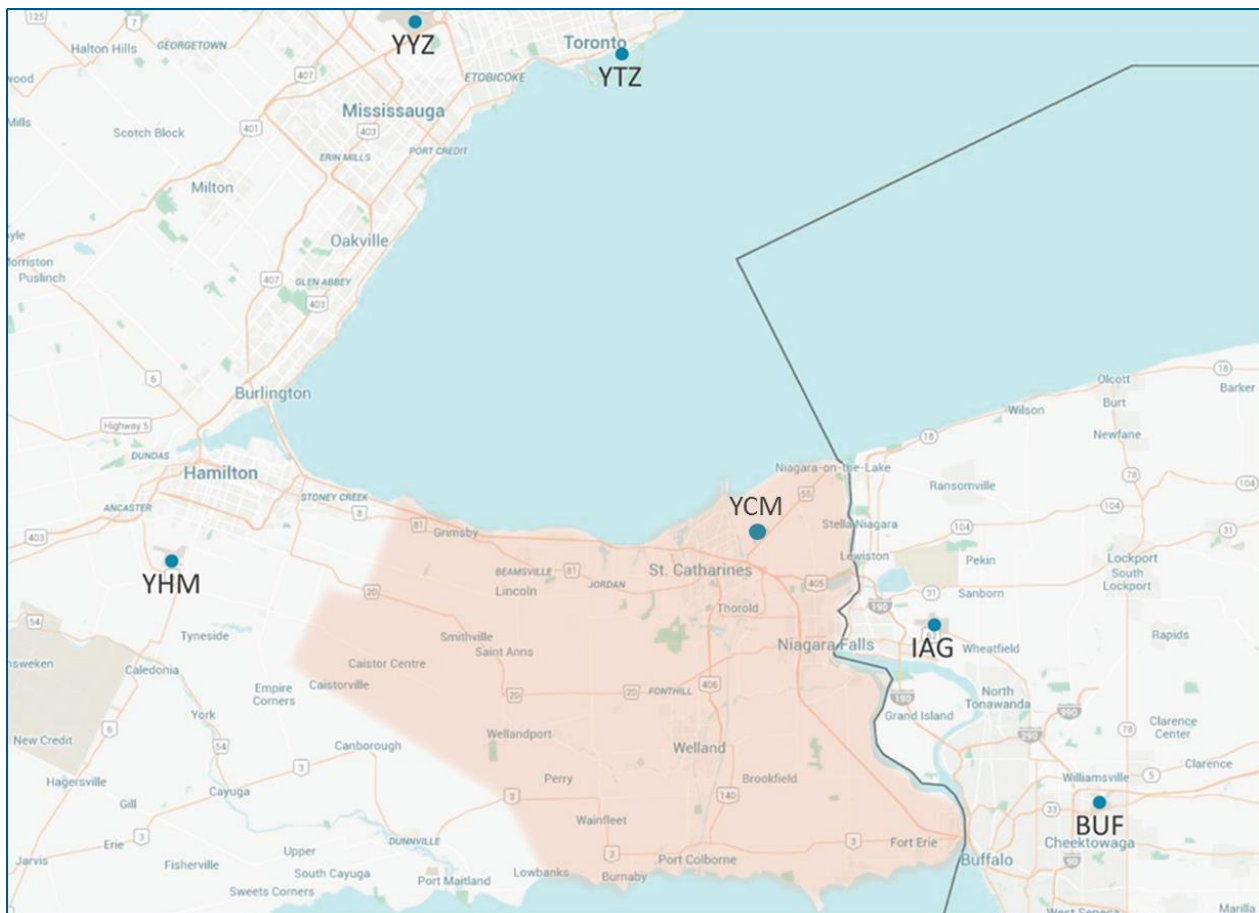
Service levels at secondary Southern Ontario airports are a function of both local market conditions and geographic proximity to competing airports. Benchmarking against markets with existing service demonstrates the Niagara Region has the potential to support commercial service. Using a conservative approach, assuming Niagara could attract only the lowest observed departing seats per capita level in the region, we can estimate the Niagara Region should be able to support just over 80,000 departing seats per year, equating to roughly three Q400 (74-78 seat aircraft) departures daily. With general market potential established, we proceed to establish a more precise estimate of air travel demand for the airport.

7 Market Demand

7.1 Defining the Catchment Area

To determine the appropriate catchment area, InterVISTAS analyzed three key metrics: drive time, airport usage pattern and air service capacity in the region. Analysis reveals that the primary catchment area for Niagara District Airport (YCM) retains the same geographic converge as the Regional Municipality of Niagara. As such, the primary catchment area contains the cities of Niagara Falls, Port Colborne, St. Catharines, Thorold, Welland, Fort Erie, Grimsby, Lincoln, Niagara-on-the-Lake, Pelham, Wainfleet, and West Lincoln. In aggregate, a population of 430,000 (2011 estimate) lives in the primary catchment area.

Figure 9: Niagara Region Primary Catchment Area



7.2 Terminology and Definitions

O/D traffic or origin and destination traffic is the industry standard for measuring air service demand. O/D traffic measures the number of passengers either starting or ending their journey at the intended airport or city. To accomplish this, ticketing data is examined at an itinerary level instead of on a flight or segment level. For example, consider two passengers travelling from Toronto to Vancouver – one takes a nonstop flight and the other connects over Calgary. Both passengers would be counted as Toronto-Vancouver O/D passengers.

7.3 Results of Demand Estimation

Since YCM does not currently have any commercial air service, potential demand from the region is estimated through an assessment of market leakage which is an examination of existing demand to/from areas where YCM is the closest airport, but in the absence of local air service, passengers are using other airports, such as YYZ. When considering the demand estimates, it is important to remember that these figures represent the full potential that is available (i.e. the market size). The share of the demand that could be captured by a new service will be dependent on the type of new service being offered relative to the services being offered by the incumbent airlines. As such, the demand figures presented in this section should not be interpreted as an estimate of the traffic levels for a new service. To arrive at the forecast performance of a new service the market demand (i.e. market size) figures must be combined with market share estimates. Market share estimation and the forecast performance of potential new services is addressed in the “Route Forecasts” section of this report.

In addition to drawing traffic from the immediate St. Catharine’s area, YCM has the potential to draw traffic from the entire Niagara peninsula region (See Figure 9) – an area with an estimated population base of 431,346 (2011 estimate). Depending on the competitiveness of the new air service, YCM may capture additional reverse leakage, which is defined as demand that originates from outside the primary catchment area. One example is a Buffalo resident using YCM to fly to Ottawa if a new nonstop service is available. To be conservative and realistic with our assessment, demand potential has been limited to the primary catchment area only. Another example is the significant amount of traffic that is driving from the Toronto area to Buffalo and Niagara Falls airports in the US. Although these passengers would be driving, right past the Niagara District Airport, it is unlikely that any of this traffic could be captured. These passengers are travelling to US airports to access low cost service to Florida and such service could not be provided from Niagara District Airport as the runway is not long enough to accommodate the necessary aircraft. As such, this traffic has not been considered as a potential source of demand.

A multi-step process is followed to establish market leakage. The first step is to estimate the traffic by origin-destination for each of the study airports. The origin-destination market sizes are estimated using GDS booking data and IATA BSP ticket data for scheduled carriers, and an estimate of passenger load factors applied against direct seat capacity for charter operators or other carriers that do not primarily distribute through the GDS. Estimates are determined by balancing airport enplaned and deplaned passengers by sector (and carrier where the information is available) to the booking and ticketing data, with additional refinement using customs entry data and Canadian resident visits abroad as reported by Statistics Canada.

The second step is to evaluate the share of traffic from each of the study airports. Point-of-sale postal code for the GDS sales is used as a proxy for the passenger’s true point of origin. For example, if the

passenger purchased a Toronto – Montreal ticket from a travel agency in Welland, we assume the demand originates from the Niagara primary catchment area.

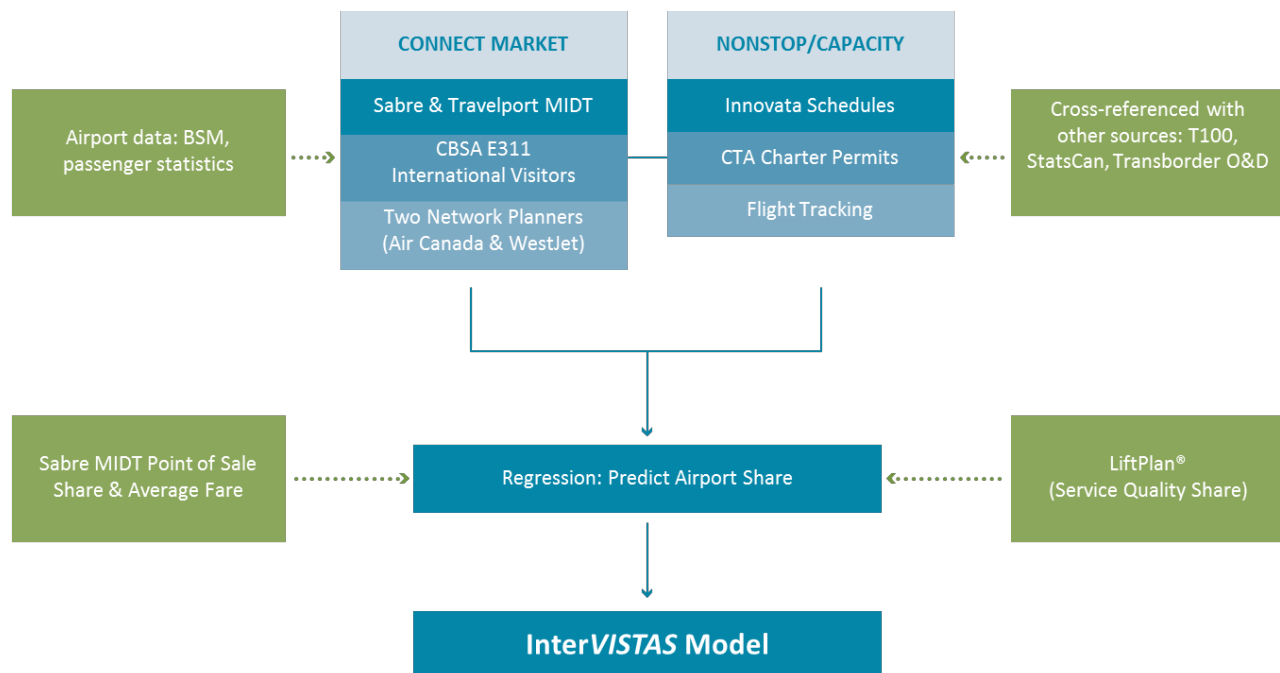
GDS point-of-sale data is, however, insufficient to model all destinations. After cleaning the data for online travel agencies and centralized corporate travel offices that misrepresent the passenger's location, the remaining sample is less than 5% of the total bookings for smaller markets and, as previously noted, does not address charters and many LCC services. This challenge is faced in almost all leakage studies. To address the issue, InterVISTAS have developed a methodology to model the passengers' airport choice behaviour which we can then use to estimate airport market shares. The model regresses the point-of-sale share versus the quality of service and average fare, by destination, for each of the competing airports. Quality of service share is estimated using the LiftPlan market share model while average fares are provided by the Sabre Global Demand database.

The output of the model is an airport attractiveness coefficient for each competing airport from each catchment area. The attractiveness coefficient primarily reflects the relative convenience of ground transportation. The coefficient can be applied to the quality of service share and fare differential to estimate the share of each airport's traffic coming from the relevant catchment area.

