NATIONAL AIRLINES COUNCIL OF CANADA
CONSEIL NATIONAL DES LIGNES AÉRIENNES DU CANADA

THE CASE FOR ELIMINATING THE GOVERNMENT OF ONTARIO TAX ON AVIATION FUEL ON TRANSBORDER AND INTERNATIONAL FLIGHTS

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EXECUTIVE SUMMARY

There are at least five good reasons why the Government of Ontario should eliminate the 2.7¢ per liter aviation fuel tax on transborder and international flights.

(1) The Government of Ontario is out of step with the federal government; most provincial governments; the US Government; and most US state governments. Indeed, Ontario is out of step with its own HST policy, where it does not impose a sales tax on air travel originating in Ontario and terminating either in the US or outside of Canada and the US. Ontario remains one of the few jurisdictions in Canada to levy the fuel tax on international flights.

When then Premier Gordon Campbell announced on September 20 that British Columbia would introduce legislation to eliminate the aviation fuel tax on transborder and international commercial flights by April 1, 2012, he pointed out:

> "This change would help YVR and B.C. markets as the preferred gateway to North America and the world, bringing tourists and added economic activity to our province from around the globe."

(2) Removing the tax on transborder and international flights could generate significant economic benefits for Ontario. For a rather small investment, the Government of Ontario could provide important stimulus to the tourism industries in the province and to the overall economy. The removal of this tax might lead to additional economic output of between $70 and $138 million, 27,000 to 52,000 more tourists per year, and an additional 970 to 1,897 jobs in the province, at an initial investment of about $22,600 to $47,300 per job. Over time the economic benefits could be significantly larger as the catalytic effects begin to materialize.

(3) While the removal of the province's fuel tax on transborder and international flights might be viewed as only a small step in helping Toronto Pearson Airport continue to develop into an international gateway airport; nevertheless, this would play a role, and with a change in federal government policies, Pearson's chances of becoming a Tier 1 hub would greatly improve. Despite Toronto Pearson's critical position in the passenger and cargo segments of the aviation industry in Canada, there is no assurance that this airport will end up as an international gateway airport – a Tier 1 hub in the global system.

Toronto Pearson competes directly with the following airports as hubs near the Canada-US border – Chicago, New York JFK and Newark, Detroit and Minneapolis. Toronto Pearson also competes with a number of hub airports in Europe, the Middle East and Asia. There appears to be scope for both Air Canada and Pearson Airport to become more important players in the global market. But there is also the very significant risk that both could become marginal players in the future. The Qantas experience highlights this risk.

(4) There are four sectors that are critical for the economy to function – finance, telecommunications, energy and transportation. How one connects to the networks in each of these sectors is important, but particularly so for the air transport industry (and the truck and rail freight

sectors as well). It does indeed matter how Canadians can get from one location to another via air. Time is important for every traveller, and for all companies that ship or receive goods by air. Without the NACC members, Canadians would be able to get to any destination to which they might want to go. However, most likely they would have to make an extra stop, and possibly an extra change of planes to get there. This would impose a cost on every traveller, and make travel less attractive.

(5) Productivity growth continues to hover, as it should, near the top of the government's economic policy agenda. Without higher and sustained rates of productivity growth, the government will have difficulty achieving its fiscal goals. The air transport industry, lead by the members of the NACC, is a key sector in spurring productivity growth. The removal of the aviation fuel tax could lead to a modest increase in the productivity growth rates in the province and enhance the competitiveness of Ontario-based manufacturing and service companies – the catalytic effects. Even a modest increase in the rate of productivity growth would generate additional future tax revenues for the Government of Ontario.

1.0 INTRODUCTION

1.1 Objective

The primary objective of this report is to spell out the case for the Government of Ontario to rescind its aviation fuel tax on all transborder and international flights departing from Ontario airports.

There are five arguments that comprise the case:

1) The Government of Ontario is out of step with the federal government; most provincial governments, notably Alberta, Quebec and British Columbia; the US Government; and most US state governments. Ontario remains one of the few jurisdictions in Canada and the United States to levy the fuel tax on international flights. Moreover, the Ontario Government does not impose a sales tax, as part of the HST, on transborder and international flights.

2) Removing the tax on international flights can generate significant economic benefits for Ontario. For a rather small investment, the Government of Ontario can provide important stimulus to the tourism industries in the province and to the overall economy.

3) Airports and airlines play important economic and social roles, and their continued growth can contribute to productivity growth. The removal of the fuel tax on international flights can improve Pearson Airport's chances of becoming an international gateway airport.

4) It does matter how Canadians can get from one location to another via air. Time is important for every traveller, and for all companies that ship or receive goods by air. Without the NACC members, Canadians would be able to get to any destination to which they might want to go. However, most likely they would have to make an extra stop, and possibly an extra change of planes to get there. This would impose a cost on every traveller, and make travel less attractive.

5) The removal of the aviation fuel tax can generate catalytic effects that will boost the economic impacts and reduce the net revenue losses for the provincial government.

1.2 Background

The *Gasoline Tax Act* is the basis for the tax on aviation fuel in Ontario. The rate has remained at 2.7¢ per liter since 1992. This tax has generated between $40 and $65 million annually in revenues for the province. The Government of Ontario collected approximately $63 million in aviation fuel tax revenues from airline operations at the Ottawa Macdonald-Cartier (YOW) and Toronto Pearson (YYZ) airports in 2012. Transborder and international flights at these two airports generated about $49 million in tax revenues for Ontario.

This revenue is credited to the Consolidated Revenue Fund. The monies collected are not re-invested in the provincial airport system in the same way that a portion of the vehicle fuel tax is reinvested in the road system.

Table 1 summarizes the current structure of aviation fuel taxes across Canada. Ontario is one of only five provinces that continue to charge this tax on transborder flights and one of four to charge this tax on international flights. While Manitoba imposes its tax on transborder and international passenger flights, it has removed the tax on transborder and international cargo flights.

The US Government does not impose its aviation fuel tax on international flights, and neither do most US states.[1]

TABLE 1: Aviation Fuel Taxes, Canada and Provinces (cents per liter)

	Domestic	International
Canada	4.0	**0**
Ontario	2.7	2.7
Newfoundland	0.7	0.0*
PEI	0.7	0.7
Nova Scotia	2.5	2.5
New Brunswick	2.5	**0**
Quebec	3.0	**0**
Manitoba	3.2	3.2**
Saskatchewan	1.5	**0**
Alberta	1.5	**0**
British Columbia	2.0	**0**

*: Transborder flights are subject to the tax; international flights are exempt.
**: 1.5 cents per liter for domestic cargo flights, 0 cents per liter for transborder and international cargo flights.
Sources: Federal Government and Provincial Government Public Accounts.

When Alberta's aviation fuel tax was eliminated on transborder and international passenger and cargo flights, effective March 1, 2004, then Revenue Minister Greg Melchin emphasized:

> "A competitive tax environment is vital to Alberta's economy and eliminating the Alberta aviation fuel tax on international air traffic at Alberta's two international airports will allow them to compete on a more level playing field with similar jurisdictions, including Seattle and Vancouver."

Mark Norris, then Minister of Economic Development, added:

> "Alberta's international airports are key factors of economic and community development in the province and international air service contributes to the growth of the local and provincial economies. Eliminating the international component of the Alberta aviation fuel tax makes Alberta a more accessible and economical destination for visitors. In addition to benefiting the tourism industry, it also backs our airports' efforts to attract more passenger and cargo services, makes our province an even more attractive location for business and supports the expansion of Alberta's value-added industries."

[1] North Carolina and Michigan are among the very few states, which do impose an aviation fuel tax on international commercial flights. The following states that all have important hub airports, many of which compete directly with Pearson for international connecting traffic, do not have an aviation fuel tax on international flights: Illinois, New York, Georgia, Washington DC and California.

At the Routes International 2010 Conference in Vancouver, then Premier Gordon Campbell announced that the British Columbia Government would eliminate the aviation fuel tax on transborder and international commercial flights by April 1, 2012, a move that would cut costs collectively for the airlines by $20 million a year. According to Campbell:

> "This change would help YVR and B.C. markets as the preferred gateway to North America and the world, bringing tourists and added economic activity to our province from around the globe."

In support of this initiative, Vancouver International Airport (YVR) offers a five-year incentive program that will allow air carriers to add capacity to YVR without incurring additional landing and terminal fees. Larry Berg, the YVR CEO, stated:

> "It's expected that the incentive program will add the equivalent of eight to 10 new international daily flights, or approximately 1.1 million additional airline seats, over the next five years. Every new international long-haul flight into YVR generates between $5 million and $8 million in wages annually and contributes between $8 million and $15 million to B.C.'s GDP."

