



Transport  
Canada

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Canada

**PRELIMINARY**

**Transport Canada  
Assumptions Report  
2005-2019**

Prepared by:

**ECONOMIC ANALYSIS  
POLICY  
TRANSPORT CANADA**

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**Canada**

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## I. Introduction

Transport Canada updates its aviation forecasts annually. The forecasts include estimates of the number of passengers and aircraft movements, presented on a national, regional and site-specific basis.

The passenger forecasts predict both origin/destination (O/D) and enplaned/deplaned (E/D) passenger traffic volumes while corresponding arriving/departing aircraft movement (A/D) forecasts are also produced. The O/D forecasts are produced with the Passenger Origin/Destination Model (PODM) while the E/D and A/D forecasts are produced by means of the Passenger Traffic Allocation Model (PTAM). This latter model also produces the scheduled aircraft movement forecasts. Together, these two models form a unique aviation forecast system in Canada.

The major independent variables considered by PODM are Gross Domestic Product, personal real disposable income per capita, adult population (i.e., people who are 20 years of age and over), nonbusiness and business airfares, and yield. The airfare forecasts used by PODM come from the Cost and Fare Model (CFM). The major variables in the CFM are labour cost and productivity, fuel cost/fuel efficiency and airline costs other than fuel and labour.

While PODM is an econometric model, PTAM is basically an “Operation Research” (OR) model, which allocates the O/D forecasts output produced by PODM, throughout its route system, subject to the constraints of available passenger routes, aircraft routes and passenger load factors.

Forecasting future air transport activity is a complex process as there are many forces at work some promoting, others constraining growth of the air travel market. **In the process of developing the aviation forecasts, assumptions have to be developed regarding these forces, which will in turn influence air travel demand. More specifically, Transport Canada has identified 12 majors socio-economic, supply and strategic factors, which are expected to chart the future course for aviation growth in Canada.** We are seeking your views on the assumptions we are proposing to use which will interact with each other to generate a revised aviation forecasts.

The socio-economic, supply and strategic factors, which influence forecasts of demand for air transportation, are listed in Table 1 below:

Table 1  
**SOCIO-ECONOMIC, SUPPLY AND STRATEGIC FACTORS**

- 1. Gross Domestic Product**
- 2. Personal Disposable Income**
- 3. Adult Population**
- 4. U.S. Economic Outlook**
- 5. Airline Yield**
- 6. Fleet/route Structure/Average Aircraft Size**
- 7. Passenger Load Factors**
- 8. Labour Cost and Productivity**
- 9. Fuel Cost/Fuel Efficiency**
- 10. Airline Costs Other than Fuel and Labour**
- 11. Passenger Traffic Allocation Assumptions**
- 12. New Technology**

**Factors 1 to 5** are related to the demand component of air forecasts. **Factors 6 through 10** are related to the operating strategies of the Canadian airline industry and represent the supply component of the air forecasts. **Factors 11 and 12** represent potential structural changes, which could stimulate and/or decrease future air demand.

## **How To Fill Out The Questionnaire...**

Before completing the survey questionnaire, you are invited to read the description text that explains the proposed set of assumptions to be used to update the forecasts. **The survey questionnaire then aims at soliciting your expert views on the changes you are envisioning in the coming years on the various key factors under consideration.** If you need additional clarifications for completing the questionnaire at the back of this document, please contact Robert Duclos at (613-990-3820) to get assistance.

Given the wide range of factors considered here, it is expected that some readers may want to comment on only some of the factors listed. Also, some readers may wish to address factors, which have not been listed. All of these ways of completing the questionnaire will prove to be very useful in validating the assumptions to be used to derive the air forecasts.

Once you have filled out the questionnaire, please send it with your answers/comments either by fax or by courier by **November 30<sup>th</sup>, 2005** or earlier to:

Robert Duclos  
Chief, Aviation Forecasts,  
Transport Canada,  
“Tower C”, Place de Ville,  
Ottawa, Ontario, Canada  
Fax – (613) 957-3280  
K1A 0N5

Or electronically to Robert Duclos at the following:  
e-mail address: [duclosr@tc.gc.ca](mailto:duclosr@tc.gc.ca)

## II. Assumptions

This section presents the proposed assumptions to be used to carry out over the next months the next General Forecast Update of Transport Canada's aviation forecasts. The assumptions contained in this survey have been made through the use of predictions supplied by a number of organizations including predictions made by **Informetrica**, **the Conference Board of Canada**, the **Department of Finance**, **Consensus Forecasts Inc.**, **Economy.com**, **Global Insight**, etc. Additionally, Transport Canada is consulting with major Canadian airport authorities, NavCanada, ATAC, CAC, ICAO and IATA and is also using internal information generated within the department.