The final step is to blend the results with an evaluation of demographic data for the catchment areas, versus all of Southern Ontario, to make sure the estimates are not inconsistent with reasonable travel propensities. In doing so, a number of demographic factors are considering including population and income level, major industries and their corporate affinities.

The chart in Figure 10 provides a summary of the process flow used to develop the market share model.

Figure 10: Market Share Analysis Model



The passenger leakage is divided into two parts, residents of the region and visitors to the region. Given the lack of services at YCM, the airport inevitably sees all of its traffic potential leaking to competing airports. Point-of-sale data from the GDS helps to quantify the amount of residents leaking to other regional airports by analyzing their postal code associated with the ticket purchase. On the other hand, inbound leakage or leakage of visitors to the region requires a combined analysis of inbound tickets, previous quantitative study conducted about the demographics of visitors to Niagara and an assessment of the drive-to-fly ratios for regions in close proximity. A new commercial service would reduce this leakage of traffic and would help support further route development down the road.

In terms of the inbound share of traffic (85%), the high share is consistent with what we would expect for a market like Niagara with significant tourism demand. Furthermore, the propensity to travel figure of 5.0 (2.2 million annual passengers divided by the catchment population of 430,000) is well above the average for Canada of 3.3. This again is consistent with what we observe in markets with a large inbound tourism component.

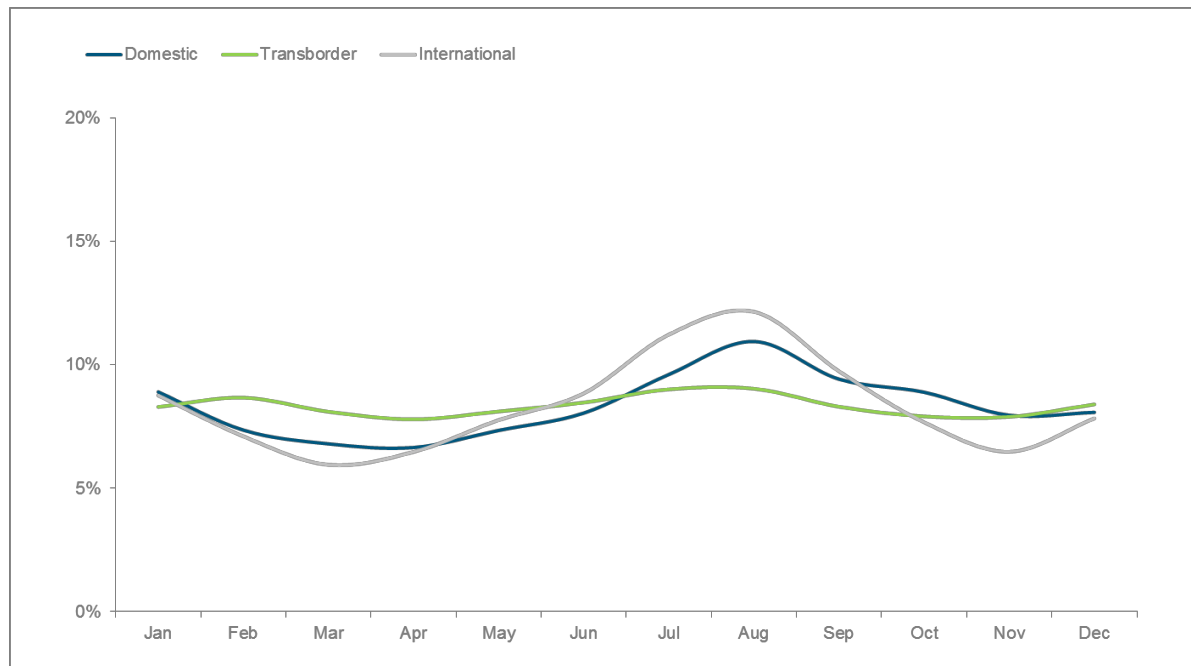
Figure 11: Top 25 O/D Markets for Niagara Region Primary Catchment Area

City	State / Country	Annual Passenger Volume	Passengers per Day Each Way (PDEW)	Inbound Visitor %	Outbound Resident %
New York	NY	148,143	203	80%	20%
Montreal	QC	123,472	169	88%	12%
Vancouver	BC	120,126	165	94%	6%
Calgary	AB	111,463	153	93%	7%
Edmonton	AB	67,728	93	92%	8%
Ottawa	ON	66,139	91	88%	12%
Winnipeg	MB	53,971	74	95%	5%
Halifax	NS	45,310	62	88%	12%
London	GB	44,832	61	91%	9%
Los Angeles	CA	39,330	54	93%	7%
Chicago	IL	38,108	52	78%	22%
Fort Lauderdale	FL	35,135	48	65%	35%
San Francisco	CA	30,151	41	92%	8%
Boston	MA	28,159	39	88%	12%
Orlando	FL	27,946	38	56%	44%
Thunder Bay	ON	26,607	36	85%	15%
Beijing	CN	23,765	33	98%	2%
St John's	NL	23,367	32	88%	12%
Hong Kong	HK	22,545	31	99%	1%
Washington	DC	22,052	30	81%	19%
Tampa	FL	21,213	29	65%	35%
Quebec	QC	20,170	28	80%	20%
Shanghai	CN	20,119	28	96%	4%
Miami	FL	17,368	24	88%	12%
Saskatoon	SK	16,774	23	97%	3%
Other		968,721	1,327	81%	19%
Total		2,162,716	2,963	85%	15%

Note: All 'Other' are markets that have less demand than Saskatoon, but collectively are significant.

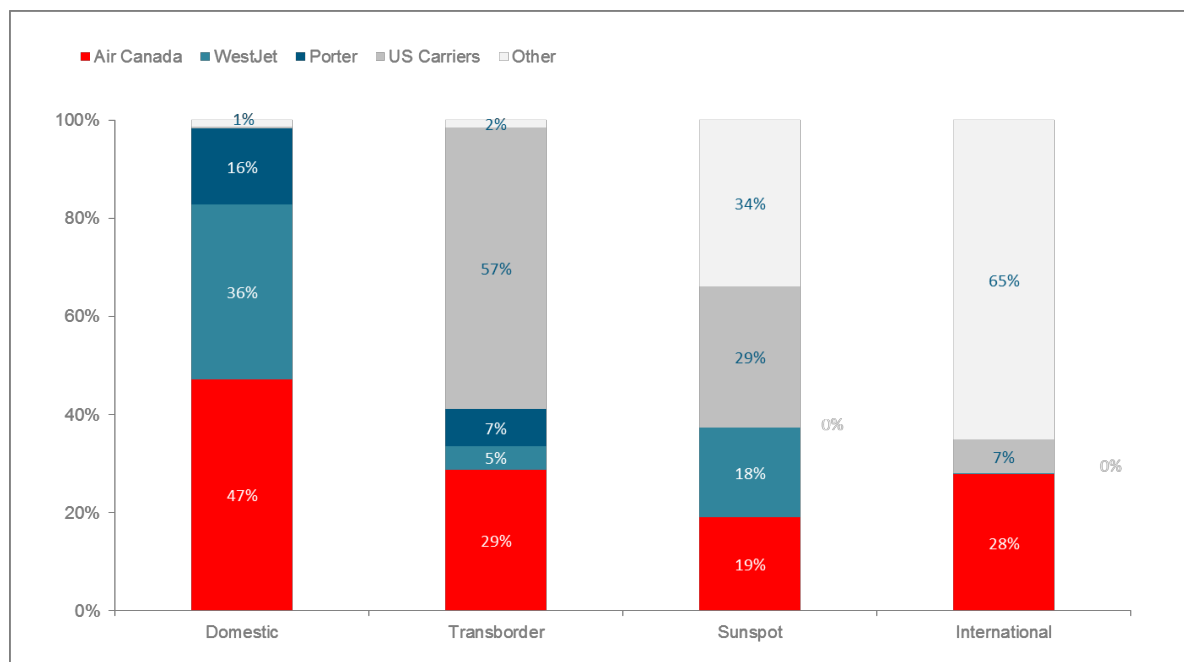
Canadian and northern markets in general have a seasonality profile that tends to peak in the summer months, but there is also distinctive sunspot demand in the winter. Winter is also often buoyed by the winter holiday season and it is not unusual to see increases in passenger activity from December to February.

Figure 12: Seasonality by Sector (as % of Annual Demand) for Niagara Catchment



Air carriers have varying shares in the region depending on the market in which they operate. While Air Canada, WestJet and Porter are dominant in the domestic space, international and US carriers also play a key role in the region.

Figure 13: Carrier Share of Market Demand for Catchment Area Airports by Market (2015)



Total market demand is currently being routed primarily through YYZ.

Some of the potential traffic that YCM could be capturing is also leaking to BUF as seen below. Of note, the largest market, New York, sees only 4% of demand leaking to BUF. This reflects the highly competitive nature of the Toronto - New York market where low fares and high frequency limit cross-border leakage.

Figure 14: Leakage by Airport (as % of Total Demand)

City	State / Country	Niagara Region Demand Airport Usage (as % of Total Demand)				
		BUF	IAG	YHM	YTZ	YYZ
New York	NY	4%	0%	0%	2%	94%
Montreal	QC	0%	0%	0%	2%	98%
Vancouver	BC	0%	0%	0%	0%	100%
Calgary	AB	0%	0%	3%	0%	97%
Edmonton	AB	0%	0%	2%	0%	98%
Ottawa	ON	0%	0%	0%	2%	98%
Winnipeg	MB	0%	0%	0%	0%	100%
Halifax	NS	0%	0%	1%	0%	99%
London	GB	7%	0%	0%	2%	91%
Los Angeles	CA	3%	0%	1%	0%	96%
Chicago	IL	18%	0%	0%	2%	81%
Fort Lauderdale	FL	12%	19%	0%	1%	67%
San Francisco	CA	4%	0%	2%	0%	94%
Boston	MA	9%	0%	0%	0%	91%
Orlando	FL	16%	22%	0%	1%	60%
Thunder Bay	ON	0%	0%	0%	2%	98%
Beijing	CN	18%	0%	0%	0%	82%
St John s	NL	0%	0%	0%	0%	100%
Hong Kong	HK	7%	0%	0%	0%	92%
Washington	DC	9%	0%	0%	6%	85%
Tampa	FL	8%	23%	0%	0%	68%
Quebec	QC	0%	0%	0%	1%	99%
Shanghai	CN	24%	0%	0%	0%	76%
Miami	FL	1%	0%	1%	1%	97%
Saskatoon	SK	0%	0%	0%	0%	100%
Other		11%	1%	1%	1%	86%
Total		7%	1%	1%	1%	90%

7.4 Market Stimulation

In the airline industry it is generally accepted that some level of market stimulation (i.e., market growth) will occur as a result of new air service. This acceptance is based on analysis of new route launches in various markets and the impact these have had on traffic levels. When new service is added it provides more options for travellers which, in turn, results in additional demand. Specifically, new services provide additional travel options, lower prices and increased market visibility, which in turn results in demand from passengers that would not have travelled before deciding to do so due to the improvement in air access. Additionally, it is important to note that stimulation does not occur only in the local market, but occurs in connecting markets where travel times and/or airfares are improved.