Paul Griffiths, the CEO of Dubai Airports (DXB) has emphasized:[2]

> "There are three primary factors behind Dubai's success – a pro-aviation government policy, industry-government partnership and a vision that embraces the changing industry dynamics driven by globalisation. At the end of the day, most governments around the world treat aviation as a pariah and choke its growth with costly, misdirected regulation and parasitic forms of taxation, whose revenues usually flow straight out of the sector. Aviation generates 25% of the Emirate's GDP - a fact that has led to its inclusion in Dubai's strategic plan and a long-standing open skies policy."

1.3 YOW and YYZ

Table 2 shows the importance of Toronto Pearson Airport in both Ontario and Canada. YYZ and YOW accounted for 89% of the total number of passengers at Ontario airports in 2011, 94% of all transborder passengers, and 99% of all international passengers at all Ontario airports. YYZ alone accounted for about 42% of all transborder passengers and 48% of all international passengers at all airports in Canada in 2011.

TABLE 2: Enplaned/Deplaned Passengers, Select Airports, 2010 and 2011 (000s)

	Domestic	Transborder	Int'l	Total
Pearson				
2010	12,657	8,472	9,727	30,856
2011	13,017	8,741	10,520	32,278
Ottawa				
2010	3,078	727	434	4,239

[2] Dubai Airport dominates Toronto in terms of total passengers, passengers per population and average annual growth between 2000 and 2011.

2011	3,205	723	430	4,359
YYZ+YOW as % of Ontario				
2010	81.9%	94.8%	99.5%	89.7%
2011	80.1%	93.9%	99.4%	88.6%
YYZ as % of Canada				
2010	23.9%	41.9%	47.5%	32.2%
2011	23.9%	41.8%	48.3%	32.4%
Total Ontario				
2010	19,218	9,703	10,210	39,131
2011	20,247	10,084	11,011	41,342
Vancouver				
2010	8,569	3,996	3,690	16,255
2011	8,641	4,043	3,711	16,395
Calgary				
2010	8,150	2,384	1,241	11,775
2011	8,314	2,496	1,264	12,073
Edmonton				
2010	4,643	998	340	5,981
2011	4,712	1,086	359	6,157
Montreal				
2010	4,734	3,099	4,777	12,610
2011	4,992	3,068	5,169	13,229
Total Canada				
2010	65,755	21,964	21,379	109,099
2011	67,759	22,647	22,678	113,083

Source: Statistics Canada, Air Traffic at Canadian Airports, 2011, Cat. 51-203-X, Table 1-2

Table 3 highlights cargo traffic at YYZ in 2011. YYZ stands out as the major airport in cargo as well in Canada, especially in transborder and international cargo.

TABLE 3: Cargo Loaded and Unloaded at Toronto Pearson Airport, 2011 (tonnes)

	Loaded	Unloaded
Domestic	33,039	31,401
% of Canada	14.0%	13.4%
Transborder	36,961	55,487
% of Canada	44.0%	40.4%
International	83,917	98,260
% of Canada	49.7%	53.5%

Source: Statistics Canada, Air Traffic at Canadian Airports, 2011, Cat. 51-203-X, Table 2-2

Despite Toronto Pearson's critical position in the passenger and cargo segments of the aviation industry in Canada, there is no assurance that this airport will end up as an international gateway airport – a Tier 1 hub in the global system. International gateway airports generate more value for their respective regional, provincial and national economies than regional hubs (Tier 2), local hubs (Tier 3), or stub airports.[3]

ICAO has defined the top tier of airports as "intercontinental or primary hubs". Such airports also have been labeled as "international gateways" or Tier 1 hubs. These are airports with at least one network

[3] The different tiers are defined by several characteristics – total number of passengers and/or tonnes of cargo; total number of passengers per person in the catchment area of the airport; connectivity – number of non-stop destinations and geographic spread of destinations, number of spokes from the hub; importance and size of the hub carrier(s); and importance of airport in attracting companies.

carrier offering connecting opportunities worldwide. These airports offer numerous long-haul destinations, which are not necessarily all operated by the hub carrier.

John Bowen has observed:[4]

> "Hub cities have important economic development advantages for certain types of economic activity. These advantages reflect two key distinctions that hub cities share: (1) the concentration of large passenger and cargo flows, and (2) the high degree of connectivity with other points in domestic and international airline networks. The way in which these advantages intersect with economic development has been described as "circular and cumulative" to the extent that additional air services facilitate development which in turn stimulates demand for further air services. This virtuous cycle tends to reinforce and perpetuate the privileged position that hub cities enjoy."

According to ICAO, "secondary hubs" comprise the next rung of airports. These are airports with at least one network carrier offering connecting opportunities. Such airports offer several intercontinental routes and/or numerous medium-haul routes. Secondary hubs also have been labeled as "national hubs" or Tier 2 airports. They offer limited inter-regional or inter-continental connections.

The third tier on ICAO's typology of airports consists of "regional platform" airports. These are airports that are not hubs, and thus traffic is mainly point-to-point. The airport's traffic is focused on short to medium-haul routes. These airports alternatively have been called regional or Tier 3 hubs (providing intra-regional connections) or stub airports (end-points of networks originating at a hub airport, primarily the Tier 2 and 3 airports).

International gateway airports, with very few exceptions, have developed because major carriers use them as the principal hubs for their networks. Tables 4 and 5 set out the largest 40 airports in the world based on number of passengers and tonnes of cargo in 2011.

TABLE 4: Top 40 Airports by Number of Passengers, 2011 (millions)

Airport	*City*	*Rank*	*Passengers*	*Hub carrier(s)*	*Pax/Pop*
ATL	Atlanta	1	92.4	Delta	17.3
PEK	Beijing	2	78.7	Air China, China Southern, Hainan	4.7
LHR	London	3	69.4	BA (IAG)	10.5
ORD	Chicago	4	66.7	United, American	8.8
HND	Tokyo	5	62.6	Japan Airlines, ANA	2.6
LAX	Los Angeles	6	61.9	United, American	5.4
CDG	Paris	7	61.0	Air France	8.3
DFW	Dallas	8	57.8	American	10.5
FRA	Frankfurt	9	56.4	Lufthansa	28.8
HKG	Hong Kong	10	53.3	Cathay Pacific	7.5
DEN	Denver	11	52.8	United	16.0
CGK	Jakarta	12	51.2	Garuda	2.0
DXB	Dubai	13	51.0	Emirates	29.3
AMS	Amsterdam	14	49.8	KLM	25.3
MAD	Madrid	15	49.6	Iberia (IAG)	7.4
BKK	Bangkok	16	47.9	Thai Air	3.4

[4] John Bowen, "Airline hubs in Southeast Asia: national economic development and nodal accessibility", Journal of Transport Geography, v. 8 (2000), p. 28, 37.

JFK	New York	17	47.7	America, Delta, Jet Blue	5.0
SIN	Singapore	18	46.5	Singapore	7.1
CAN	Guangzhou	19	45.0	China Southern	1.7
PVG	Shanghai	20	41.4	Air China, China Eastern, Shanghai Airlines	2.9
SFO	San Francisco	21	40.9	United	7.1
PHX	Phoenix	22	40.6	US Air	9.9
LAS	Las Vegas	23	40.6	Southwest	19.5
IAH	Houston	24	40.1	United	8.5
CLT	Charlotte	25	39.0	US Air	17.5
MIA	Miami	26	38.3	American	11.7
MUC	Munich	27	37.8	Lufthansa	18.2
KUL	Kuala Lumpur	28	37.7	Malaysia	5.8
FCO	Rome	29	37.7	Alitalia	12.4
IST	Istanbul	30	37.4	Turkish	3.8
SYD	Sydney	31	36.0	Qantas	7.6
MCO	Orlando	32	35.4		12.2
ICN	South Korea	33	35.2	Korean, Asiana	2.1
DEL	Delhi	34	35.0	Air India, Jet Airways	1.5
BCN	Barcelona	35	34.4	Iberia (IAG)	7.5
EWR	New York	36	33.7	United	5.0
LGW	London	37	33.7	BA (IAG)	10.5
YYZ	Toronto	38	33.4	Air Canada	5.7
MSP	Minneapolis	39	33.1	Delta	11.2
SHA	Shanghai	40	33.1	China Eastern, Shanghai Airlines	2.9

Sources: Airport Council International North America, www.citypopulation.de, and airline annual reports.