### III. Current Traffic Outlook

The strong passenger traffic recovery during 2004 was followed by above average growth during the first half of 2005. As a result, total passenger traffic at the end of 2004 totaled 87.5 million enplaned and deplaned revenue passengers, exceeding the previous peak of 86.0 million passengers in 2000. When considering the sector splits, the transborder traffic, with 18.5 million passengers at the end of 2004, was the only sector, where the number of passengers was still significantly below the 2000 level of 20.8 million transborder passengers. This suggests a post-Sept 11th temporary shift of O&D international travel away from U.S. sun spots/tourist areas destinations to other international destinations. Statistics from the International Customs database of Statistics Canada, a proxy for Origin and Destination Canada-U.S. travel, appear to confirm this shift in Canadians travel destinations. During 2004, the number of Canadians returning from the U.S. was 15% lower than during 2000 while the number of Canadians returning from non-U.S. destinations was up 21% over 2000.

A comparison of the most recent 2004/2005 aviation forecast general update<sup>1</sup> with the aviation forecasts prepared during the 2000/2001 aviation forecast review indicates the potential traffic slippage since 2000.

Both set of passenger traffic forecasts, prepared respectively during 2000/2001 and 2004/2005 periods, for target years 2004, 2009 and 2014 are presented in Table A.1 for each traffic sector.

#### Passenger Traffic Forecasts

In the domestic sector, E/D passenger traffic was originally predicted to reach 57.8 million at the end of 2004. The recent review predicts a slightly lower figure of 54.7 million instead, or a 5% shortfall which represents approximately a “2-year traffic slippage” (5% divided by the expected average annual growth in this sector of 3.1%).

For the longer term, stronger than average passenger growth in the short-term is expected to eliminate the traffic slippage by the period 2009 to 2014.

In the transborder sector, E/D passenger traffic was originally predicted to reach 23.8 million at the end of 2004. The recent review predicts a lower figure of 18.5 million instead, or a significant 22% shortfall which represents approximately a “5-year traffic slippage” (24% divided by the expected average annual growth in this sector of 4.7%).

For the longer term, stronger than average passenger growth is expected to reduce the traffic slippage to two to three years by the period 2009 to 2014.

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<sup>1</sup> “**Transport Canada Aviation Forecasts 2004-2018 – Sept 2005**”. The report is available on Transport Canada’s aviation forecast web site at the following address:  
<http://www.tc.gc.ca/POL/EN/airforecasting/airforecasting.htm>

In the other international sector, E/D passenger traffic was originally predicted to reach 15.5 million at the end of 2004. The recent review predicts a lower figure of 14.3 million instead, or a 8% shortfall which represents approximately a “1 to 2-year traffic slippage” (6% divided by the expected average annual growth in this sector of 5.3%).

For the longer term, stronger than average passenger growth is expected to not only eliminate the current traffic slippage but actually advance traffic level when compared to the pre-Sept 11 aviation forecast.

Total E/D passenger traffic was originally predicted to reach 97.1 million at the end of 2004. The recent review predicts a lower figure of 87.5 million instead, or a 10% shortfall which represents approximately a “3-year traffic slippage” (12% divided by the expected average annual growth in this sector of 3.8%).

For the longer term, stronger than average passenger growth is expected to reduce the traffic slippage to one year or about 3 percent lower traffic level when compared to the pre-Sept 11 aviation forecast.

TABLE A.1									
ALL REPORTING AIRPORTS – ENPLANED AND DEPLANED PASSENGERS (Millions)									
Forecast Years	DOMESTIC			TRANSBORDER			OTHER INT’L		
	JULY 2001	SEPT 2005	% DIFF	JULY 2001	SEPT 2005	% DIFF	JULY 2001	SEPT 2005	% DIFF
2004	57.8	54.7	-5%	23.8	18.5	-22%	15.5	14.3	-8%
2009	65.8	64.2	-2%	28.6	23.8	-17%	18.9	18.9	0%
2014	73.2	72.8	-1%	33.3	29.2	-12%	22.7	23.6	+4%
	ALL SECTORS								
	JULY 2001	SEPT 2005	% DIFF						
2004	97.1	87.5	-10%						
2009	113.3	107.0	-6%						
2014	129.2	125.6	-3%						

**Air Carrier Aircraft Movement Forecasts**

Both set of air carrier aircraft movement forecasts, prepared respectively during 2000/2001 and 2004/2005 periods, for target years 2004, 2009 and 2014 are presented in Table A.2 for each traffic sector.