When it comes to the level of market stimulation, there are a number of market characteristics that are important to consider. Specifically, markets that have limited service generally tend to produce larger rates of stimulation when new service is added. Additionally, markets that have a higher proportion of inbound leisure travellers tend to experience higher rates of stimulation. This is because inbound leisure travellers have many options when choosing their vacation destinations and as such their decisions will be heavily based on the convenience of available air service and the airfares. In the case of YCM, it is

essentially a tourist destination behind YYZ that will become more visible for the leisure market as new services are introduced. On the other hand, outbound travellers are more likely to be accustomed to a lack of service and many will drive to Buffalo or Toronto to obtain their desired service, despite the lack of convenience and/or lower fares. That being said, there is still potential for outbound stimulation, as business travellers often make travel decisions based on the convenience of air services (less opportunity cost of being out of the office) and airfares.

In order to gauge the potential for stimulation at YCM, a number of recent examples were reviewed. As shown in the table below, history has demonstrated that new services usually result in significant market growth.

Figure 15: Examples of Stimulation in the Canadian Domestic Market

Route	Orig City	Dest City	Airline	Year Started	Average Weekly Outbound Frequency (at start)	Stimulation (change in demand after service start)	
						Incremental Demand (Per Day Each Way)	Stimulation (%)
YBRYC	Brandon	Calgary	WestJet	2013	7x weekly	41.8	∞
YCDYC	Nanaimo	Calgary	WestJet	2013	7x weekly	62.2	395%
YCLYH	Charlo	Halifax	Provincial	2012	3x weekly	4.3	∞
YLWYMM	Kelowna	Fort McMurray	WestJet	2014	7x weekly	38.2	194%
YLWYXC	Kelowna	Cranbrook	Pacific Coastal	2013	6x weekly	11.3	754%
YQFYC	Red Deer	Calgary	Air Canada	2013	20x weekly	24.0	∞
YXJYC	Fort St. John	Calgary	WestJet	2013	7x weekly	50.9	280%
YXSYYC	Prince George	Calgary	CMA/WestJet	2013	6x weekly	57.2	439%
Average						36.2	413%

∞ denotes routes with no pre-existing market demand.

Source: Innovata Schedules via Diio.

Note: Stimulation and incremental demand represent observed demand the year after new service enters the market versus the year before start of the service.

In addition to direct stimulation that results from improvement in service there is also a broader type of market stimulation that takes place through increased awareness for the tourism product. For example, using many online booking channels, a potential traveller may not be able to search for “Niagara, Ontario” or some variation of that. Rather they must be aware that Toronto or Hamilton are presently their best alternatives for accessing the Niagara Region. Conversely, with a direct service in the market, a potential traveller could just search “Niagara, Ontario” online and see flight itineraries that take them to/from YCM. This increased visibility often results in incremental tourism demand.

8 Strategic Assessment

8.1 Competitive Position

It is helpful to conduct a SWOT analysis to determine where the airport is positioned relative to its peers and examine how YCM will fit into the Niagara region's travel preferences. This will allow us to identify the type of traveller to target and narrow down which routes/airlines will be the most effective operating at YCM. A SWOT analysis also allows for some degree of situational awareness at a point in time, which can then be updated after a certain length of time to see how the airport has improved (or regressed), and what opportunities can be pursued in the future.

Figure 16: SWOT Analysis

Strengths	Weaknesses
- Large local population base - Strong levels of quantifiable demand - Global tourism destination - No direct competition from existing air service	- Multiple large, well established, competing airports in the region - Lack of existing terminal services/infrastructure to support commercial service (e.g. CATSA) 5,000 ft. runway restricts aircraft type and in turn range of markets that are servable
Opportunities	Threats
- Congestion at YYZ creating opportunity for "reliever" airports - Recapturing large existing demand that is leaking to other airports - Stimulate new travel demand with a local air service option - Convert existing drive/rail traffic	- Population conditioned to using alternative airports will continue to do so - Reduction in small aircraft availability - Improved road/rail linkage to YYZ - Dependence on regulatory approvals to facilitate commercial service - Major service expansion at YHM

Based on the SWOT assessment, it is apparent that the market fundamentals indicate that there is potential for commercial service at YCM. Specifically, a large population base combined with a strong tourism draw are core strengths that are attractive to airline planners. While the reduction of smaller aircraft availability does pose a threat to the development of air service at YCM, there are routes where the aggregate demand (local plus connecting) is sufficient to support larger equipment.

That being said, the key to the viability of any service at YCM will be its ability to provide additional value over competing options. The most likely way value will be created is through the improved convenience that will result from flying directly in and out of YCM. This improvement in convenience could be realized through a number of factors including, but not limited to, a simplified airport experience and reduced

uncertainty around road congestion and drive times. Another way value can be created is through lower fares; however, it is unlikely that carriers would price YCM service below that of competing airports in the area (if anything they will charge a premium in order to capitalize on the convenience aspect).

As such, any service proposed for YCM must have a demonstrable value proposition for travellers. Targeting a carrier with a strong brand and network will help with this aspect. If a service were to be initiated at YCM, it would certainly be advisable for the community to develop a comprehensive marketing program to ensure that the value proposition is clearly articulated in order to build awareness and persuade passengers to adapt their current travel patterns.

8.2 Operational Considerations

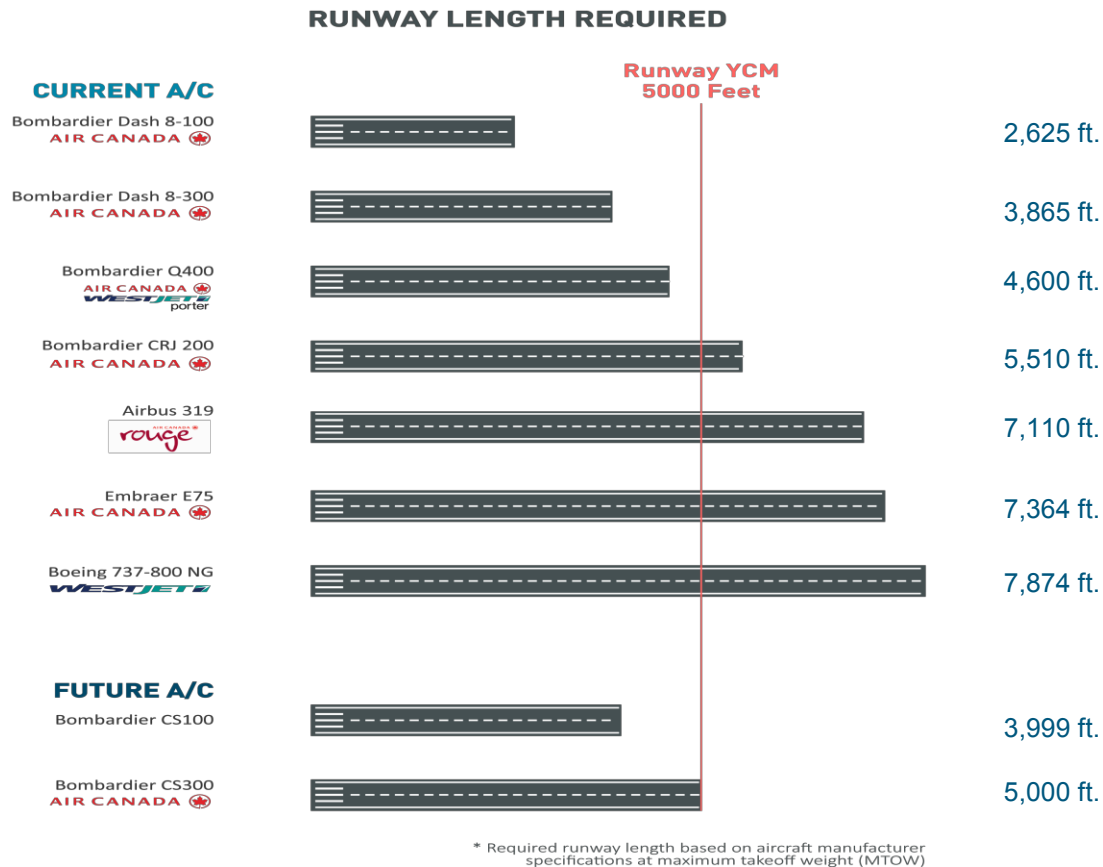
Runway Length

While various infrastructure considerations, both airfield and terminal, will impact a carrier's ability and desire to serve a market, adequate runway length is a critical initial parameter in assessing commercial service viability.

While the required runway length varies greatly between aircraft types, it is also impacted by a variety of operational and environmental factors. These factors include payload (passengers, bags and fuel), weather conditions (temperature, winds, ceiling, rain/snow contamination), navigational aids (lightning, instrumental landing system), obstacles (terrain, constructed obstacles near airfield) and operator specific policies (carrier requirements that exceed manufacturer specifications).

Acknowledging the above factors will impact actual requirements on a case-by-case basis, using manufacturer specifications for required runway length at maximum takeoff weight (MTOW), we can develop a fairly clear, conservative picture of which aircraft would be able to serve YCM reliably.

Figure 17: Runway Length Requirements for Specific Aircraft



Range Limitations

As the above graph illustrates, with a 5,000 foot runway, YCM is presently limited to pursuing regional turboprop service. Air Canada, Porter and WestJet all possess aircraft suited to operating at YCM. However, regional fleets at US carriers are almost exclusively composed of regional jets, making them unable to serve YCM. Air Canada has greater capacity flexibility, with the smaller Dash 8-100 (37-seat) and Dash 8-300 (50-seat) in their fleet in addition to the larger Q400 (74-seat). However, as previously discussed, with the Dash 8-100/300 reaching the end of their service life, Air Canada has plans to phase them out in the coming years. Therefore, we have assumed their growing fleet of modern Q400s as the most probable aircraft for future route expansion at regional airports.

The Q400 also provides the best range capability in the turboprop market and is therefore used to illustrate the maximum range circle for non-stop service from YCM. While the aircraft can fly further with reduced payload, we have modelled the maximum range from YCM based on the longest routes currently flown on regular scheduled service in North America. Based on this analysis, the longest viable route length is approximately 650 nautical miles. This cap on trip length provides a realistic estimate of how far carriers would be willing to operate, limiting the scope of route options to those carriers are likely to consider viable.

While Air Canada has placed an order for the Bombardier CS300 aircraft (45 firm, 30 options), it remains to be seen whether the C Series is operationally capable of landing on a runway as short as 5,000 ft. Bombardier has released information that would indicate this is possible, but it is currently unclear whether this will be operationally possible with feasible load factors.

Figure 18: Markets Reachable from Niagara District Airport (YCM)



As the range circle illustrates, service from YCM is effectively limited to Ontario and Quebec domestically and the Northeast and eastern Midwest of the United States. Of note, this precludes service to major demand markets in Atlantic and Western Canada as well as the southern United States, particularly Florida.

8.3 Facility and Process Requirements

The airports system in Canada is typified by large hubs such as Toronto Pearson, Vancouver and Montreal that are self-sustaining. Smaller airports such as YCM are challenged with viability due to large capital infrastructure and associated operating costs. While there are opportunities to lever public or private dollars associated with new infrastructure, there also has to be a viable business case to attract carriers. Given carriers are reluctant to spend time analyzing markets that do not have the necessary facilities in place, it is very difficult to get a commitment from an airline before the investment is made by the airport. Nowhere is this more evident than in the ability for the airport to obtain government support for agencies related to security and border processing.

Security

YCM currently does not have services from the Canadian Air Transport Security Authority (CATSA) – the crown corporation created in April 2002 charged with delivering certain security screening services at airports in Canada. The choice of airports designated to have CATSA services is a decision from

Transport Canada. Without security screening that meets Transport Canada and CATSA requirements, there is no possibility of commercial service access to hubs such as Toronto Pearson or Montreal. Moreover, no direct connections are possible through hub airports (e.g. Niagara-Montreal-Paris).