TABLE 5: Top 40 Airports by Total Cargo, 2011 (000s of metric tons)

Airport	***City***	***Rank***	***Cargo***	***Hub carrier(s)***
HKG	Hong Kong	1	3,977	Cathay Pacific, UPS
MEM	Memphis	2	3,916	FedEx
PVG	Shanghai	3	3,085	Shanghai Airlines, Air China, FedEX, DHL, China Eastern
ANC	Anchorage	4	2,543	FedEx, Polar Air
ICN	Incheon	5	2,539	Korean Airlines, Asiana, Polar Air
CDG	Paris	6	2,300	Air France
DXB	Dubai	7	2,270	Emirates
FRA	Frankfurt	8	2,215	Lufthansa
SDF	Louisville	9	2,188	UPS
NRT	Tokyo	10	1,945	Japan Airlines, Nippon Cargo
SIN	Singapore	11	1,899	Singapore Airlines
MIA	Miami	12	1,842	American, FedEx, LAN, UPS
LAX	Los Angeles	13	1,682	America, United
PEK	Beijing	14	1,640	Air China, China Southern
TPE	Taipei	15	1,627	Eva Airlines, China Airlines
LHR	London	16	1,569	BA
AMS	Amsterdam	17	1,550	Air France/KLM
JFK	New York	18	1,349	America, Delta, Evergreen
BKK	Bangkok	19	1,322	Thai Air
ORD	Chicago	20	1,312	American, United
CAN	Guangzhou	21	1,180	China Southern, FedEx
IND	Indianapolis	22	972	FedEx
HND	Tokyo	23	873	Japan Airlines, Nippon Cargo
SZX	Shenzhen	24	828	Shenzhen Airlines, UPS
EWR	Newark	25	813	United, FedEx
DOH	Qatar	26	808	Qatar
LEJ	Leipzig	27	744	DHL
KIX	Osaka	28	743	Japan Airlines
CGN	Cologne	29	726	FedEx, UPS
KUL	Kuala Lumpur	30	694	Malaysia Airlines

BOM	Mumbai	31	681	Air India, Jet Airways
LGG	Liege	32	674	TNT, El Al Cargo
ATL	Atlanta	33	663	Delta
LUX	Luxembourg	34	657	Cargolux
DFW	Dallas	35	654	American
BOG	Bogota	36	617	LAN, Avianca
DEL	Delhi	37	593	Air India, Jet Airways
CGK	Jakarta	38	582	Garuda
IST	Istanbul	39	514	Turkish
GRU	Sao Paulo	40	497	TAM
YYZ	Toronto	41	493	Air Canada

Source: Airport Council International.

Three observations stand out. With one exception on the passenger side, each of the largest airports serves as a hub for at least one major airline. Hub carriers are important. Toronto barely makes the top 40 for passengers and among the top 40 in terms of cargo.

Toronto competes directly with the following airports as hubs near the Canada-U.S. border – Chicago, New York JFK and Newark, Detroit and Minneapolis. There appears to be considerable scope for Canadian air carriers and Pearson Airport to become more important players in the global market. There is also the very significant risk that both could become marginal players in the future.

Toronto also competes with several airports outside of North America to connect continents and regions within continents. Among the competing airports are Amsterdam, London, Frankfurt, Munich, Paris, Madrid and Istanbul in Europe; Doha, Abu Dhabi and Dubai in the Middle East; and Tokyo, Hong Kong, Shanghai, Singapore, Bangkok and Kuala Lumpur in Asia.

The third observation is that several of the top passenger airports are not among the top 40 cargo airports: e.g., Houston, Sydney, Barcelona, Gatwick, Madrid, San Francisco, Munich, Phoenix, Denver, Minneapolis, Rome, Orlando, Charlotte, Las Vegas. Toronto at least comes close to being the top 40 in both.

Table 6 compares YYZ and YOW with airports in cities of comparable population. The comparisons are based on total number of passengers per population (pax/pop).[5]

TABLE 6: Comparison of YYZ and YOW with Other Airports of Comparable Population, 2011

City	***Population***	***Hub Carrier***	***Pax/Pop***
TORONTO	5,850	Air Canada	5.7
Atlanta	5,350	Delta	17.3
Dallas	6,250	American	10.5
Houston	5,850	United	8.5
Miami	5,750	American	11.7
Madrid	6,700	Iberia	7.4
Sydney	4,725	Qantas	7.6
Singapore	6,600	Singapore	7.1
Hong Kong	7,100	Cathay Pacific	7.5
Kuala Lumpur	6,550	Malaysia	5.8
Milan	5,050	Alitalia	7.3

[5] For cities with multiple airports, the total number of passengers is the sum of the passengers at each of the airports serving that city.

OTTAWA	1,300		3.6
Dubai	1,740	Emirates	29.3
Zurich	1,210	Swiss	20.1
Copenhagen	1,460		15.5
Dublin	1,280	Ryanair, Aer Lingus	14.6
Doha	1,690	Qatar	10.8
Auckland	1,410	Air New Zealand	9.9
Abu Dhabi	1,650	Etihad	7.5
Buffalo	1.320		3.9

Source: Airport Council International.

In almost all cases, the two Ontario airports fare worse than their comparator airports. For example, Toronto has fewer passengers per population than all of its comparators. Toronto lags significantly behind Atlanta, Dallas and Miami, even though geographically it is better located to connect both Europe and Asia to North and South America.

Ottawa lags behind all of its comparator airports.

Toronto Pearson is compared to other key Star Alliance hubs around the world in Table 7. Toronto does not rank high on the list in terms of either the total number of passengers or passengers per capita. For the Star Alliance, some of the most likely candidates to become Tier 1 hubs are: Bangkok, Beijing, Chicago, Frankfurt, Los Angeles, Munich, New York, Singapore, Shanghai, Tokyo, Washington, and even Toronto. But which ones?

There is scope for Toronto to become a much larger and more prominent hub in the global networks. There is also the risk that it could end up as a Tier 2 hub instead despite its attractive geographic location.

In 2000, St. Louis, Cincinnati and Pittsburgh were thriving hub airports. All three have lost their hub airlines since that time and all three have experienced very sharp declines in their passenger traffic. St. Louis, Cincinnati and Pittsburgh have seen the number of passengers using these airports decline by 59%, 69% and 58% respectively since 2000.

TABLE 7: Comparison of YYZ and Other Major Star Alliance Hubs, 2011

City	Passengers (millions)	Pax/Pop
Toronto	**33.4**	**5.7**
Chicago	66.7	8.8
Los Angeles	61.9	5.4
Frankfurt	56.4	28.8
Denver	52.8	16.0
Bangkok	47.9	3.4
Houston	40.1	8.5
Phoenix	40.6	9.9
Singapore	46.5	7.1
San Francisco	40.9	7.1
Charlotte	39.0	17.5
Munich	37.8	18.2

Seoul	35.2	2.1
Washington	23.1	8.0
Zurich	24.3	20.1
Vienna	21.1	10.3
Brussels	18.8	9.6

Air France pointed out, in their fiscal year 2010 Annual Report, the economic advantages derived from "density economies" and "frequency advantage":

> "Large traffic flows are fed by small traffic flows, leading to the operation of bigger aircraft, which are more cost-efficient. The gap between the cost per seat between the A330 and the A380…is almost 30%! The hub system makes it possible, for each flight, to combine connecting traffic and point-to-point traffic. As a result, traffic flows are bigger, allowing Air France to increase the number of flights to any given destination. As soon as a carrier offers a number of flights that is greater than half of all flights offered by all the airlines flying to this destination, it becomes more attractive than its competitors, thus improving load factor and market share."

The consequence is that if an airline and airport do not achieve the density economies and the hub carrier is unable to gain a frequency advantage, both begin to fall behind and both risk becoming marginalized over time.

Etihad/Abu Dhabi, Emirates/Dubai, and Qatar/Doha are all positioning themselves to become one of the pre-eminent gateway hubs. They are all buying large numbers of new aircraft, especially the wide-body, long-haul types (A380s, A350s, B777s, and B787s), and each of the United Arab Emirates (UAE) is investing tens of billions of dollars to greatly expand their airports.

On the other hand, several large cities, despite serving as hubs for an airline, are not likely to become more than Tier 3 hubs (see Table 8). They lack the geographic location and/or their hub airlines are not expanding.

TABLE 8: Select Cities Likely to Remain as Tier 3 Hubs, 2011

City	Population (000s)	Pax/Pop
Santiago	6,250	1.9
Buenos Aires	14,400	1.1
Rio di Janeiro	12,800	1.2
Kuwait	3,850	2.2
Riyadh	5,950	2.6
Johannesburg	8,050	2.4

A classic study of the economic effects of deregulation in the U.S. found that most of the economic benefits came from the time savings for travellers as a result of the restructuring of the networks by the airlines to offer more frequencies and more non-stop and one-stop flights through their hubs.

Thus, it will matter to Canadians whether they connect through Toronto; or they have to make an additional stop and change planes and airlines in order to travel through Atlanta, Los Angeles, Chicago, London, Dubai, Shanghai or elsewhere. Yes, YYZ and YOW are important in Ontario, and YYZ is important in Canada, but neither is important globally yet. And the leakage to Buffalo does not help YYZ, Air Canada and the Ontario economy.