In the domestic sector, air carrier aircraft movement traffic was originally predicted to reach 2.945 million at the end of 2004. The recent review predicts a lower figure of 2.683 million instead, or a 9% shortfall which represents approximately a “3-year traffic slippage” (9% divided by the expected average annual growth in this sector of 2.7%).

For the longer term, the utilization of smaller 85-100 seat aircraft by Air Canada to replace larger jet aircraft plus stronger than average passenger growth in 2004 and 2005 is expected to stimulate growth in this sector principally in the short term and to completely eliminate the traffic slippage by 2014.

In the transborder sector, air carrier aircraft movement traffic was originally predicted to reach 493 thousands at the end of 2004. The recent review predicts a lower figure of 430 thousands instead, or a significant 13% shortfall which represents approximately a “3 to 4-year traffic slippage” (-13% divided by the expected average annual growth in this sector of 3.5%).

For the longer term, the combination of a higher proportion of level IV-VI air carrier movements plus stronger than average passenger growth in 2004 and 2005 is expected to completely eliminate the traffic slippage by 2014.

In the other international sector, air carrier aircraft movement traffic was originally predicted to reach 89,200 at the end of 2004. The recent review predicts a higher figure of 93,200 instead, as a result of an apparent shift of transborder frequencies to other international “sunspots”.

For the longer term, stronger than average growth in 2004 and 2005 is expected to exceed previous pre-Sept 11’s aviation forecast.

Total air carrier aircraft movement traffic was originally predicted to reach 3.527 million at the end of 2004. The recent review predicts a lower figure of 3.206 million instead, or a 9% shortfall which represents approximately a “3-year traffic slippage” (9% divided by the expected average annual growth in this sector of 2.9%).

For the medium term, the utilization of smaller aircraft by Air Canada combined with stronger than average passenger growth in 2004 and 2005 is expected to completely reduce the traffic slippage by 2014.

TABLE A.2									
ALL TOWER AND NON TOWER AIRPORTS – AIR CARRIER LEVEL I TO VI (Thousands)									
Forecast Years	DOMESTIC			TRANSBORDER			OTHER INT’L		
	JULY 2001	SEPT 2005	% DIFF	JULY 2001	SEPT 2005	% DIFF	JULY 2001	SEPT 2005	% DIFF
2004	2,945	2,683	-9%	492.6	429.5	-13%	89.2	93.2	+4%
2009	3,297	3,241	-2%	547.7	531.5	-3%	104.4	122.8	+18%
2014	3,629	3,673	+1%	608.2	624.6	+3%	120.9	150.3	+24%
ALL SECTORS									
	JULY 2001	SEPT 2005	% DIFF						
2004	3,527	3,206	-9%						
2009	3,949	3,896	-1%						
2014	4,358	4,448	+2%						

## 1. Gross Domestic Product

While the economy expanded briskly in the first half of 2004, the appreciating Canadian dollar and rising interest rates began to put the brakes on growth. While the exchange rate continued to dampen exports in 2005, export growth still managed to surprise on the positive side. The real story for 2005, however, was strong domestic demand, characterized by strong consumer spending and business investment, and a 50 percent rise in the price of oil over the first three quarters of 2005. Canadian GDP is expected to grow by 2.6 percent in 2005. This expansion is expected to strengthen to 2.9 percent in 2006.

**Between 2004 and 2009, Canadian GDP is expected to expand at an average annual rate of 2.9 percent. This growth is dependent on strong growth in the U.S, as well as a strong but stable exchange rate.**

### Historical

The Canadian economy fared better in 2004 than in 2003, as real gross domestic product (GDP) grew 3.1 percent. This was up from the 2.2 percent increase of 2003, when GDP had been depressed by the SARS outbreak, the mad cow scare and the increasing value of the Canadian dollar. Both consumer spending and business investment provided strength while exports surprised on the positive side. Consumers spent heavily on housing and non-auto-durables. Business investment was concentrated in machinery and equipment as manufacturers worked to improve productivity. The Canadian dollar continued to appreciate in 2004 but at a much lower rate than in 2003. The increase was concentrated in the last half of the year as it actually depreciated in the first five months of 2004. A recovery in exports reflected increased exports to China, which rose 39 percent, and rising energy exports, which reflected higher rising energy prices.

