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

The Economic Impacts of Proposed Increases to the Ontario Aviation Fuel Tax

June 2014

Prepared by Dr. Fred Lazar
Schulich School of Business
for the National Airlines Council of Canada

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

The goal of this report is to articulate the negative economic impacts that would result from the Government of Ontario's 2014 budget proposal to increase the aviation fuel tax by 148 per cent from 2.7 cents per litre to 6.7 cents per litre over the next four years.

As was noted in a previous study for the National Airlines Council of Canada,[1] it is well established that the air transport industry plays several critical roles in the economy. The industry:

- Expands markets for companies, enabling them to exploit economies of scale and learning curves;
- Spurs competition within and across countries thus promoting innovation and higher levels of productivity growth;
- Magnifies the economic benefits from trade liberalization by reducing transportation costs and travel times, thus inducing new production technologies/arrangements such as just-in-time manufacturing on a global basis.

The direct, short-term adverse economic consequences of increasing the aviation fuel tax in Ontario by four cents per litre by 2017 would be a decrease in provincial GDP of between **$67 and $97 million** in 2017, and a resulting decrease in employment across the province of between **1,991 and 2,907 full-time jobs.** Furthermore, the tax increase would negatively affect Ontario's vital travel and trade sectors by driving away **292,700 to 407,800** air travellers.

These negative impacts would be quickly compounded by the larger catalytic effects. A reduction in productivity would result in a further decrease in Ontario's GDP. By 2030, GDP could be $323 million to $1.0 billion lower,[2] with the consequent negative impacts for employment. These longer-term negative impacts would be significantly larger (five to ten times larger) than the estimated, direct short-term effects.

High aviation sector costs have been a prime concern raised by many public policy leaders including the Canadian Chamber of Commerce, which has named travel and tourism competitiveness as one of the top ten barriers to Canadian competitiveness two years in a row. In 2013, the World Economic Forum ranked Canada 136 out of 140 countries for the competitiveness of aviation taxes and other charges. High taxes and fees lead approximately three million Ontarians (among the more than five million Canadians) to drive across the border every year to depart on flights from U.S. airports. The proposed increase in the aviation fuel tax in Ontario will drive more people in the province to nearby U.S. border airports in places such as Buffalo, Niagara Falls, and Detroit.

[1] "The Economic Impacts of the Member Carriers of the National Airlines Council of Canada," March 2013.
[2] In 2014 dollars.

The aviation industry and policy experts alike have been advocating for governments in Canada to reduce or eliminate uncompetitive aviation fuel taxes.[3] Ontario's proposed move stands in stark contrast to British Columbia and other provinces that have cut aviation fuel taxes in a bid to grow international air routes and the business and tourism jobs they support. It also puts the province at a competitive disadvantage against competing U.S. jurisdictions that do not have a comparable tax on aviation fuel.

In a March 2013 report for the National Airlines Council of Canada, which examined the economic impacts of *eliminating* the aviation fuel tax for U.S. and international flights, it was concluded that removing the 2.7 cents per litre aviation fuel tax on these flights could generate significant economic benefits for Ontario. For a rather small investment, the Government of Ontario could provide important stimulus to the tourism industry in the province and to the overall economy. The removal of this tax could lead to additional economic output of between $70 and $138 million, $32 to $62 million in additional GDP, 27,000 to 52,000 more tourists per year, and an additional 970 to 1,897 jobs in the province. Over time, the economic benefits could be significantly larger as the catalytic effects begin to materialize. These effects could increase aggregate productivity in the province by between 0.005% and 0.02% in 15 years, generating between $54 million and $242 million in additional GDP in 15 years. These increases would be over and above the short-term increases in GDP.

Without higher and sustained rates of productivity growth, the Ontario Government will have difficulty achieving its fiscal goals and generating growth. The air transport industry is a key sector spurring productivity growth. Increasing the aviation fuel tax could lead to a decrease in the productivity growth rates in the province and diminish the competitiveness of Ontario-based companies in all sectors.

Economic theory is quite clear that governments should not tax activities and industries that generate positive externalities.

[3] For example, Ben Cherniavsky, a leading airline analyst in Canada, and Benjamin Dachis, a graduate from the London School of Economics, commented several years ago: "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."

2.0 Projected Economic Impacts of Increasing Ontario's Aviation Fuel Tax

2.1 Short-Term Direct Economic Costs

The previous study examined the economic consequences of *eliminating* Ontario's aviation fuel tax for flights to the U.S. and other international destinations. In that study only the Ottawa (YOW) and Toronto Pearson (YYZ) airports were considered. This new report adds the Billy Bishop Toronto City (YTZ), Thunder Bay (YQT), London (YXU) and Hamilton (YHM) airports, and the scope is expanded to explore the impacts on domestic travel.