1.4 Tourism

Airlines play an important role in facilitating tourism. Indeed, airlines are the focal point in an important value chain – globally and nationally. The value chain consists of:

- Manufacturers: airframes, engines, mechanical systems, computers, electronics, software;
- Aviation services: insurance, leasing/financing, aircraft maintenance, fuel suppliers, consultants, fixed base operators;
- Airports and services;
- Tourism; and
- Freight: forwarders, transport, warehousing, input to other industries.

The tourism industry in turn consists not only of air transportation, including airports, but also of the following sectors:

- Other transportation;
- Accommodation;
- Food and Beverage Services;
- Recreation and Entertainment; and
- Travel Services.

Table 9 highlights tourism GDP and total spending, including spending by non-resident tourists (exports of tourism services) in 2004. Tourism contributed 2.0% of Canada's GDP and 3.8% of total employment (616,600 jobs). Non-residents accounted for 30% ($17.5 billion) of total spending by all tourists across Canada. The industries other than air transportation generated 89% of total tourism GDP, accounted for 82% of all tourism spending, and 84% of all tourism spending by non-residents in 2004.

TABLE 9: Tourism GDP and Spending by Industry, Canada, 2004 ($ Billions)

	GDP	Total Spending	International Spending (Exports)
Transportation	$5.1	$20.9	4.8
Air Transportation	2.7	10.8	2.8
Accommodation	5.9	9.2	4.1
Food & Beverage Services	3.0	8.9	2.9
Other Tourism Industries*	3.9	9.8	2.3
Other Industries**	5.9	9.9	3.4
Total Tourism GDP	23.9	58.6	17.5

*: Includes recreation and entertainment services and travel services industries
**: Includes non-tourism industries that produce some commodities bought by tourists
Source: Statistics Canada, Canadian Tourism Satellite Account, 2004

Tourism is Ontario's seventh largest export with over $21.4 billion in receipts and $11.6 billion in tourism value added (2.2% of provincial GDP).

Tourism has continued to grow since 2004, with the exception of 2009, a recession year worldwide (Table 10). Total tourism spending was $78.7 billion in 2011, with $15 billion spent on airfares. However, non-Canadian tourism expenditures declined every year between 2004 and 2009, and even though these expenditures have increased in 2010 and 2011, they are still well below the 2004 spending levels.

TABLE 10: Tourism GDP and Spending, Canada, 2004-2011 ($ Billions)

	GDP	Total Spending	Total Spending: Non-Canadians
2004	$23.9	$58.6	17.5
2005	25.3	62.3	16.9
2006	27.2	66.8	16.5
2007	28.6	70.8	16.2
2008	30.3	74.7	15.7
2009	29.0	71.5	14.2
2010	29.3	73.4	14.9
2011	31.1	78.7	15.1

Sources: Statistics Canada, Cansim Table 387-0010, "Tourism GDP", Quarterly, and Cansim Table 387-0001, "Tourism Demand in Canada", Quarterly

Tables 11 and 12 summarize the total spending, excluding airfares and other transportation costs incurred in travel to Canada, and average spending per person-visit in 2011 by province for US residents and non-US residents. 45% of US residents traveling to Canada visited Ontario, but only 33% of residents of other countries did so. The US tourists spent $2.4 billion in Ontario, $431 per person-visit, and 39% of their total spending in Canada. Non-US tourists spent $1.7 billion, $950 per person-visit. Both US tourists and non-US tourists spent less on average in Ontario than they did on average across Canada.

TABLE 11: Trip Characteristics of US Residents Entering Canada and Staying One or More Nights, by Province Visited, 2010

	Person-visits (000s)	Spending ($ M)	Avg. Spending ($)
Ontario	5,630	2,428	431
% of Total	44.6	38.8	87.1
Atlantic	864	396	458
Quebec	1,805	1,027	569
Manitoba	214	117	548
Saskatchewan	146	97	662
Alberta	813	571	702
BC	3,157	1,619	513
Total	12,630	6,254	495

Source: Statistics Canada, International Travel, 2010, Cat. 66-201-X, Table 13

TABLE 12: Trip Characteristics of Residents of Countries Other than the US Entering Canada and Staying One or More Nights, by Province Visited, 2010

	Person-visits (000s)	Spending ($ M)	Avg. Spending ($)
Ontario	1,769	1,679	950
% of Total	32.7	29.6	90.6

Atlantic	306	318	1,040
Quebec	1,039	1,093	1,051
Manitoba	65	51	793
Saskatchewan	58	47	815
Alberta	708	713	1,008
BC	1,459	1,765	1,210
Total	5,403	5,667	1,049

Source: Statistics Canada, International Travel, 2010, Cat. 66-201-X, Table 18

Most of the non-US tourists who visited Ontario arrived by plane. But about 25% to 30% did so indirectly via the US – see Table 13. 17% of these tourists came to Ontario for business, conventions or employment; another 41% came to visit friends and relatives; and the remaining 41% came for pleasure, recreation or holidays. 49% of the non-US tourists to Ontario came from Europe, 30% from Asia, and 7% from South America.

TABLE 13: Visitors to Canada from Countries other than the US, 2006-11 (000s)

	2006	2007	2008	2009	2010	2011
Total	4,518	4,679	4,764	4,170	4,456	4,523
By Plane	3,904	4,037	4,061	3,051	3,697	3,802
Direct	3,020	3,129	3,197	2,285	2,742	2,843
Via US	884	908	864	766	956	959

Source: Statistics Canada, Cansim Table 427-0001, "Number of international travellers entering or returning to Canada, by type of transport", Monthly

Canada continues to record a deficit in the travel account in the balance of payments. The deficit has been increasing every year in bi-lateral trade with the US and with all other countries – Table 14.

TABLE 14: Balance of Payments in the Travel Account Between Canada and Other Countries, 2004-2010 ($ Billions)

	2004	2005	2006	2007	2008	2009	2010
All Countries							
Receipts	17.0	16.7	16.5	16.6	16.5	15.5	16.2
Balance	-3.3	-5.2	-6.9	-9.9	-12.1	-12.1	-14.3
US							
Receipts	9.9	9.0	8.7	8.3	7.6	7.1	7.2
Balance	-1.2	-3.0	-4.2	-6.8	-8.9	-8.7	-10.9
Other							
Receipts	7.1	7.7	7.8	8.3	8.9	8.5	9.0
Balance	-2.1	-2.2	-2.6	-3.1	-3.2	-3.5	-3.3

Source: Statistics Canada, International Travel, 2010, Cat. 66-201-X, Table 1

Jacobs Consultancy concluded that the global travel and tourism industry is clearly important to Canada's economy. The World Travel and Tourism Council ranked Canada's travel and tourism economy ninth (of 181 countries) in absolute size worldwide, but only 87th in relative contribution to GDP, and 82nd in terms of long-term (10-year) growth. While tourism is important for Canada and Ontario, there appears to be ample room for further growth.

Jacobs Consultancy pointed out that air travel is particularly price sensitive in the leisure markets, and "even when ground transportation costs are factored in, leisure travellers will often choose to depart

from a U.S. based airport to save money." They also emphasized that governments across Canada raise revenues from tourism through a variety of taxes and other means:[6]

> "A study commissioned by Statistics Canada and the Canadian Tourism Commission concluded that in 2007, government revenue from tourism activities in Canada reached $19.7 billion – of this, $5.1 billion stemmed from spending by non- resident visitors to Canada. Total tourism spending in that year was $70.8 billion, implying that every dollar spent by tourists generated $0.28 on average for all three levels of government combined."

1.5 Economic Benefits of the Air Transportation Industry

The importance of the airline industry and the entire air transportation sector extends well beyond the tourism industry. This industry and this sector:

- Expand markets for companies, enabling them to exploit economies of scale and learning curves;
- Facilitate the international division of labor thus allowing for the more productive use of labor and other factors of production, and encouraging increased levels of investment by labor in their human capital;
- Spur competition within countries and across countries thus promoting innovation and higher levels of productivity growth; and
- Magnify the economic benefits from trade liberalization by reducing transportation costs and travel times and thus inducing new production technologies/arrangements, such as just-in-time manufacturing, on a global basis.

In other words, the air transport industry, of which NACC members are key players in Canada and Ontario, is essential for economic progress. In an increasingly global community and marketplace, air transportation makes possible the rapid movement of people and goods to markets around the world. The airline industry generates many valuable economic benefits!

Productivity growth continues to hover near the top of all governments' economic policy agendas. Without higher and sustained rates of productivity growth, every government will have difficulty achieving their fiscal goals and maintaining their social programs. The air transportation industry, lead by the members of the NACC, is a key sector in spurring productivity and economic growth as it generates significant externalities throughout the economy. Consequently, there are sound economic and policy reasons for ensuring that the air transportation industry thrives and Canadian carriers and Ontario airports succeed in the North American and international markets.