In 2015, an all-party Private Members' Resolution called for the ability for non-designated airports such as YCM to receive CATSA security services. A program was advanced by Transport Canada and CATSA to designate airports such as YCM for services, with equipment and screening officer time charged back to the airport, provided sufficient facilities were available to meet the Aeronautics Act regulations.

In the development of the 2015 program that CATSA and Transport Canada have for non-designated airports, paying fees on a cost recovery basis to receive CATSA services is standard and for now there is no plan to change this formula.

However, CATSA is bound to federal Treasury Board secretariat rules on pricing; it is always possible to challenge the amount of cost recovery. Some airports and communities in Canada have accepted the quotation for the estimated costs for service provision based on a Letter of Intent from CATSA. Other communities have found the costs unreasonable and may be considering a third party consulting group to review overall costs, and to link the initiative to results from the Canada Transportation Act review panel that was tabled before the House of Commons in March 2016.

Border Services

Currently, YCM has services by Canada Border Services Agency (CBSA). However, as an airport of entry for 15 passengers or less ("AOE/15"), there are service limitations. While YCM has 8am to midnight operations available from CBSA (with availability after midnight on a cost recovery basis), there is a limitation for the ability for clearances to occur. Obtaining "AOE/30" or a higher status from CBSA will require a formal review of services. CBSA will ask for the services to be paid for with cost recovery. Similar to other airports, any international service (e.g., from the United States) will require costs to be recovered from the airport or airline. This cost is typically recovered directly from the passenger through a ticket charge; there is however an impact on demand if the pricing is too high for the market to bear.

There is a history of fee-for-service associated with CBSA, and they have a set system for parameters for what is defined as core services, opposed to cost recovery. Generally speaking, any new services given by CBSA will be in a fee-for-service model.

9 Airline Strategies

9.1 Introduction

In general, an airline is more geared towards maximizing its return on assets, rather than maximizing its market share. As such, commercial airline teams are focusing on improving route profitability by taking a disciplined approach to fleet growth. Underperforming routes relative to other route opportunities will likely be targeted for capacity/frequency reduction or cancellation as the aircraft can be deployed more profitably elsewhere. An airline's network strategy will have a direct impact on which new routes have the best potential to support profitable growth. In turn, it is important to understand a carrier's strategy in order to identify which routes provide the best strategic fit. Several major airline operating models prevail in the Canadian aviation industry with applicability to YCM's pursuit of commercial service. They are discussed below with respect to carriers relevant to the Niagara market and how recent carrier trends impact the potential for service at YCM.

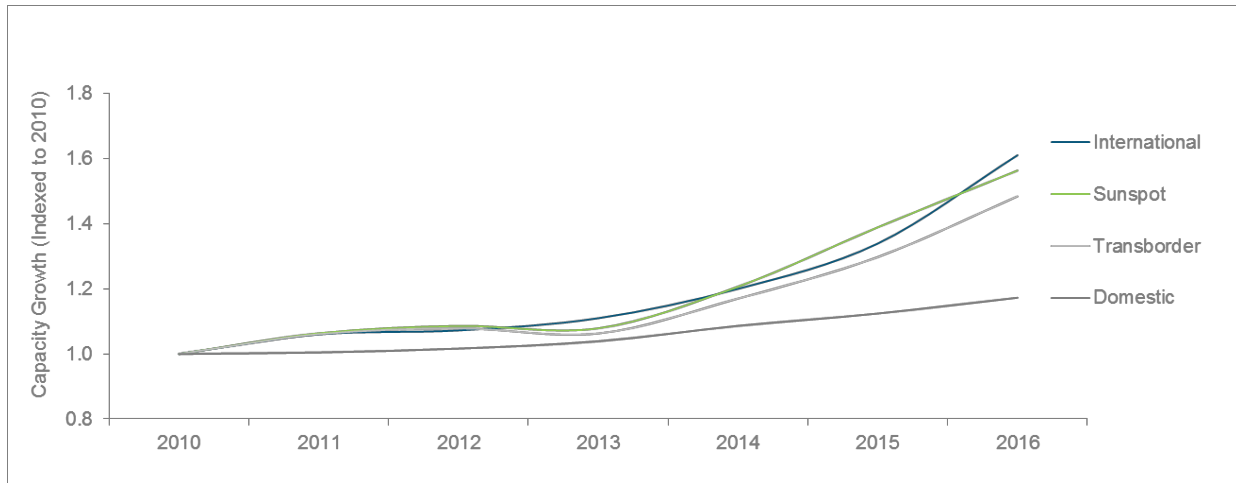
9.2 Full Network Carrier + Leisure Carrier (Air Canada)

The Air Canada business model continues to evolve. In addition to their network hub and spoke flying with the mainline carrier, the creation of Air Canada rouge has allowed the carrier to more effectively compete in low fare, leisure markets.

International expansion is a key area of growth for Air Canada, supported by a fleet of 30 Boeing 787s expected by 2017. Air Canada has already received 15 of these aircraft and has launched new destinations in Asia and in Europe (including mainline Toronto-Dubai service and Vancouver-Osaka service on rouge). In order to support this international growth, Air Canada has also been focusing on building regional feed at its 4 major hubs (YYZ, YUL, YYC and YVR). Additionally, AC has placed orders for 737 MAX and CSeries aircraft to help replace their current narrow-body fleet and have been renegotiating and initiating new contracts with regional providers to reduce costs.

Cost cutting initiatives on the regional side have included the increased use of larger, more cost effective aircraft such as the Q400. It is also strengthening its relationships with its partners in the Star Alliance network through Joint Venture (JV), Anti-Trust Immunity (ATI) partnerships. These partnerships allow partner carriers to coordinate pricing, schedules and sales activities as if the carriers were one company. The Trans-Atlantic JV between Air Canada, Lufthansa, and United Airlines, otherwise known as Atlantic-Plus-Plus (A++), allows the three carriers to better compete in the North America to Europe/Middle East/India markets by allowing close coordination of commercial activities.

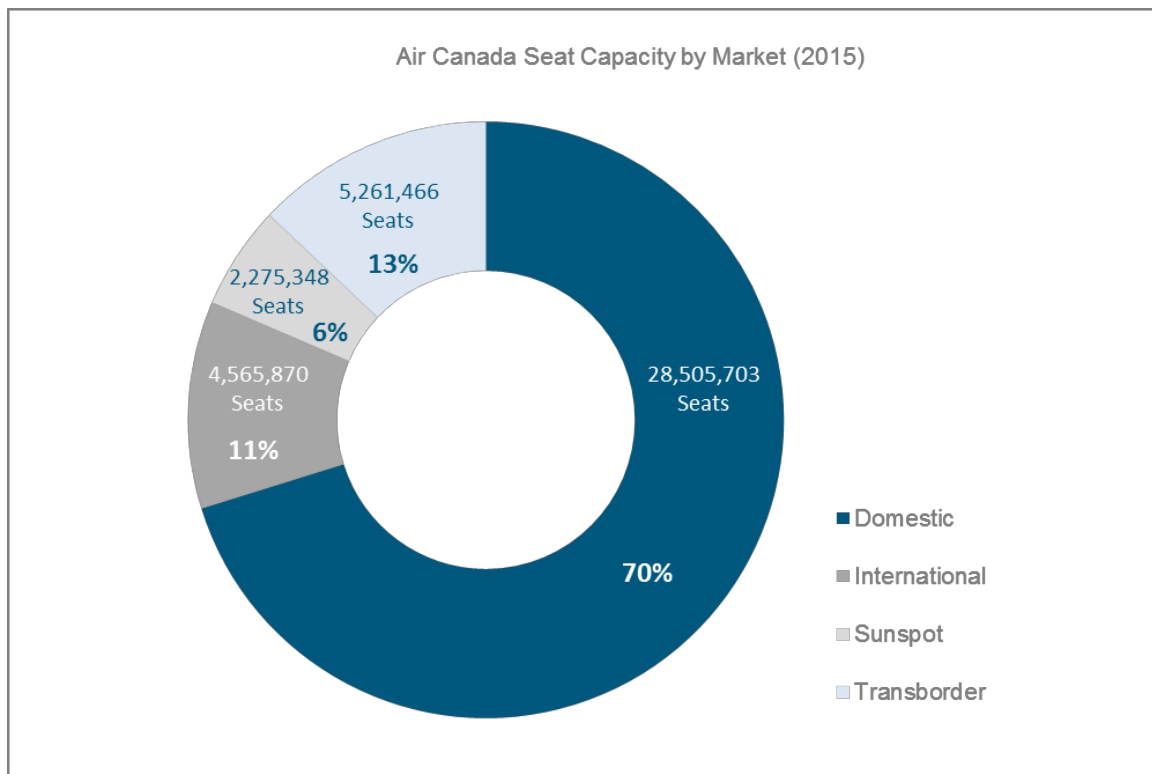
Figure 19: Air Canada Capacity (ASM) Growth Trends



Source: Innovata Schedules via Diio.

Although international expansion has been the main area of focus for Air Canada, domestic service still accounts for the majority of Air Canada's capacity.

Figure 20: Air Canada Seat Capacity Share by Market (2015)



Source: Innovata Schedules via Diio.

Air Canada rouge was launched in summer 2013 and has been very successful as it has continued to expand rapidly. While commercial planning and sales are handled by Air Canada, Air Canada rouge operates under a separate Air Operator's Certificate (AOC), allowing for separate union agreements for its labour force. This allows Air Canada to operate at a lower cost base on select highly price sensitive markets, and hence better compete with leisure carriers. Rouge was initially launched at YYZ and YUL serving exclusively sun spot leisure markets. Air Canada has continued to focus on expansion of rouge's low-cost product and has begun taking over select domestic routes as well (e.g., Kelowna-Toronto, Charlottetown-Toronto, Sydney NS-Toronto).

Financially, AC is doing very well which is helping fuel their appetite for further growth (achieved excellent 2015 financial performance with an adjusted net income of \$1.2 billion – 9% of total revenues). Continuation of cost control measures, lower fuel prices, and transfer of more mainline operations to rouge were the drivers behind 2015 profits.

A focus on growth at their hubs in Toronto and Montreal necessitates continued examination of new regional connecting spokes to increase traffic feed in support of their growing international network. The movement away from smaller regional turboprops also highlights the importance of demonstrating to Air Canada that YCM can support a 70+ aircraft.

Longer term, if the runway were extended, the recent expansion of Air Canada rouge into secondary airports (e.g. Abbotsford, BC) indicates transcontinental or sun service may be possible on a limited frequency/seasonal basis.

9.3 Hybrid LCC (WestJet)

WestJet began as a Low Cost Carrier (LCC) in 1996 and has since evolved into a hybrid, network carrier model. While it continues to operate seasonal, low frequency leisure services, such as Hamilton-Cancun, and point-to-point service to secondary airports, such as London ON-Winnipeg, it has begun to build a robust hub network at its main airport bases in Calgary and Toronto, as well as smaller hub operations in Vancouver and Halifax. The carrier is also growing its list of codeshare partners worldwide, including Delta Air Lines and American in the US, China Southern in China and Emirates in the UAE. Their codeshare partners offer WestJet customers a larger network to more effectively compete with Air Canada's international reach.