Table 1 summarizes passenger traffic at these six airports in 2013. These data are derived from the annual reports of the respective airports.

Table 1: Passenger Traffic, Total Passengers Enplaned and Deplaned, Selected Ontario Airports, 2013 (000s)

	Domestic	U.S.	International	Total
Toronto Pearson	14,385	9,840	11,884	36,110
Ottawa	3,364	773	442	4,579
Billy Bishop Toronto City	1,700	800	N/A	2,500
Thunder Bay	*Data not available*			772
London	*Data not available*			449
Hamilton	*Data not available*			342
Total	*Data not available*			**43,980**

The 2013 passenger traffic data are used to project the potential economic impacts of an increase in the aviation fuel tax to 6.7 cents per litre.

Table 2 summarizes estimates of the positive economic impacts currently generated by airlines and the aviation sector at each of the six airports considered in this report.

Table 2: Economic Impacts, Selected Ontario Airports

	Employment	Labour Income ($ millions)	GDP ($ millions)
Toronto Pearson	185,000	6,800	26,400
Ottawa	10,325	581	1,100
Billy Bishop Toronto City	5,700	290	640
Thunder Bay	4,986	243	569
Hamilton	2,760	151	284
London	2,600	*Data not available*	*Data not available*
Total	**211,371**		

Sources: InterVistas, "Billy Bishop Toronto City Airport Economic Impact" (October 25, 2012); "Economic Impacts of Toronto Lester B. Pearson International Airport, 2006"; "Ottawa Airport Economic Impacts, 2010"; RP Erickson & Associates, "Thunder Bay Airport Economic Impacts, 2011"; InterVistas, "John C. Munro Hamilton International Airport, Economic Impact Study" (February 26, 2014); London International Airport Authority, 2011 Annual Report.

The same methodology is used to project the economic impacts of increasing the aviation fuel tax by four cents per litre as was used in the previously cited study. The key assumptions are set out in Appendix A.

By 2017, increasing Ontario's aviation fuel tax could result in a direct decrease in the total number of (enplaned and deplaned) passengers per year at the six airports of between **292,700 and 407,800**.

These declines are referred to as conservative estimates because an increase in the aviation fuel tax would produce negative catalytic effects; that is, would reduce productivity levels in the province, negatively impacting GDP growth, employment and the demand for air travel. Moreover, the increase in the aviation fuel tax could jeopardize Toronto Pearson's potential to become a Tier 1 airport, and thus the negative economic impacts would be exacerbated further.

In addition, by 2017, increasing Ontario's aviation fuel tax could result in a direct decrease in provincial GDP of between **$67 and $97 million**, and a corresponding decrease in employment across the province of between **1,991 and 2,907 people**.

2.2 Compounding Negative Economic Impacts over the Long-Term

The air transport sector plays important economic and social roles. Indeed, numerous studies confirm that the aviation sector produces important catalytic effects that enhance productivity levels throughout the economy. A dollar invested in the aviation industry is likely to produce a larger net benefit than a dollar invested in most other sectors of the economy. The converse is also true.

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

> "Air transportation facilitates employment and economic development in the national and regional economy through increased trade, attracting new businesses to the region and encouraging investment. It supports long-term economic growth by providing linkages between a country and the global economy through greater connections to international business markets and greater access to resources. Industries and activities that would otherwise not exist in a region can be attracted by improved air transport connectivity. Thus, aviation yields additional benefits to direct users and generates further positive impact on performance and economic activity of a country." [4]

An increase in the aviation fuel tax also would further burden the entire air transport sector in the province. For example, the Thunder Bay International Airport Authority has reported that:

[4] InterVistas re-emphasized the importance of the aviation industry in their study for Tradeport on the economic impacts of the John C. Munro Hamilton, International Airport.

> "Upwards of 40,000 passengers per year drive to Duluth and Minneapolis (joining 5 million other Canadian passengers) to avoid paying the plethora of excise & regular taxes, surcharges, navigation fees, security fees and Federal Airport Rent added to or included in the price of air travel in Canada. Thunder Bay is unlikely to be able to support U.S. service in the near term unless changes occur. The difference in transportation policy between Canada (take cash from airports) and the U.S. and almost every other country (fund airports and infrastructure) remains a competitive disadvantage for Canada and Thunder Bay."