A dollar invested in this industry is likely to produce a larger net benefit than a dollar invested in most other sectors of or activities in the economy. Hidden taxes may not be apparent to consumers, but they do have significant effects on their expenditures and standards of living.

[6] Jacobs Consultancy Canada Inc., "The Strategic Impact of the Canadian Aviation Based Travel and Tourism Industry on Canada's Economy", Prepared for The National Travel and Tourism Coalition, September 2010.

2.0 ECONOMIC AND REVENUE IMPACTS OF ELIMINATING THE FUEL TAX FOR TRANSBORDER AND INTERNATIONAL FLIGHTS

2.1 Gross Revenue Losses

As noted above, the Government of Ontario collected approximately $63 million in aviation fuel taxes in 2012 from airline operations at the Ottawa Macdonald-Cartier and Toronto Pearson airports. Transborder and international flights at these two airports generated about $49 million in tax revenues.

2.2 Potential Economic Impacts

There are several steps in estimating the potential positive economic impacts (incremental spending, GDP and employment) of eliminating the fuel tax for all transborder and international flights in Ontario. The detailed methodology is set out in Appendix A.

The elimination of Ontario's aviation fuel tax might result in an initial increase in the total number of passengers (enplaned and deplaned) at YYZ and YOW of up to 185,000 – 128,000 more international passengers and 57,000 additional transborder passengers. Not all would be non-Canadian passengers. According to the analysis in Appendix A, the elimination of the fuel tax might increase the number of non-Canadian tourists visiting Ontario by as much as 52,000 per year. The aggregate expenditures of these potential additional tourists consist of the additional airfares and the additional tourism expenditures.

In order to estimate the potential economic impacts in Ontario, it is necessary to estimate the incremental airfares for NACC members only. The remaining airfares would accrue to foreign airlines operating at YYZ and YOW. It is also necessary to estimate the total incremental tourism expenditures in Ontario.

Applying the output multipliers to the potential aggregate incremental air transport expenditures ($24-$47 million) and the tourism expenditures ($21-$42 million) in Ontario yields a potential total economic output impact in Ontario ranging between $71 million and $138 million. The potential increase in Ontario's GDP, stemming from the elimination of the aviation fuel tax on all international and transborder flights, might range between $32 million and $62 million. The incremental GDP produced in Ontario as a result of the elimination of the tax might translate into 970 to 1,897 additional jobs.

2.3 Net Revenue Impacts

Just as there are several steps in estimating the potential positive economic impacts of eliminating the fuel tax for all transborder and international flights in Ontario, so too are there several steps in estimating the net revenue impacts. Appendix B describes the detailed methodology.

If I only consider the incremental traditional economic impacts from eliminating the aviation fuel tax on transborder and international flights, the Ontario Government would experience a net reduction in its revenues. GDP would not increase sufficiently to generate additional tax revenues for the government to fully offset the lost revenues needed to provide the stimulus to the airline industry. The additional tax

revenues generated by the traditional economic impacts might total between $3.2 and $6.1 million in the first year, falling far short of the gross revenue losses of the Ontario Government.

However, when the catalytic effects and their impacts on government revenues are considered, the annual revenue losses do begin to decline, at least in the higher impact scenario.

3.0 CONCLUSIONS

There are at least five good reasons why the Government of Ontario should eliminate the 2.7¢ per liter aviation fuel tax on transborder and international flights.

First of all, the Government of Ontario is out of step with the federal government; most provincial governments; the US Government; and most US state governments. Ontario remains one of the few jurisdictions in Canada and the United States to levy the fuel tax on international flights.

The Government of Ontario recognizes the importance of transborder and international air travel for business and tourism since it has not imposed its sales tax on transborder and international flights. The Ontario Government continued to exempt such flights from the sales tax as it moved to harmonize its sales tax with the federal government's GST. Thus, on the one hand, the government understands the importance of transborder and international air travel; but on the other hand, it seems to have difficulty recognizing the importance.

Ben Cherniavsky, a leading airline analyst in Canada, and Benjamin Dachis, a graduate from the London School of Economics, commented in their 2007 CD Howe Commentary:[7]

> "A comparative assessment of this tax burden, which we undertake in this paper, reveals that the current tax treatment of airlines is inequitable and inefficient…Among the recommended reforms: fuel taxes, currently applied unevenly and inequitably across jurisdictions, should ideally be scrapped altogether, unless earmarked for either air infrastructure or environmental investment…The goal is to ensure that this sector of the economy is taxed on a level playing field with other transportation modes domestically and other airline sectors internationally. This would be a small step toward making our airlines more competitive internationally and less vulnerable to the cyclical downturns inherent in the business. And it will be an especially crucial change if we are to seek a more liberal market for air travel with other countries, particularly the US."

Cherniavsky and Dachis added:[8]

> "The wide variation in fuel taxes and differences in exemptions have a number of impacts. Firstly, provinces without fuel tax exemptions on international flights are less attractive to carriers connecting to international destinations. Provinces provide no aviation

[7] Ben Cherniavsky and Benjamin Dachis, "Excess Baggage: Measuring Air Transportation's Fiscal Burden", CD How Commentary No. 242, February 2007, p. 1.
[8] Ibid, p. 7, 8 and 9.

> infrastructure, and provincial fuel tax flows into general revenue. Governments have no justification, currently, for these taxes. US federal jet fuel taxes are apportioned to the Airport and Airways Trust Fund, which finances air traffic control, airport improvements, and other aviation related infrastructure."

Secondly, removing the tax on transborder and international flights could generate significant economic benefits for Ontario. For a rather small investment, the Government of Ontario could provide important stimulus to the tourism industries in the province and to the overall economy. As I pointed out above, the removal of this tax might lead, based on traditional economic impact analysis, to additional economic output of between $71 and $138 million, 27,000 to 52,000 more tourists per year and an additional 970 to 1,897 jobs in the province. The traditional economic impact analysis however, ignores the catalytic impacts of the airline industry on the economy.

Airports and airlines play important economic and social roles, and their continued expansion can contribute to productivity growth. In addition to the standard economic impacts, the airline industry generates significant externalities or catalytic impacts. York Aviation and ACI Europe, in their study of the economic impacts of airports in Europe,[9] added catalytic impacts to the standard direct, indirect and induced impacts. They defined catalytic impacts as follows:[10]

> "employment and income generated in the economy of the study area by the wider role of the airport in improving the productivity of business and in attracting economic activities, such as inward investment and inbound tourism."

They emphasized that access to markets and external and international transport links are regarded as "absolutely essential" to businesses making location decisions. The catalytic effect of an airport operates primarily through enhancing business efficiency and productivity by providing easy access to suppliers and customers, particularly over medium to long distances. Global accessibility is a key factor for business location and success in all regions of Europe.

Positive externalities, as the catalytic impacts are more commonly known in economics, stem from the higher rates of productivity growth made possible by the air transport industry's contribution to the integration of markets and the time savings for both passengers and freight.

Berechman has argued:[11]

> "Transportation improvements can potentially incite positive externalities that may exist in various markets and consequently improve productivity, enhance output, reduce production costs and promote more efficient use of resources. The combined effects of these impacts are regarded as economic growth, which can be measured by annual changes in employment, in output and productivity. These allocative externalities are typically represented by economies of scale, size, scope, agglomeration, density and network."

[9] York Aviation and ACI, Europe, "The social and economic impacts of airports in Europe", January 2004.
[10] Ibid, p.5.
[11] OECD, European Conference of Ministers of Transport, Transport and Economic Development, Round Table 119, Report by J. Berechman, p. 115, 116.

The economic and social impacts of the air transport industry greatly exceed the direct, indirect and induced effects.

There have been an increasing number of studies that have attempted to measure the externality/ catalytic impacts of air transport. Oxford Economic Forecasting (OEF) has undertaken several of the key studies. In their 1999 study, OEF estimated that a 10% increase in transport services would increase total factor productivity by 1.3% in the long run.[12] Their 2005 study for Eurocontrol[13] found that a 10% increase in the output of air services would increase productivity and potential output by 0.56% in the long run. They concluded their results implied that the rapid growth in air transport usage during the preceding decade boosted long-run, total factor productivity by 2.0% across the 24 European Union countries covered by their study.

InterVistas, in their study for IATA, also found a positive link between connectivity and productivity. Their model showed that connectivity has a statistically significant relationship with labor productivity levels – a 10% rise in connectivity relative to a country's GDP could boost labor productivity levels by 0.07%.[14]

Thus, the removal of the aviation fuel tax on transborder and international flights might lead to a modest increase in the productivity growth rates in the province and enhance the competitiveness of Ontario-based manufacturing and service companies.