Figure 21: WestJet Capacity (ASM) Growth Trends

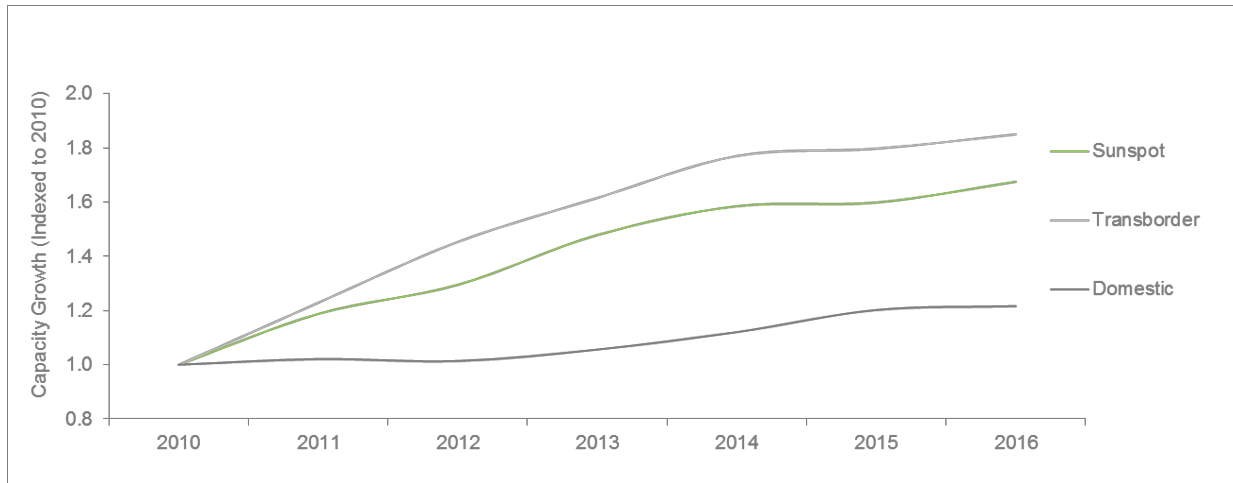
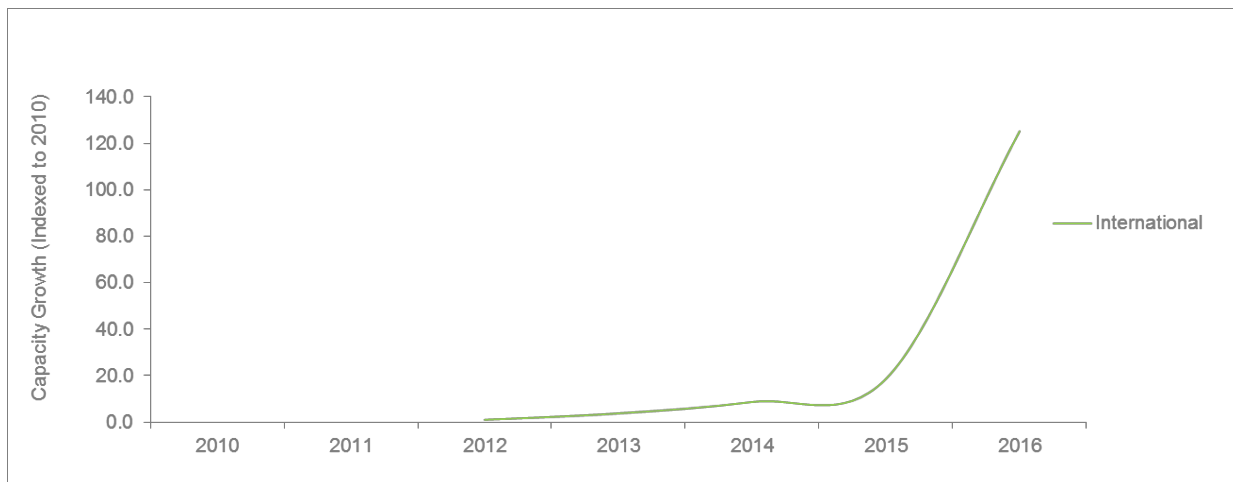
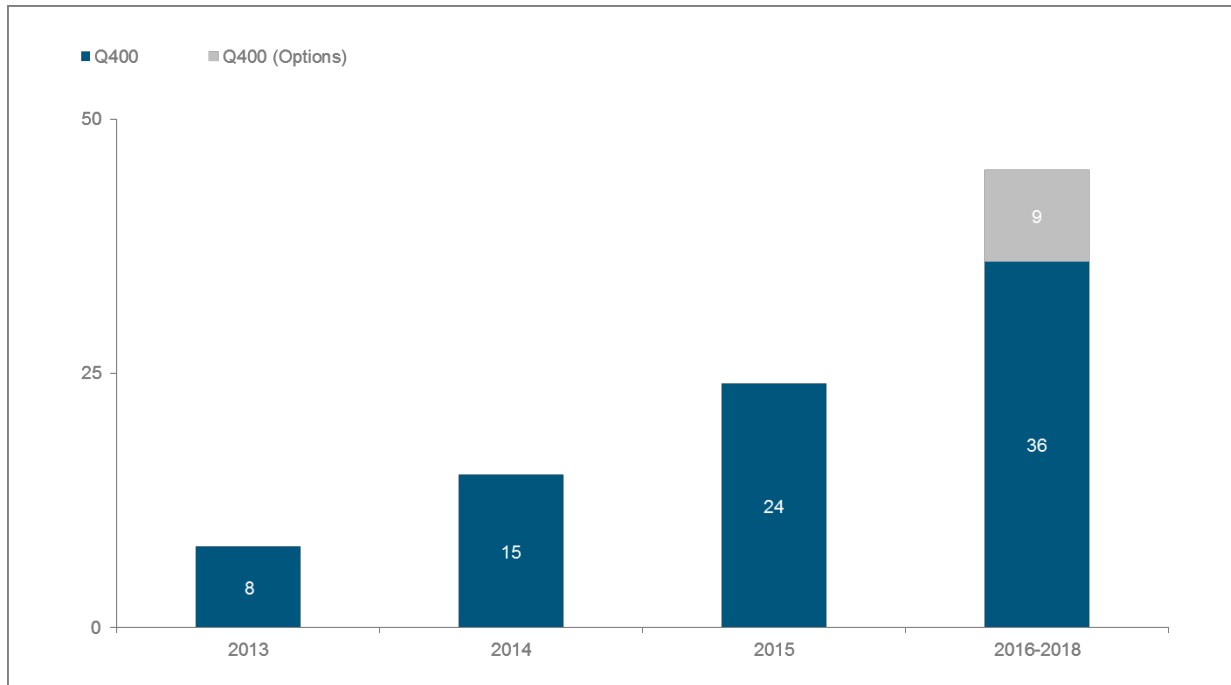


Figure 22: WestJet Capacity (ASM) Growth Trends – International Only



Launched in 2013, WestJet Encore was created as a wholly owned subsidiary to facilitate WestJet's growth into smaller regional markets. Operating a fleet of Q400 aircraft, Encore has expanded rapidly across Canada with an eastern hub established in Toronto in 2015. Over the past year, Encore has improved frequency on existing regional markets (e.g. Thunder Bay-Toronto, Quebec City-Toronto) and added new spokes (e.g. Fredericton-Toronto, London-Toronto). With a current fleet of 27 aircraft, Encore has orders for up to an additional 18 aircraft over the next 3 years.

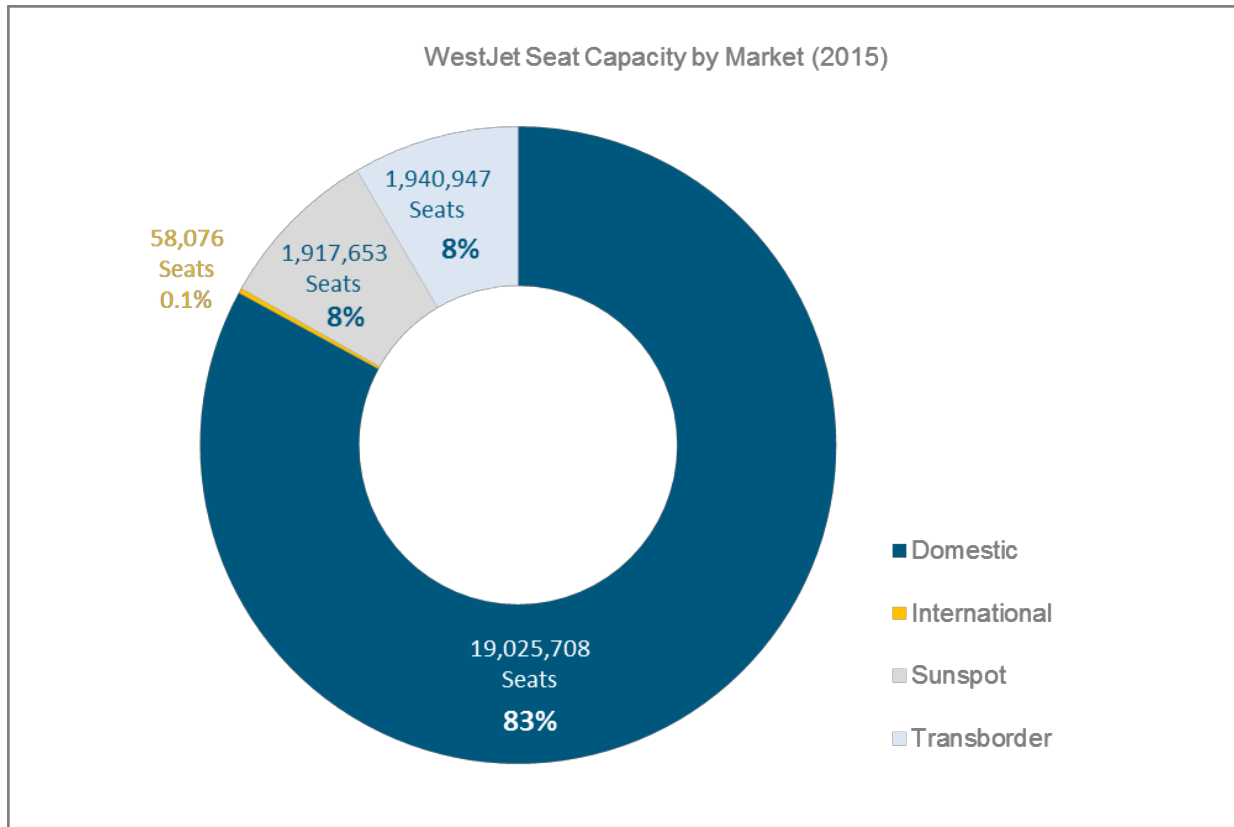
Figure 23: WestJet Encore Fleet Growth



In 2015 WestJet acquired four Boeing 767s to mark their entrance into the wide-body market. These planes are replacing leased Boeing 757s operating between Alberta and Hawaii. Beginning in summer 2016 these aircraft will operate new seasonal service to London-Gatwick from 5 Canadian cities. These aircraft and associated routes are seen as a long haul service trial before deciding on a larger order of wide body aircraft.

WestJet continues to have strong financial performance, with adjusted net earnings of \$368 million for 2015 (9% of total revenues). In 2016 WS expects to increase seat capacity and ASMs, despite shifting capacity from Alberta to Eastern and Central Canada amid falling oil prices.