The Buffalo Airport actively markets to Ontario travellers. Its website advertises:

> "Starting your trip from the Buffalo Niagara International Airport can save you time, money and hassle. Approximately 750 nonstop flights every week to 23 airports and beyond means you get to where you're going better and faster! Many of your neighbors already benefit from flying with us; almost two million Canadians used our airports last year… If you fly from Toronto Pearson to the U.S. you can expect government-imposed charges of up to $200 per round-trip ticket, depending on routing and destination."[5]

Even Ogdensburg Airport, a city with a population of just over 11,000 people in upper New York State, is looking to expand in order to take advantage of the possible spillover of Ontario travellers from Ottawa which is only an hour's drive away.[6]

When an airline or airport does not achieve density economies, and the hub carrier is unable to gain a frequency advantage, the consequence is that both the airline and the airport begin to fall behind and both risk becoming marginalized over time.[7]

It will matter to Canadians whether they connect through Toronto; or they have to make an additional stop and change planes in order to travel through Atlanta, Los Angeles, Chicago, London, Dubai, Shanghai or elsewhere. And the leakage to Buffalo will only increase as a result of the aviation fuel tax which does not help Toronto Pearson and the Ontario economy.

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 (Appendix B compares Toronto Pearson with a number of other potential Tier 1 airports).

---

[5] http://www.buffaloairport.com/Canadian/Start.aspx.

[6] http://northcountrynow.com/business/new-program-place-attract-commercial-airliner-traffic-ogdensburg-airport-0116700

[7] Air France pointed out in their 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."

3.0 CONCLUSIONS

The direct, short-term adverse economic effects of increasing the aviation fuel tax in Ontario by four cents per litre by 2017 would be a decrease in provincial GDP of between **$67 and $97 million** in 2017, and result in a corresponding decrease in employment across the province of between **1,991 and 2,907 jobs**. Furthermore, it would negatively affect Ontario's vital travel and trade by driving away **292,700 to 407,800** air travellers.

These negative impacts would be quickly compounded by the larger negative catalytic effects. Based on existing studies, total factor productivity in the province could be reduced between 0.037% and 0.121% by 2030. This, in turn, would result in a further decrease in Ontario GDP in 2030 (measured in 2014 prices) of between **$323 million and $1.0 billion**, with the consequent negative impacts for employment. These longer-term, negative impacts would be significantly larger than the estimated, direct short-term effects.

An increase in the aviation fuel tax would be a further burden for the air transport sector in the province. The aviation industry and policy experts alike have been advocating for governments in Canada to reduce or eliminate uncompetitive aviation fuel taxes. Ontario's proposed move stands in stark contrast to British Columbia and other provinces that have cut aviation fuel taxes in a bid to grow international air routes and the business and tourism jobs they support. It also puts the province at a competitive disadvantage against competing U.S. jurisdictions that do not have a comparable tax on aviation fuel.

Economic theory is quite clear that governments should not tax activities and industries that generate positive externalities.

APPENDIX A: KEY ASSUMPTIONS USED IN ESTIMATING THE ECONOMIC IMPACTS

Table A.1 sets out the information for fuel capacity and total number of passengers for the various aircraft used at the six airports in this report.

Table A.1
Fuel Capacity, Passengers, Aviation Fuel Tax per Passenger, Various Aircraft

	Fuel Capacity (Litres)	Total Passengers	*Current Fuel Tax *2.7 cents per seat*	*Proposed Fuel Tax *6.7 cents per seat*	*Incremental Fuel Tax per Passenger *4 cents*
Domestic and U.S.					
A319	23,860	137	$3.53	$8.75	$5.22
A320	23,860	165	$2.93	$7.27	$4.34
A321	26,700	200	$2.70	$6.71	$4.01
B737-600	26,020	120	$4.39	$10.90	$6.51
B737-700	26,020	158	$3.33	$8.28	$4.94
B737-800	26,020	175	$3.01	$7.47	$4.46
B737-900	26,030	183	$2.88	$7.15	$4.27
E-175	11,840	80	$3.00	$7.44	$4.44
E-190	16,250	98	$3.36	$8.33	$4.97
CRJ200ER	8,080	50	$3.27	$8.12	$4.85
CRJ-705ER	10,990	75	$2.97	$7.36	$4.40
CRJ900ER	10,990	86	$2.59	$6.42	$3.83
D8-100	3,160	37	$1.73	$4.29	$2.56
Q-400	6,530	76	$1.74	$3.48	$1.74
D8-300	3,160	50	$1.28	$2.56	$1.28
Fairchild Metroliner	2,450	19	$2.61	$5.22	$2.61
Beech 1900D	2,520	19	$2.69	$5.37	$2.69
Pilatus PC-12	1.520	9	$3.42	$6.84	$3.42
International					
B777-300ER	181,200	420	10.28	25.51	15.23
B777-200LR	202,500	400	12.86	31.92	19.06
B747-400	210,000	524	10.18	25.27	15.09
B767-300ER	91,380	269	8.09	20.08	11.99
B787-8	127,000	242	12.50	31.02	18.52