Thirdly, while the removal of the province's fuel tax on transborder and international flights might be viewed as only a small step in helping Pearson Airport continue to develop into a global hub – federal government policies play a much more substantial role – nevertheless, this would play a role, and with a change in federal government policies, Pearson's chances of becoming a global hub would greatly improve.

Weidemann and Associates et al, have stated:[15]

> "Air travel and aviation make up the activity that quickly connects people and goods… Air transportation derives its value from time savings. In the current technology-driven economy, the value of time has increased… time savings in business and personal life has a value that can be measured in the market place by the prices that are paid for the convenience and speed… air travel acts as a time machine, compressing hours to minutes and increasing the efficiencies of business people, raising the overall productivity in the conduct of commerce."

In a classic study examining the economic benefits of airline mergers, Professors Carlton, Landes and Posner (now Judges Landes and Posner) estimated that travelers were willing to pay between US$13.10 and US$17.75 (in 1977 dollars) more for a flight with an on-line connection than one with an interline

[12] Oxford Economic Forecasting, "The Contribution of the Aviation Industry to the UK Economy", 1999.
[13] Oxford Economic Forecasting, "The Economic Catalytic Effects of Air Transport in Europe", prepared for Eurocontrol, 2005.
[14] International Air Transport Association, Economics Briefing No 08, "Aviation Economic Benefits," 2007.
[15] R.A. Weidemann & Associates, "Economic impact assessment of Delaware airports and aviation", prepared for DelDot, Office of Aeronautics, June 2001, p. 3.1, 3.2.

connection.[16] Extrapolating these results to a domestic carrier with a large domestic and global network implies substantial benefits for travelers using the services of this airline – benefits that are not captured in the air fares paid or in the standard economic impact studies.

Morrison and Winston stated in their classic study of the economic benefits of deregulation of the U.S. airline industry:[17]

> "the value of time between departures reflects travelers' value of the inconvenience involved in schedule delay, manifested in their valuation of waiting time both at their home (or hotel) or business and in the terminal. The estimated high value placed on time between departures by business travelers reflects the high disutility to them of adjusting departure times to the schedule and capacity constraints of the air carriers. The high value placed on time between departures by business travelers that is captured in our demand model suggests that significant benefits to these travelers can be generated by increases in the frequency of service…our qualitative conclusion regarding the welfare effects on travelers of deregulation is robust, with a reliable conservative quantitative estimate of annual benefits approaching $6 billion. In addition, for all assumptions but the most liberal one regarding discount fare travel, the largest contribution to the welfare change comes from changes in departure frequency."

Travelers prefer non-stop and direct, on-line connections to interline connections. Domestic carriers with expansive networks generate significant time-savings for travelers. Accessibility and connectivity are critical for externalities to be maximized. Airline links are important components of a city's aspirations to world city status.

As the airline industry continues to evolve, we likely will move towards a global network consisting of 12 to 20 intercontinental (Tier 1) hub airports, 20 to 30 regional platform (Tier 2) hub airports, and hundreds of Tier 3 and stub airports. The gateway airports will dominate the system and the dominant airline(s) at these airports will offer non-stop and one-stop service to most of the world.

A number of studies have shown how gateway airports give their cities an enormous advantage in competing for talent and money in the global economy. So it comes as no surprise that the United Arab Emirates are investing heavily in the air transport industry, and China will not be far behind. Where will Canada and Ontario end up?

Brent Jang, a reporter for the Globe and Mail Report on Business, pointed out that a record 2.3 million Canadians flew to or from the US border airports, with approximately 1.9 million flying out of Buffalo. Jang emphasized that:

> "The loss of those passengers hurts Canada's domestic airline industry, but it also has had a much wider impact. Local companies are losing the revenue that airport traffic generates. Businesses with far-flung operations are facing higher flying costs for employees who use Canadian airports. In an age where a top-notch air hub is seen as a vital ingredient in

[16] Dennis Carlton, William Landes and Richard Posner, "Benefits and costs of airline mergers: A case study", Bell Journal of Economics, v. 11 (Spring 1980), p. 73.
[17] Steven Morrison and Clifford Winston, "The economic effects of airline deregulation," Brookings (1986), p. 18, 35.

> attracting enterprises to a region, Canada's leading airports are finding it challenging to increase their passenger traffic."

It will matter to Canadians whether they connect through Toronto; or they have to make an additional stop and change planes and airlines in order to travel through Atlanta, Los Angeles, Chicago, London, Dubai, Shanghai or elsewhere.

Every policy initiative that lowers the costs for the air transportation system and levels the playing field for this industry in Ontario and throughout the country matters!

Fourth, productivity growth continues to hover, as it should, near the top of the government's economic policy agenda. Without higher and sustained rates of productivity growth, the government will have difficulty achieving its fiscal goals. The air transport industry, lead by the members of the NACC, is a key sector in spurring productivity growth. The removal of the aviation fuel tax could lead to a modest increase in the productivity growth rates in the province and enhance the competitiveness of Ontario-based manufacturing and service companies – the catalytic effects. Even a modest increase in the rate of productivity growth would generate additional future tax revenues for the Government of Ontario.

Finally, as I show in Appendix B, the Government of Ontario's net revenue losses might begin to decline over time. Part of the $49 million in foregone tax revenues from eliminating the fuel tax on international and transborder flights at YYZ and YOW could be offset by tax revenues generated by the incremental GDP created by the elimination of the tax. When the catalytic effects and their impacts on government revenues are considered, the annual revenue losses decline. Thus, for a very small annual investment, the Ontario Government could generate significant economic benefits, including a modest increase in productivity growth. Indeed, the initial net revenue investments per job created might range between $22,600 and $47,300 – 35% to 55% less than the usual expenditure costs per job.

APPENDIX A: Methodology for Estimating the Economic Impacts

The starting point for estimating the economic impacts of eliminating the aviation fuel tax on transborder and international flights in Ontario is estimating the possible cost savings per passenger.

Table A.1 summarizes the information for fuel capacity and total number of passengers for the various aircraft currently or recently in the Air Canada fleet. I supplemented these with data from Boeing and Airbus on additional aircraft types.

TABLE A.1: Fuel Capacity, Passengers, Aviation Fuel Tax and Fuel Tax per Passenger, Various Aircraft

	Fuel Capacity (Liters)	Total Passengers	Fuel Tax per Passenger	Adjusted Fuel Tax per Passenger
Transborder				
A319*	23,859	120	$5.37	4.03
A320*	23,859	146	4.41	3.31
A321*	26,692	174	4.14	3.11
E-175*	11,671	73	4.32	3.24
E-190*	16,209	93	4.71	3.53
B737-800**	26,020	162	4.34	3.25
CRJ-705*	10,977	75	3.95	2.96
CRJ100/200*	8,082	50	4.36	3.27
Q-400*	6,526	74	2.38	1.79
International				
B777-300ER*	181,280	349	14.02	13.20
B777-200LR*	202,287	270	20.23	19.04
B747-400**	216,820	416	14.07	13.24
B767-200ER**	90,770	224	10.94	10.30
B767-300*	90,547	211	11.59	10.91
A330-200***	139,100	253	14.84	13.97
A330-300*	97,530	265	9.94	9.35
A380***	310,000	525	15.94	15.01
A340-300***	141,500	295	12.95	12.19

Sources:
* Air Canada Fleet Facts, aircanada.com
** Boeing website
*** Airbus website

The single aisle aircraft, including the Bombardier regional jets and turbo-prop, generally operate on transborder routes, although several also are used on international routes to the Caribbean, Mexico and Central America. The wide-body, dual aisle aircraft are used principally on longer-haul, international routes. Applying the 2.7¢ per liter tax to the fuel capacity and dividing by the passenger capacity, at least as configured by Air Canada, produced the estimates for the average fuel tax per passenger. Obviously, if more seats are squeezed into a plane, the fuel tax costs per passenger decline.

For the short-haul aircraft, a proxy for transborder routes, the average tax per passenger ranges between $2.38 and $5.37. For the international routes, the average tax per passenger ranges between $4.14 and $20.23.

I also adjusted the costs by assuming that actual fuel loads and passenger loads differed from 100% and from each other.[18] In the case of transborder flights, it is probably reasonable to assume that because of the tax in Ontario, airlines economize on fuel loads at YYZ and YOW. Thus, I assumed that for the types of aircraft likely to be used on transborder flights, fuel loads would be only 60% and passenger loads would average 80%. This resulted in scaling down the fuel costs per passenger estimates based on 100% fuel and passenger loads by 25%.

In the case of the international flights I assumed that fuel loads might only be 80%, while passenger loads average 85%. This resulted in scaling down the fuel costs per passenger by 6%.