Figure 24: WestJet Seat Capacity Share by Market (2015)

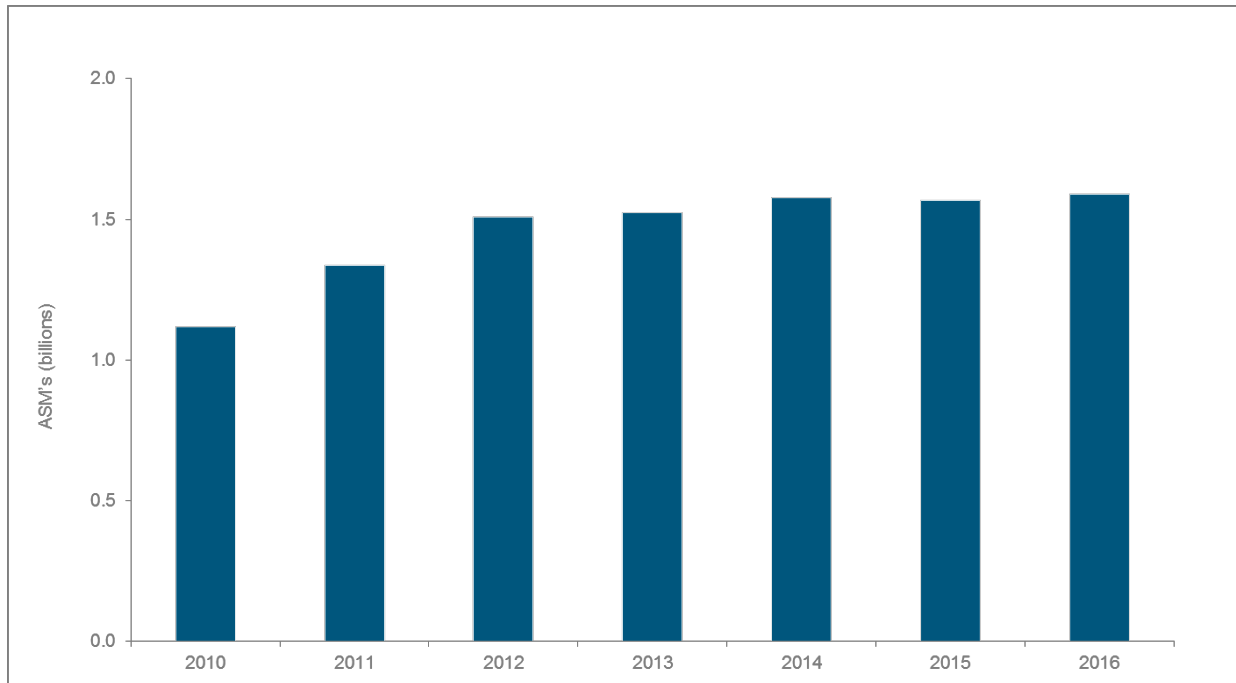


As WestJet continues to develop its regional network at Toronto, it will be looking for new spokes to better compete with its domestic rivals. The recent addition of Encore service from London ON to Toronto demonstrates a willingness to explore predominantly connecting, close proximately markets. A shift in focus to capacity growth in eastern Canada also bodes well for consideration of unserved markets in Southern Ontario such as YCM.

9.4 Regional Carrier (Porter)

Porter Airlines started operations in 2006 and now operates a fleet of 26 74-seat Q400 propeller aircraft. These aircraft can typically fly up to 650 nautical miles under normal operating conditions. Porter's main hub is located at Toronto Island Airport (YTZ), with smaller hub operations at Ottawa and Halifax. While it had plans to fly larger, longer-range jet aircraft (the Bombardier CS100), this was on the condition that it could get approval for a required runway extension at YTZ. With the Trudeau government opposing the extension proposal, Porter will not be able to move forward with jet service at YTZ for the foreseeable future. Additionally, YTZ is heavily slot restricted and it is unlikely that additional landing and takeoff slots will be authorized in the near future.

Figure 25: Porter Capacity Growth (Measured in Available Seat Miles or ASMs)



Without the CS100 jet aircraft in its fleet, Porter will need to look for network growth opportunities outside of its main base at YTZ. Montreal is dominated by Air Canada and complemented with WestJet service. Ottawa seems to be most likely prospect for future Porter growth with the Q400. As Atlantic Canada is generally too far to operate from YTZ nonstop using Q400 aircraft, additional Porter flights to the Maritimes could potentially link into a growing network via Ottawa.

Figure 26: Porter Capacity (ASM) Growth Trends

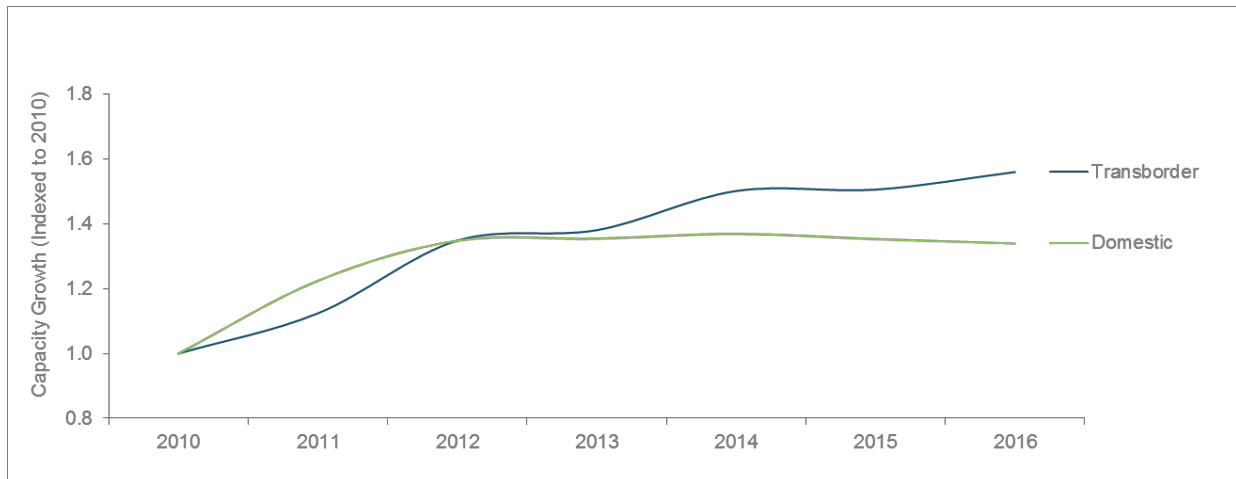
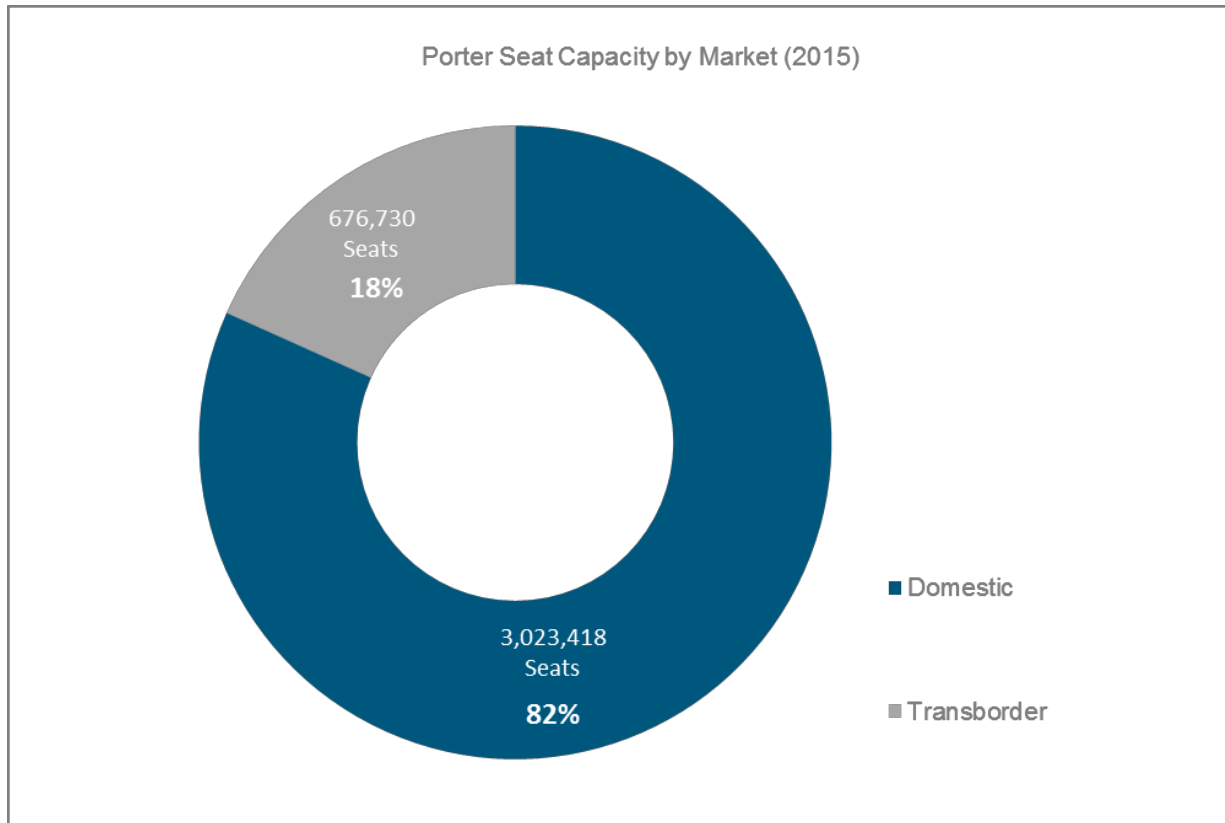


Figure 27: Porter Seat Capacity Share by Market (2015)



Pressure from Air Canada and increasingly WestJet Encore in Toronto necessitates that Porter continue to look at niche opportunities from Toronto. While slot restrictions are an issue, Porter has shown a willingness to tactically shift slots between markets to enhance and expand service. With the advantage of servicing downtown Toronto, Porter has the potential to stimulate local traffic on a YCM route that would likely not be possible via Toronto Pearson. In the longer term, if Porter decides to build up their operation at Ottawa, YCM could again provide a potential niche opportunity.

9.5 Ultra Low Cost Carriers

The Ultra-Low Cost Carrier (ULCC) model has been widely adopted in the United States. Carriers such as Spirit Airlines and Frontier brand themselves as ULCCs to attract travellers seeking low fares. These carriers generally operate one type of aircraft, in an all-economy configuration flying between two cities, point-to-point without transiting through a hub. Their fare structure is often “unbundled”; the carrier applies extra charges to overhead carry-on bags, checked luggage, on-board beverages and snacks, and seat selection. To maintain low operating costs, these carriers often fly from smaller, regional airports with lower fee structures versus larger airports. Due to their low cost of operations, their core airfare is often lower than the average fare from larger network carriers, and hence, can often stimulate traffic demand for leisure-type markets. Generally, these carriers will offer services at low frequency to maximize their aircraft utilization across their network. US ULCCs currently offer domestic US flights, as well as flights to Mexico and the Caribbean. ULCC service from Niagara Falls International Airport in New York, offered by

Spirit and Allegiant, provide service to Florida specifically targeting Canadian origin passengers from the Niagara region and beyond.

Due to taxes associated with cross-border flights, US LCCs and ULCCs have not attempted Canadian service. At some point, domestic opportunities will decline and these carriers will seek international services into Canada and additional points in Mexico, Caribbean, and Central America. Recent weakness in the Canadian dollar is likely to delay such plans, but if pursued, the impact to Niagara is unlikely to be considered as they will target Canadian cities distant from border airports where they already operate.

While no Canadian ULCC has yet to take flight, there are currently three proposed Canadian ULCC startups:

- Jetlines: Based in Vancouver, currently seeking additional funding before starting operations.
- NewLeaf: Based in Winnipeg, the airline was recently cleared by the Canadian Transportation Agency to operate as a reseller of air services.
- FlyToo: Based in Calgary, this startup proposes to use Enerjet aircraft, currently used for Charter operations.