B787-9	138,700	280	11.80	29.28	17.48
A330-300	97,530	350	6.64	16.47	9.83
A380	310,000	550	14.32	35.54	21.22

*Adjusted for passenger and fuel loads.
Source: www.airlines-inform.com/commercial-aircraft

In the case of domestic and U.S. flights, it is assumed that for the types of aircraft likely to be used, fuel loads would be only 60 per cent and passenger loads would average 80 per cent. In the case of the international flights it is assumed that fuel loads might only be 75 per cent to 80 per cent while passenger loads average 85 per cent.

The single aisle aircraft, including the Bombardier and Embraer regional jets and turbo-props, generally operate on domestic and U.S. 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.

As a result, for the domestic and U.S. routes the average incremental tax per passenger could range between $1.28 and $6.51. For the international routes, the average tax per passenger could range between $9.83 and $21.22. Similarly, data were available for litres consumed by domestic, U.S. and international flights operating out of Toronto Pearson in 2009. Using these data and applying the four cents per litre tax, produces the following incremental aviation fuel tax per enplaned passenger: Domestic – $3.12; U.S. – $3.25; and International – $8.94.

Consequently, going forward the range of estimated Ontario aviation fuel taxes per passenger in Table A.2 are used. These amounts are based on the types of aircraft operating on the various routes at each of the airports, a mix of assumptions based on the data in Table A.1 and the data available for 2009 for Toronto Pearson. The estimates tend to be on the conservative side in order to generate more conscientious estimates of the potential negative economic impacts.

Table A.2
Incremental Aviation Fuel Tax per Enplaned Passenger, Domestic, U.S. and International

	Domestic	U.S.	International
Toronto Pearson (YYZ)			
Low	$3.00	$3.00	$8.00
High	$4.00	$4.00	$12.00
Billy Bishop Toronto City (YTZ)			
Low	$1.25	$1.25	NA
High	$1.75	$1.75	NA

Ottawa (YOW)			
Low	$3.00	$3.00	$7.00
High	$4.00	$4.00	$12.00
Thunder Bay (YQT)			
Low	$2.00	N/A	$3.00
High	$3.50	N/A	$4.00
London (YXU)			
Low	$1.25	N/A	$3.00
High	$2.50	N/A	$4.00
Hamilton (YHM)			
Low	$3.00	N/A	$3.00
High	$4.00	N/A	$4.00

The average one-way airfares are set out in Table A.3. The U.S. and international fares for Toronto Pearson and Ottawa airports are the same as those used in the previous study. The domestic fares for these two airports are derived from Statistics Canada, Cansim Table 401-003 ("Domestic airfares, city of enplanement, 4th quarter 2012). The airfares for the other airports are derived from the respective airfares for Toronto Pearson and Ottawa airports. In the case of Thunder Bay, London and Hamilton, the international flights are to the Caribbean. There are no long-haul, trans-Atlantic or trans-Pacific flights. Thus, the assumed airfares for international flights from these cities are closer to the U.S. airfares for Toronto Pearson and Ottawa airports.

Table A.3
Average One-Way Fares, Domestic, U.S. and International

	Domestic	U.S.	International
Toronto Pearson (YYZ)	$218	$319	$660
Billy Bishop Toronto City (YTZ)	$218	$319	N/A
Ottawa (YOW)	$192	$340	$780
Thunder Bay (YQT)	$200	N/A	$375
London (YXU)	$180	N/A	$350
Hamilton (YHM)	$200	N/A	$350

It is assumed that the entire additional fuel costs resulting from the increase in the aviation fuel tax will be passed on to consumers. As in the previous study, the median price elasticity of demand estimate of -1.112 is used.

Combining this price elasticity with the estimated percentage increases in average round-trip airfares and the enplaned passenger totals produces the estimates for the resulting incremental decrease in passengers in Table A.4. The totals in this table include both enplaned and deplaned passengers.