As a result, for the transborder routes the average tax per passenger ranges between $1.79 and $4.03. For the international routes, the average tax per passenger ranges between $3.11 and $19.04. Consequently, going forward I used the range of estimated Ontario aviation fuel taxes per passenger in Table A.2.

TABLE A.2: Aviation Fuel Tax per Passenger, Transborder and International, YOW and YYZ

	Transborder	International
YYZ		
Low	$2.00	$6.00
High	$3.50	$13.00
YOW		
Low	$2.00	$7.00
High	$3.50	$14.00

Source: Calculated by author

The average one-way airfares are set out in Table A.3.

TABLE A.3: Average One-Way Fares, Transborder and International, YOW and YYZ

	Transborder	International
YYZ	$319	$660
YOW	$347	$787

Source: NACC

Assuming that the entire savings from the elimination of the aviation fuel tax are passed on to consumers, the resulting reductions in the average round-trip airfares at these two airports are summarized in Table A.4.

TABLE A.4: Reductions in Average Round-Trip Airfares, Transborder and International, Resulting from the Elimination of the Aviation Fuel Tax per Passenger, YOW and YYZ

	Transborder	International
YYZ		
Low	-0.313%	-0.530%

[18] If fuel loads and passenger loads are both 80% for example, the resulting estimated fuel tax costs per passenger are the same as the estimates in Table A.1. If they are both 70%, the fuel tax costs per passenger estimates still remain the same.

High	-0.549%	-1.061%
YOW		
Low	-0.288%	-0.381%
High	-0.504%	-0.826%

Source: Calculated by author

To translate these possible reductions in transborder and international airfares into possible increases in the total number of transborder and international passengers at Ottawa Macdonald-Cartier and Toronto Pearson airports, I need an estimate of the price elasticity of demand since:

(1) % change in number of passengers = price elasticity of demand for air travel * % change in average fares;

(2) increase in number of passengers = % change in number of passengers * current number of total passengers;

where,

(3) price elasticity of demand = % change in number of passengers / % change in average airfares.

The Department of Finance conducted a review and analysis of 254 demand elasticity estimates from 21 studies.[19] Table A.5 provides a summary of the results. The median elasticity estimatesare reported for each grouping of studies.

TABLE A.5: Median Estimates of Own-Price Elasticities for Air Travel for Selected Groupings of Studies

	Number of estimates	Elasticity (ε)
All studies	254	-1.12
All short/medium haul studies	109	-1.15
All long-haul domestic studies	36	-1.15
All short-haul leisure travel studies	19	-1.52
All cross-section studies	85	-1.33
All time series studies	136	-0.85
All studies less than 5 years' old	30	-0.85
Studies that account for inter-modal effects	109	-1.11

I used the median estimate (-1.112) for the studies that accounted for inter-modal effects, since this was the one preferred by the Department of Finance. For comparison purposes, InterVistas estimated a price elasticity of -0.88 for transborder traffic and -0.95 for international traffic.[20] On the other hand, Jacobs Consultancy noted:[21]

[19] Canada, Department of Finance, "Air Travel Demand Elasticities: Concepts, Issues and Measurement" (www.fin.gc.ca/consultresp//Airtravel/airtravStdy_1e.html.)
[20] InterVistas, "Estimating Air Travel Demand Elasticities", prepared for IATA, 2007.
[21] Jacobs Consultancy Canada Inc., "The Strategic Impact of the Canadian Aviation Based Travel and Tourism Industry on Canada's Economy", Prepared for The National Travel and Tourism Coalition, September 2010.

> "IATA indicates that existing estimates of price sensitivity using averages of the past 15-20 years, will be underestimates. Even so, they show that leisure travel is already very sensitive, declining 15% in response to a 10% rise in price."

This translates into a price elasticity of -1.5.

Table A.6 lists the passenger totals reported in Table 2 above for 2011. The passenger totals in this table include only the enplaned passengers.

TABLE A.6: Total Transborder and International Passengers (Enplaned Only), YYZ and YOW, 2011 (000s)

	2011
YYZ	
Transborder	4,350
International	5,250
YOW	
Transborder	360
International	215

Combining the price elasticity (-1.112) together with the estimated percentage reductions in average round-trip airfares (Table A.4) and the enplaned passenger totals (Table A.6) – as described in equations (1) to (3) – produces the estimates for the resulting incremental passengers in Table A.7. The totals in this table include both enplaned and deplaned passengers.

TABLE A.7: Potential Increase in Passengers at YYZ and YOW Resulting from the Elimination of Ontario Fuel Tax on Transborder and International Flights

	YYZ	YOW	Total
Low Estimates			
International	61,918	1,822	63,740
Transborder	30,328	2,308	32,636
	92,246	4,130	96,386
High Estimates			
International	123,836	3,950	127,786
Transborder	53,072	4,038	57,110
Total	176,908	7,988	184,896

Source: Calculated by author

The elimination of Ontario's aviation fuel tax might result in an initial increase in the total number of passengers at YYZ and YOW of 96,000 to 185,000 passengers.

From hereon, I follow the methodology developed by InterVistas in their study for the Canada Airlines Council in order to derive estimates of the potential economic and employment impacts from eliminating the provincial fuel tax for all transborder and international flights in Ontario.

The aggregate expenditures of the potential additional passengers generated by eliminating the fuel tax consist of the additional airfares for the NACC members and the additional tourism expenditures. The potential additional airfares equal the average one-way airfares reported in Table A.3, times the

incremental passengers at these two airports (Table A.7). The total estimated incremental airfares range between $24 million (low estimates) and $47 million (high estimates).

The resulting total estimated incremental tourism expenditures in Ontario depend upon the proportions of the incremental transborder and international passengers that are non-Canadian. I assumed that the split between Canadian and non-Canadian transborder and international passengers on NACC airlines was 70%/30%. On the non-NACC airlines, I assumed that the split was 20%/80%. These assumptions, together with the analysis that produced the results reported in Table A.7, also resulted in the following estimates of the total number of incremental non-Canadian passengers at YOW and YYZ combined.

TABLE A.8: Potential Increase in Non-Canadian Passengers at YYZ and YOW Resulting from the Elimination of Ontario Fuel Tax on Transborder and International Flights

	Total
Low Estimates	
International	18,770
Transborder	8,475
Total	27,245
High Estimates	
International	37,622
Transborder	14,720
Total	52,342

Source: Calculated by author

The potential additional tourism expenditures equal the average expenditures per person-visit in Ontario (Tables 11 and 12) for each of transborder (US residents) and international (non-US residents) tourists. This results in a range of $22 million to $42 million for the potential additional tourism expenditures of non-Canadians.[22]

Adding the airfares and the tourism expenditures, the potential aggregate incremental expenditures in Ontario might range between $46 and $89 million.[23]

To translate these potential incremental economic outputs in Ontario into total economic outputs, GDP and employment requires the use of multipliers. The traditional approach, used in many economic impact studies, involves identifying and measuring each of the following: direct economic impacts, indirect economic impacts and the secondary or induced economic impacts.

Many of the traditional studies have relied on surveys to estimate the direct and indirect impacts and on input-output model generated multipliers. It is possible to short circuit the process and apply multipliers directly to the direct economic impacts. For example, RP Erickson and Associates used this approach in their study of the economic impacts of the Calgary International Airport:[24]

> "Multipliers are used to infer indirect and induced economic activity from a measure of

[22] This underestimates the total incremental tourist expenditures in Ontario because these totals do not include tourists from other parts of Canada.
[23] I am implicitly assuming no leakages.
[24] RP Erickson & Associates, "The 2004 Economic Impact of the Calgary International Airport", September 2005, p. 7.

> direct economic activity. Multipliers are not directly observed; they are inferred from an economic model. By far the direct measure is the most accurate. Readers are advised that multiplier analysis remains an imprecise econometric technique and that caution be used in interpreting the indirect and induced impacts contained in this report. However, multipliers are virtually the only cost-effective tools available to identify the overall impact of a sectoral activity within an economy."

InterVistas used a similar approach in their study of the economic impacts of the Vancouver International Airport:[25]

> "As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured by the use of economic multipliers. Multipliers are derived from economic/statistical/accounting models of the general economy.
>
> The use of multiplier analysis is limited by a number of factors, these are:
> - the accuracy of the structure and parameters of the underlying model;
> - the level of unemployment in the economy;
> - the assumption of constant returns to scale in production;
> - the assumption that the economy's structure is static over time; and
> - the assumption that there are no displacement effects.
>
> Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity.
> In general, the use and reporting of multiplier impacts is discouraged. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment."

I use an approach similar to the ones employed by RP Erickson and InterVistas.