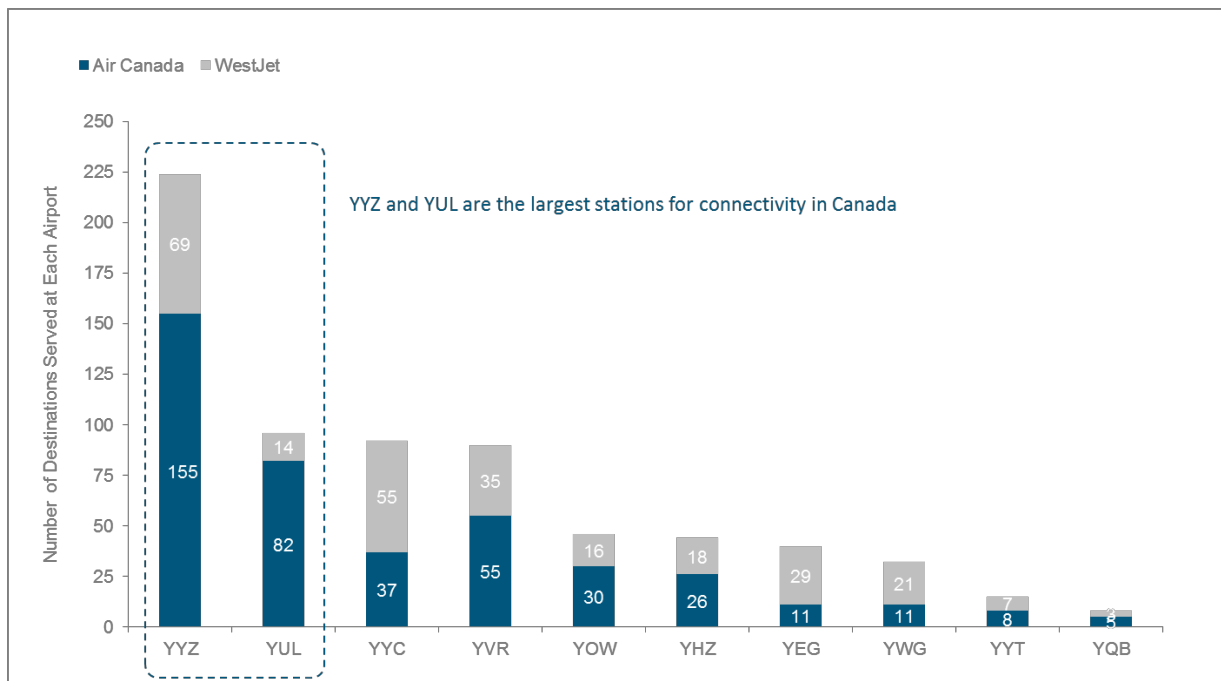
Both NewLeaf and Jetlines have announced their intention to use Hamilton as their gateway to the Greater Toronto Area. This has potential to greatly increase Hamilton's competitive position in drawing traffic from the Niagara Region with lower fares, increased frequencies and additional non-stop destinations available.

10 Assessment of Potential Airlines/Routes

A number of variables will go into selecting potential new commercial services at YCM. Some are obvious like market size, but some are perhaps less clear, and reflect the nuances of Canada's aviation industry. As we have seen in earlier sections, in addition to local market size, airline planners also look at things such as connecting market demand, growth potential, strategic fit and whether competing airports are already served by their airline.

As a region, the Niagara peninsula has a number of air service options to points both domestic and international. The vast majority of potential YCM passengers currently travel to Toronto due to the sheer volume of both domestic and international flight options. Others travel to Buffalo and Niagara Falls, NY for low-cost transborder services, while others access alternative WestJet and other leisure carrier services at Hamilton. As seen below, Toronto and Montreal are the strongest stations in Canada when it comes to connectivity potential.

Figure 28: Canadian Airport Connectivity: Number of Destinations Served (2016)



Source: Innovata Schedules via Diio (2016).

Keeping the above considerations, as well as the limited runway length in mind, it would make sense to target the Big 3 Canadian carriers (Air Canada, WestJet and Porter) as likely first candidates for service. American carriers may hold some potential in the future if it can be demonstrated that YCM is able to sustain commercial service, but recently American carriers have been reluctant to add capacity to regional Canadian markets and have cut service across the country as they struggle with the weak Canadian dollar. These recent trends, combined with limited turboprop fleets make US carriers generally

a poor fit. This is especially true when major US airlines consider that they capture Niagara region market share across the border at Buffalo (BUF).

Although New York City is the largest air travel market for the Niagara region it is unlikely that domestic carriers like Air Canada and WestJet would consider serving this market from YCM because it does not fit with their business models. Specifically, with the exception of sunspot flying, these carriers are focused on operating service to their hubs in order to support their existing operations. Adding service from a small unserved station in Canada into a congested and expensive hub like JFK (New York Kennedy) or EWR (Newark) would not make sense from a commercial or operational standpoint.

As shown in Figure 29, a number of operational feasible route and carrier combinations were scrutinized to identify the top three opportunities. Given the information in Figure 29, especially the market sizes, as well as the aforementioned less tangible parameters, we have chosen the following routes that we feel hold sufficient potential to warrant further analysis in order to determine the viability of service at YCM:

- 1) WestJet – Toronto Pearson (YYZ)
- 2) Porter – Toronto City (YTZ)
- 3) Air Canada – Montreal (YUL)

It should be noted that although service with a small regional operator to/from a fixed base operator (FBO) facility would be possible, and could eliminate the need for CATSA security screening, these types of service hold limited potential. Specifically, these types of services tend to fail due to higher costs, no connectivity feed and weak brand recognition. That being said if an FBO point-to-point carrier is able to establish itself in Southern Ontario and create sufficient brand awareness and operate with lower costs, there may be potential for YCM service to the bigger markets of Toronto-City, Ottawa and Montreal. One example of a carrier attempting establish itself in Southern Ontario is NEXTJETCANADA, with service at Kitchener-Waterloo, Peterborough, Gatineau/Ottawa and Montreal. If this carrier's business model proves viable then additional analysis may be warranted to evaluate the potential for service at YCM.

Figure 29: Opportunities at Niagara District Airport (YCM)

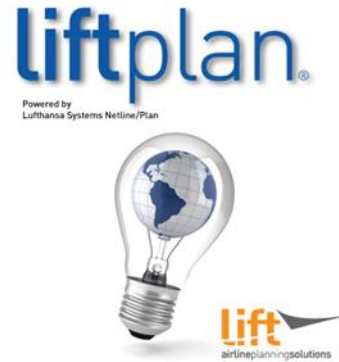
Market	Potential Carrier	Current Service - Within 2 hr. of Toronto			Market Demand		Strategic Fit	Potential For Service	
		Hamilton	Kitchener	London	PDEW	Connectivity			
Domestic									
Toronto-Pearson	WestJet	✗	✗	✓		No service	High	✓	Medium
	Air Canada	✗	✗	✓			High	✓	Medium
Toronto-City	Porter	✗	✗	✗		No service	Medium	✓	Medium
Montreal	Air Canada	✓	✗	✓		169	Medium	✓	Medium
Ottawa	Air Canada	✗	✗	✓		91	Medium	✗	Low
	Porter	✗	✗	✓			Medium	✗	Low
Thunder Bay	Air Canada/Porter	✗	✗	✗		36	Low	✗	Low
Quebec	Air Canada	✗	✗	✗		28	Low	✗	Low
Transborder									
New York	Porter	✗	✗	✗		203	Low	✗	Low
	United	✗	✗	✗			High	✗	Low
Chicago	Porter	✗	✓	✓ ends Jun 2016		52	Low	✗	Low
	Air Canada	✗	✓	✓ ends Jun 2016			Medium	✗	Low
Boston	Porter	✗	✗	✗		39	Low	✗	Low
	Air Canada	✗	✗	✗			Low	✗	Low

Note: PDEW = Passengers per Day Each Way.

11 Routes Analysis

11.1 Route Analysis Methodology

For route forecasting, the LiftPlan model has been used. LiftPlan is a software suite based on Lufthansa Systems' NetLine/Plan. Inputs to the software suite include a complete worldwide schedule, origin/destination (O/D) market sizes – adjusted to reflect results from the YCM leakage study, fares, and a fully customizable set of airline cost categories. Using the input data, LiftPlan is able to generate logical O/D itineraries for every true origin and destination in the market size database. The quality of each itinerary is measured by the market share model, which allocates passengers and revenues to the individual flights in a carrier's network. Specifically, traffic and revenue is allocated based on a logit based quality of service index (QSI) methodology – a technique widely used for network planning in the airline industry. QSI is a way of quantifying a concept which is qualitative (service quality). Moreover, QSI attempts to forecast consumer behaviour by quantifying the relative attractiveness of different flight options. The specific parameters used to quantify the attractiveness of different air service itineraries are derived by the model designers and based on comprehensive statistical analysis of currently observed passenger behaviour. Stimulation is also determined by the changes in the quality and price of available air services.



More importantly, different scenarios can be built by adding/deleting/adjusting individual flights. The tool will then analyse the resulting changes in passengers, incremental revenue gain/loss and the changes in market shares for all airlines in every O/D market.

The Lufthansa Systems model is currently used by major airlines including Lufthansa, Air Canada, Qatar Airways, Cathay Pacific and Turkish Airlines. InterVISTAS has successfully used LiftPlan with airline clients worldwide, ranging from regional carriers to large international Tier I airlines.

All route results shown in the following section are presented on a mutually exclusive basis. That is, the viability of any potential service was assessed independently of other potential services. As such, if a carrier were to initiate a route at YCM this may have an impact on the viability of any subsequent potential routes.

11.2 Route Forecast Results

Overall, the results from these detailed route forecasts indicate that there are multiple airlines that hold potential for a viable commercial service from YCM.

Figure 30: Route Operating Results

Air Canada YUL (Montreal) - YCM (Niagara)	Summer	Winter	Annual Average
Onboard Traffic			
Weekly Frequencies (outbound)	14	14	14
Aircraft Type	Q400	Q400	Q400
Weekly Seats	2,072	2,072	2,072
Weekly Passengers	1,680	1,334	1,507
% Local	28%	41%	34%
% Connecting at Hub	72%	59%	66%
Stimulation as % of Load	10%	12%	11%
Avg. Load Factor	81%	64%	73%

WestJet YYZ (Toronto) - YCM (Niagara)	Summer	Winter	Annual Average
Onboard Traffic			
Weekly Frequencies (outbound)	14	14	14
Aircraft Type	Q400	Q400	Q400
Weekly Seats	2,184	2,184	2,184
Weekly Passengers	1,645	1,269	1,457
% Local	3%	4%	4%
% Connecting at Hub	97%	96%	96%
Stimulation as % of Load	8%	9%	9%
Avg. Load Factor	75%	58%	67%

Porter YTZ (Toronto City) - YCM (Niagara)	Summer	Winter	Annual Average
Onboard Traffic			
Weekly Frequencies (outbound)	14	14	14
Aircraft Type	Q400	Q400	Q400
Weekly Seats	2,072	2,072	2,072
Weekly Passengers	1,283	1,064	1,173
% Local	13%	16%	14%
% Connecting at Hub	87%	84%	86%
Stimulation as % of Load	17%	19%	18%
Avg. Load Factor	62%	51%	57%

Load factors vary from airline to airline, but the resulting loads from the scenario modelling conducted appear to be viable for the carriers in question. For instance, Air Canada posted a system-wide load factor of 84% in 2015, while WestJet posted 80% for the same period. It has been estimated that Porter generally operates at or below 60% load factor, and one of Porter's last publicly released figures (54% YTD February, 2013) indicated this to be true.