Table A.4
Potential Decrease in Passengers Resulting from the Increase in the Ontario Aviation Fuel Tax (000s)

	Low Estimates	High Estimates
Toronto Pearson (YYZ)	241.6	335.5
Billy Bishop Toronto City (YTZ)	7.2	10.0
Ottawa (YOW)	35.2	47.8
Thunder Bay (YQT)	4.3	7.4
London (YXU)	1.8	3.4
Hamilton (YHM)	2.7	3.6
Total	**292.7**	**407.8**

Table A.5 sets out the assumptions used regarding the percentage of the total number of passengers that might have originated their flights in Ontario.

Table A.5
Percentage of Passengers Originating in Ontario, Domestic, U.S. and International

	Domestic	U.S.	International
Toronto Pearson (YYZ)	65	75	50
Billy Bishop Toronto City (YTZ)	85	75	N/A
Ottawa (YOW)	80	75	65
Thunder Bay (YQT)	90	N/A	100
London (YXU)	95	N/A	100
Hamilton (YHM)	90	N/A	100

The total estimated reduction in tourism expenditures in Ontario depends upon the proportions of the U.S. and international passengers that are non-Canadian. Table A.6 sets out the assumptions I used.

Table A.6
Percentage of Passengers Originating outside of Canada, U.S. and International

	U.S.	International
Toronto Pearson (YYZ)	20	40
Billy Bishop Toronto City (YTZ)	25	N/A
Ottawa (YOW)	25	35
Thunder Bay (YQT)	N/A	0
London (YXU)	N/A	0
Hamilton (YHM)	N/A	0

The potential loss in aggregate tourism expenditures equals the average expenditures per person-visit in Ontario (Tables 11 and 12 in the previous study) for each of U.S. (US residents -- $430) and international (non-US residents -- $950) tourists.[8]

Table A.7 summarizes the multipliers for Ontario.[9]

Table A.7
Ontario Multipliers, 2006

	GDP	Output	Jobs
Air Transport	0.61	1.57	6.84
Accommodation and Food	0.78	1.53	23.56

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

Applying the output multipliers to the potential aggregate incremental air transport expenditures and the tourism expenditures in Ontario yields a potential total economic output impact in Ontario ranging between $156 million and $224 million (Table A.8). The corresponding potential decrease in Ontario's GDP, stemming from the proposed increase in the aviation fuel tax, might range between $67 million and $97 million. The reduction in GDP in Ontario translates into a possible loss of 1,991 to 2,907 jobs.

Table A.8
Potential Total Impacts, Ontario GDP and Economic Output, Resulting from the Proposed Increase in the Ontario Aviation Fuel Tax

	GDP ($ million)	Economic Output ($ million)	Jobs
Low Estimates	$67	$156	1,991
High Estimates	97	224	2,907

[8] This underestimates the total incremental tourist expenditures in Ontario because these totals do not include tourists from other parts of Canada.
[9] These are the within Ontario only multipliers.

APPENDIX B: RELATIVE POSITION OF TORONTO PEARSON

Toronto Pearson 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 they could become marginal players in the future.

Toronto Pearson 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.

Table B.1 compares YYZ with airports in cities of comparable population. The comparisons are based on total number of passengers per population (pax/pop).

Table B.1
Comparison of YYZ with Other Airports of Comparable Population, 2013

City	Population (000s)	Hub Carrier	Pax/Pop
TORONTO	5,583	Air Canada	6.5
Atlanta	5,523	Delta	17.1
Dallas	6,810	American	8.9
Houston	6,313	United	6.3
Miami	5,828	American	7.0
Madrid	6,388	Iberia	6.2
Sydney	4,676	Qantas	8.2
Singapore	5,155	Singapore	10.4
San Francisco	4,516	United	10.0
Kuala Lumpur	6,094	Malaysia	7.8
Philadelphia	6,035	American	5.0

Sources: Airport Council International.

Toronto Pearson has improved its relative position during the past few years. But Toronto Pearson lags significantly behind Atlanta, Singapore and San Francisco.

Toronto Pearson is compared to other key Star Alliance hubs around the world in Table B.2. 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, Chicago, Frankfurt, San Francisco, 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.

Table B.2
Comparison of YYZ and Other Major Star Alliance Hubs, 2013

City	Passengers (millions)	Pax/Pop
Toronto	36.2	6.5
Chicago	66.9	7.0
Frankfurt	58.0	25.7
Denver	52,6	19.5
Bangkok	51.4	7.2
Houston	39.9	6.3
Singapore	53.7	10.4
San Francisco	44.9	10.0
Munich	39.7	24.2
Seoul	41.7	2.4
Washington	22.4	3.8
Istanbul	51.2	3.6
Abu Dhabi	14.7	16.0