Statistics Canada has produced a set of national and provincial multipliers, based on 2006 data, for the air transport industry, as well as accommodation and food industries and the arts, entertainment and recreation industries. InterVistas used these same multipliers in their recent study, "The Elimination of Airport Rent: Return on Investment" (July 21, 2009), prepared for the Canadian Airport Council.

Table A.9 summarizes the multipliers for Ontario.[26] These are the multiplier values that I use.

TABLE A.9: Ontario Multipliers, 2006

	GDP	Output	Jobs
Air Transport	0.61	1.57	6.84
Accommodation and Food	0.78	1.53	23.56
Arts, Entertainment and Recreation	0.82	1.54	19.71

Source: Statistics Canada, "National and Provincial Multipliers", Cat. 15f0046xdb

[25] InterVistas, "The Vancouver International Airport Economic Impact", March 2006, p. 22, 23.
[26] These are the within Ontario only multipliers.

Applying the output multiplier to the potential aggregate incremental air transport expenditures ($24 to $47 million) and the tourism expenditures in Ontario ($22 to $42 million)[27] yields a potential total economic output impact in Ontario ranging between $71 million and $138 million (Table A.10). The potential increase in Ontario's GDP, stemming from the elimination of the aviation fuel tax on all international and transborder flights, might range between $32 million and $62 million. The incremental GDP produced in Ontario as a result of the elimination of the tax translates into 970 to 1,897 additional jobs.

TABLE A.10: Potential Total Impacts, Ontario GDP and Economic Output, Resulting from Elimination of Ontario Fuel Tax on International Flights

	GDP ($ MM)	Economic Output ($ MM)	Jobs
Low Estimates	$32	$71	970
High Estimates	62	138	1,897

Source: Calculated by author

[27] For the incremental tourism expenditures, I used a simple average of the multipliers for the accommodation and food industries and the arts. Entertainment and recreation industries.

APPENDIX B: Methodology for Estimating the Revenue Impacts for the Government of Ontario

As noted in section 2.1, the Government of Ontario collected approximately $49 million from its tax on aviation fuel used on transborder and international flights out of Ottawa and Toronto-Pearson airports in 2012. In section 2.2 and Appendix A, I estimated that eliminating this tax for international flights might lead to an increase in GDP in Ontario of between $32 and $62 million.

If I only consider the incremental traditional economic impacts from eliminating the aviation fuel tax on transborder and international flights, the Ontario Government would experience a net reduction in its revenues. GDP would not increase sufficiently to generate additional tax revenues for the government to more fully offset the lost revenues needed to provide the stimulus to the airline industry.

But is it possible that when the catalytic effects are considered, eliminating the tax could spur the airline industry to generate GDP growth large enough to produce additional tax revenues to offset part of the initial revenue losses for the Ontario Government?

Table B.1 summarizes the ratio to GDP of six major Government of Ontario taxes – personal income tax (PIT), corporate income tax (CIT), provincial sales tax (PST – now part of the HST), the employer health tax (EHT), the Ontario health premium (OHP) and gasoline tax (GT) – for the years 2010 and 2011.

TABLE B.1: Ontario Government Tax Revenues as % of Ontario GDP, 2010-2011

	2010	2011
PIT	3.8	3.7
CIT	1.3	1.4
PST	3.0	3.2
EHT	0.8	0.8
OHP	0.5	0.4
GT	0.4	0.4
Total	9.8	9.9

Sources: Government of Ontario, Annual Budgets

I only use these taxes in the following analysis, and I assume the following GDP ratios for each of these taxes – the assumptions are based on the average values for 2010 and 2011:

- PIT: 3.75%
- CIT: 1.35
- PST: 3.1
- EHT: 0.8
- OHP: 0.45
- GT: 0.4
- Total: 9.85%.

Applying the 9.85% rate for the six taxes listed above to the incremental traditional GDP impacts (resulting from the elimination of the tax on aviation fuel used on transborder and international flights) generates potential new tax revenues for the Government of Ontario of between $3.2 and $6.1 million. It is clear that the traditional economic impacts alone fall far short of generating sufficient new revenues

to compensate the Government of Ontario for their foregone revenues. Following this traditional analysis, the net costs to the Government of Ontario, using only YOW and YYZ in the analysis, might range between $43 million and $46 million annually.

I now expand upon the two cases to consider potential catalytic impacts. The first (case 1) involves the increase of GDP in Ontario of $32 million combined with the OEF catalytic effect (discussed in section 3.0) of a long-run increase in productivity of 0.56%. The second (case 2) involves the increase in GDP of $62 million combined with the OEF catalytic effect of 1.3%. In both cases I assume that the Government of Ontario will forego $49 million in revenues starting in 2013.

The annual gross revenue losses start at $49 million in 2013 and increase 1.5% per year – the assumed annual rate of increase in fuel consumption on transborder and international flights departing YYZ and YOW. The 1.5% assumption is based on a combination of continued growth in international air travel and improvement in fuel efficiency as airlines bring new planes into their fleets.

The incremental revenue gains start at $3 and $6 million for cases 1 and 2 respectively in 2013, and they are assumed to increase in the following years at the same rate of increase assumed for nominal GDP in Ontario (2.5% real and 2% for inflation).

Are the investments by the Ontario Government warranted?

In case 1, the estimated potential increase in the number of passengers in Ontario was 0.09% of the total number in Canada in 2011. Case 1 uses the OEF estimate of a long-run increase in productivity of 0.56% for a 10% increase in connectivity. Thus, I assumed that the potential catalytic effects would produce a cumulative increase of productivity of 0.0048% in 15 years. To generate this aggregate increase over 15 years, the annual increases in productivity would have to be 0.000318%.

Similarly, in case 2, the estimated potential increase in the number of passengers was 0.16% of the total number in 2011. Thus, I assumed that the potential catalytic effects would produce an increase of productivity of 0.0213% in 15 years. To generate this aggregate increase over 15 years, the annual increases in productivity would have to be 0.001417%.

In order to estimate the incremental revenue effects for the government, it is necessary to estimate the incremental GDP generated by the catalytic effects. To do this I projected nominal GDP for the time period 2013 to 2026 assuming a constant growth rate of 4.6% per year. I then estimated nominal GDP for each case using annual growth rates equal to 4.6% plus the incremental productivity growth rates – in total, 4.60032% for case 1; 4.60142% for case 2. The resulting differences in GDP are presented in Table B.2.

TABLE B.2: Incremental GDP, Catalytic Effects of Eliminating the Aviation Fuel Tax on International Flights, Cases 1 and 2, 2013-2026 ($ millions)

	Case 1	Case 2
2013	2	10
2014	5	20
2015	7	32

2016	10	44
2017	13	58
2018	16	73
2019	20	89
2020	24	106
2021	28	125
2022	32	145
2023	37	166
2024	43	190
2025	48	215
2026	54	242

It is quite clear in this table that the catalytic effects are substantial. For example, by 2026 the catalytic effects alone contribute to an increase of $54 million in GDP in case 1. This compares with the estimated initial incremental traditional impact of only $32 million in 2012. The catalytic effects are even larger in case 2 – an increase in GDP of $242 million by 2026.

Using the estimates of the catalytic impacts in Table B.2, I applied the 9.85% average tax rate to produce estimates of the catalytic-induced incremental revenues for the Ontario Government. These estimates are combined with those derived from the incremental traditional impact revenues and are presented in Table B.3.

TABLE B.3: Incremental Ontario Government Revenues, Combined Traditional Economic Impacts and Catalytic Effects of Eliminating Aviation Fuel Tax on International Flights, Cases 1 and 2, 2013-2026 ($ millions)

	Case 1	**Case 2**
2013	3	7
2014	4	8
2015	4	10
2016	5	11
2017	5	13
2018	6	15
2019	6	17
2020	7	19
2021	7	21
2022	8	23
2023	9	26
2024	9	29
2025	10	32
2026	11	35

In case 1, the total new revenues for the Ontario Government do not exceed the foregone revenues in any of the next 15 years. But as can be seen in Table B.4, the net revenue costs for the Government of Ontario do not exceed $48 million in any year in case 1.

In case 2, the net costs max out at $42 million and start declining. By 2026, the net cost to the government is down to $25 million.

TABLE B.4: Net Revenue Position of Ontario Government, Cases 1 and 2, 2013-2026 ($ millions)

	Case 1	Case 2
2013	-46	-42
2014	-46	-41
2015	-46	-41
2016	-47	-40
2017	-47	-39
2018	-47	-38
2019	-48	-37
2020	-48	-36
2021	-48	-34
2022	-48	-33
2023	-48	-31
2024	-48	-29
2025	-48	-27
2026	-48	-25

In both cases, the Government of Ontario does take a hit. But the investments are worthwhile, given the longer-term benefits for the economy – enhanced productivity growth, incremental GDP, potential greater connectivity at YYZ and the very low costs per job created.