With a large local market size, the Montreal service with Air Canada shows the highest potential of the three routes analyzed. To provide some context around the results, it should be noted that only 34% of the traffic would be local traffic going to/from Montreal. This equates to 37 local passengers per day each way which equates 22% market share (as shown previously, total market size is 169 passengers per day

each way). This level of market share is in line with what we have observed in other comparable markets. Additionally, it should be noted that Air Canada could decide to launch service with an aircraft smaller than the Q400 in order to minimize start-up risk (e.g. Beechcraft 1900 (18 seats), Dash 8-100 (37 seats), Dash 8-300 (50 seats)). However for this assessment we chose to use the Q400 as a better indication of long term viability given the eventual phase out of the smaller aircraft.

In terms of market access, YUL is a significant hub for Air Canada and the proposed flights would provide one-stop connectivity to key markets. Of particular interest, is the fact that Air Canada serves some markets out of Montreal that it does not serve out of Toronto. These unique services from YUL include large markets such as Lyon, Nice and Geneva. For service in these markets, itineraries directly from YCM with a connection in YUL would certainly be competitive against the alternative option of driving to YYZ and then connecting via another hub along the way.

WestJet service to Toronto Pearson benefits from the extensive connectivity available throughout their network (including their partner airlines) but shows very limited opportunity for local traffic. Porter service to Toronto-City offers increased local traffic potential with the convenience of the airport's downtown location, but the limited reach of connecting options results in forecasted performance lagging slightly behind WestJet. All routes show seasonal strength in summer consistent with peak tourism demand in the region. Winter forecasts are lower, but still demonstrate demand that is likely sufficient to support year-round service on all markets.

Our market demand analysis indicates that WestJet currently captures a smaller share of the Niagara market than Air Canada. As such, WestJet has more to gain in terms of incremental passenger traffic by initiating service directly to YCM. WestJet has historically employed this type of strategy in Southern Ontario to capture market share to its Western hub in Calgary (WestJet has direct Calgary service to Toronto, Hamilton, Kitchener-Waterloo, London and Windsor).

In the case of Porter, market shares also seem reasonable based on the current competitive environment. For example, on the largest connect market of Montreal, Porter is forecast to achieve 3% market share. Again, this level of market share is in line with what we have observed in other comparable markets. Based on current travel patterns from the leakage study performed by InterVISTAS, Porter is capturing only 1% of the Niagara market. As such, the potential for Porter to gain incremental traffic by initiating service at YCM is significant.

However, generating and maintaining commercial air service at YCM is not without risk. Operating a 74-78 seat aircraft will generally require local community support and there are challenges to year-round service including, but not limited to, aircraft size, ticket pricing, investments in infrastructure and regulatory requirements. These factors will impact YCM's assessment of whether commercial air service is attainable, and sustainable.

12 Recommendations & Implementation

Based on analysis of the overall market dynamics and the three specific route/airline options, it is our conclusion that there is sufficient passenger demand for the market to sustain commercial air service at YCM. The market demand from the Niagara Region primary catchment combined with the current competitive environment provides ample opportunity for a carrier to initiate commercial service at YCM. As such, if the necessary investments are made to develop adequate facilities, processes and infrastructure at the airport for commercial service, there are a number of viable regional service opportunities, with the best and most likely options being service to Toronto or Montreal.

Although the actual airline costs associated with specific routes are only known by the airlines, based on publically available financial statements and industry standards, the analysis indicates that a YCM regional service is expected to be financially viable. Forecast load factors are in line with the airlines' historical performance for regional operations, so combined with typical airfares this metric would support the notion that there is good potential for these services at YCM.

12.1 Implementation Process

Based on this financial and load factor analysis it is expected that some airlines would agree that a regional service at YCM could be viable for them and therefore initiate service in the future. Should the airport wish to move forward with the pursuit of commercial service, the following implementation process, in approximate chronological order, could be utilized:

1. Make necessary facility improvements and ensure regulatory approvals are arranged (as determined by airport operator, as this aspect is outside the scope for this assessment)
2. Development of commercial fee structure for airlines (e.g. landing fees etc.) and passengers (e.g. parking rates etc.)
3. Establish a community consultative group to gather community feedback and input
4. Develop business cases for target airlines
5. Present business cases to network planners at target airlines
6. Engage in negotiations with airlines regarding incentives and community support (if necessary)
7. Facilitate commercial agreement between airport and airline
8. Support new service through community marketing plan

Although steps 2 through 5 could be completed prior to step 1, the carriers are not going to be willing to give serious consideration to a YCM service until the necessary facility improvements have been made. Of particular importance is security screening (provided by CATSA). Having security screening at all stations is a requirement for the major airlines, as the facilities that they use at their hubs require passengers and bags to be properly screened to allow for connections.

13 New Service Implications

13.1 Community Benefits

In terms of the broad implications of new air services, there are numerous benefits for the community as a whole. Air service provides an economic link the rest of the world, facilitating commerce through increased trade, direct investment and knowledge transfer. Often times when companies are looking to set up operations in an area, access to transportation for goods and employees will be one of the key considerations. On the tourism side, having direct air access helps build market awareness that is not available via indirect offerings. For example, using many online booking channels, a potential traveller will not be able to search for “Niagara, Ontario” or some variation of that. Rather they must be aware that Toronto or Hamilton are presently their best alternatives for accessing the Niagara Region. Conversely, with a direct service in the market, a potential traveller could just search “Niagara, Ontario” and see flight itineraries that take them to/from YCM.

In addition to the qualitative benefits discussed above, there is one important benefit that can be quantitatively measured – convenience. Being able to fly directly into Niagara Region will eliminate the time associated with driving to other area airports. For the nonstop local market, the time saving could be fairly significant (e.g. YCM to Montreal (YUL) nonstop versus driving to Toronto Pearson (YYZ) and then flying to YUL). For connecting markets the connection time will add to the elapsed time however it will eliminate the uncertainty associated with driving to other airports. For example, someone going to Halifax may prefer to travel on a YCM-YUL-YHZ (i.e. connect via Montreal) as opposed to driving to Toronto Pearson (YYZ) and then flying nonstop to Halifax (YHZ). Although the Toronto Pearson (YYZ) option may potentially be faster, there is also uncertainty around traffic congestion and conditions for the drive from Niagara Region to Toronto Pearson (YYZ).

13.2 Airport Revenue

At most airports commercial service is the main driver of revenue. Generally, airports will derive their revenues from three sources: airlines, passengers and third-party operators. Additionally, revenue streams are generally classified as either aeronautical or non-aeronautical. It is important to distinguish aeronautical from non-aeronautical as airlines are increasingly pressuring airports to focus on the latter rather than the former. As such, a focus on developing non-aeronautical revenue streams is essential to maintaining a competitive cost structure that is attractive to airlines. Many airports have already adopted this strategy, with some airports in Canada getting almost half their total revenues from non-aeronautical sources.

Figure 31 below summarizes the different mechanisms for generating revenue from each source and classification.

Figure 31: Revenue Generation at Airports

		Classification	
		Aeronautical	Non-Aeronautical
Source	Airline	Landing Fees Terminal Fees Aircraft Parking Fees	-
	Passenger	AIF	Customer Parking Retail & Concession (often revenue sharing)
	Third Party Tenant	De-icing Providers Ground Handling	Advertising Retail & Concession (lease) Car Rentals Taxi Services

When determining the revenue potential for commercial services, the main drivers are aircraft landings, seat capacity and passenger volume. Below in

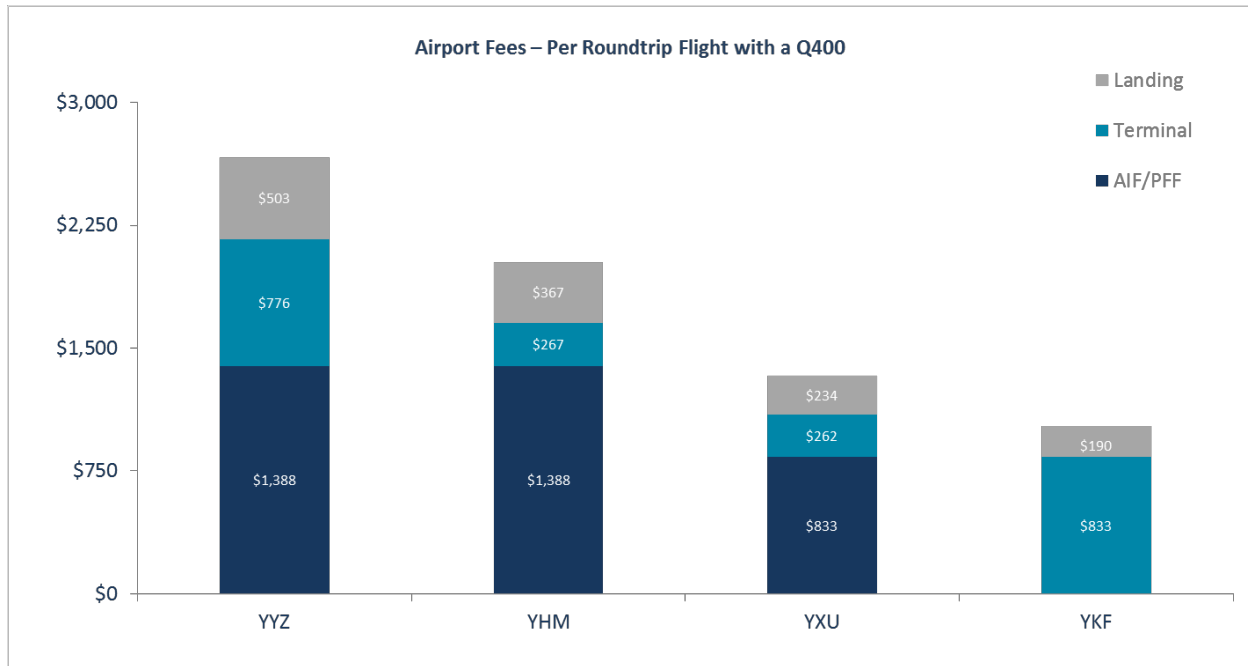
Figure 32 is a summary of these drivers, on an annual basis, for each of the three scenarios. By applying landing, terminal fees and AIF amounts to these figures, a good estimate of the aeronautical fees can be derived. With regards to the non-aeronautical fees, assumptions about per passenger spend rates can be applied to estimate this component. In terms of revenues from third party operators, these need to be considered on a case-by-case basis.

Figure 32: Summary of Annualized Service Metrics

Service Scenario	Aircraft Landings	Inbound Seats	Enplaned Passengers
Air Canada YUL (Montreal) - YCM (Niagara)	730	54,020	39,288
WestJet YYZ (Toronto) - YCM (Niagara)	730	56,940	37,992
Porter YTZ (Toronto City) - YCM (Niagara)	730	54,020	30,593

In terms of determining a specific fee structure for YCM, it is critical that the rates are in line with other stations in the area. For context a sample fee structure comparison is below for stations in the area using a Q400 as an example.

Figure 33: Airport Fee Structure Comparison



Note: Assumes 75% load factor on a Q400 aircraft (78 seats).

Source: Airport fee schedules & InterVISTAS analysis.

Parking at is another key revenue generator for airports, and for the southern Ontario region, typical ranges for parking fees are between \$8-\$18 per day and \$50-\$90 per week.



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