### National Forecast

Real economic growth is expected to be 2.6 percent in 2005, a reduction from the 3.1 percent in 2004. Consumer spending and business investment will continue to provide strength. Domestic demand should grow at 3.8 percent. Consumer spending is expected to grow by 3.6 percent and business investment should increase by 5.9 percent. Hurricane Katrina is expected to have minimal impact on Canadian economic output. However the high Canadian dollar will affect exports and similarly lower import prices for consumers and for investment in machinery and equipment. The result will be significantly lower exports in 2005 than in 2004.

In 2006 the economy is expected to grow by 2.9 percent. Higher interest rates, as well as higher energy prices, are expected to restrain domestic demand. Consumer spending should grow by 2.7 percent while business investment should grow by 4.3 percent. The Canadian dollar will remain strong but stable. Fluctuations in the dollar's value should remain minimal. Without large changes in the dollar's value manufacturers should

complete their adjustment to the higher dollar value. Exports are expected to rise, reflecting the strong U.S. economy, while import growth is expected to be weakened reflecting weaker domestic demand.

Inflation is expected to average about 2.1 percent throughout the 2004-2009 periods. High energy prices will contribute to higher inflation in 2005 and 2006. The CPI increase was held to 1.9 percent in 2004 due in part to low import prices. **Table 1.1** includes the CPI forecast.

<b>TABLE 1.1</b>							
<b>SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – GROSS DOMESTIC PRODUCT</b>							
<b>(Percentage Change )</b>							
	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>'04-'09</b>
<b>Real GDP</b>	<b>3.1</b>	<b>2.6</b>	<b>2.9</b>	<b>2.8</b>	<b>2.9</b>	<b>3.1</b>	<b>2.9</b>
<b>CPI</b>	<b>1.9</b>	<b>2.3</b>	<b>2.2</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.1</b>

Source: Private Sector Forecasts and Transport Canada

The main risks to the short-term forecast come from sustained high oil prices as well as the large U.S. trade deficit and the high level of U.S. consumer indebtedness. High oil prices have the effect of reducing consumer spending and slowing both the Canadian and the U.S. economies. Since Canada is a net exporter of oil, high oil prices have the additional effect of pushing up the value of Canadian dollar and adversely affecting the exports of the manufacturing sector. There is also the possibility that the large U.S. trade deficit might result in a rapid decline in the value of the U.S. dollar and hence a sharp rise in U.S. interest rates. The high level of consumer indebtedness in the U.S., due in part to historically low interest rates and the increase in housing prices, means that if interest rates suddenly rise or housing prices start to fall there could be a significant decrease in consumer spending.

A comparison of economic forecasts for the Canadian economy from other organizations is presented in **Table 1.2**.

<b>TABLE 1.2</b>			
<b>CANADIAN GDP FORECAST COMPARISON</b>			
<b>(Real GDP Percentage Change )</b>			
<b>Organization</b>	<b>Forecast Date</b>	<b>2005</b>	<b>2006</b>
<b>Informetrica</b>	<b>November 2004</b>	<b>3.2</b>	<b>3.2</b>
<b>Conference Board of Canada</b>	<b>June 2005</b>	<b>2.5</b>	<b>2.9</b>
<b>Global Insight</b>	<b>2<sup>nd</sup> Quarter 2005</b>	<b>2.6</b>	<b>2.8</b>
<b>Bank of Canada</b>	<b>July 2005</b>	<b>2.7</b>	<b>3.3</b>
<b>Canadian Bank of Commerce</b>	<b>August 2005</b>	<b>2.8</b>	<b>2.8</b>
<b>Royal Bank of Canada</b>	<b>July 2005</b>	<b>2.7</b>	<b>3.2</b>
<b>Toronto-Dominion Bank</b>	<b>June 2005</b>	<b>2.8</b>	<b>2.9</b>
<b>Consensus Economics</b>	<b>July 2005</b>	<b>2.8</b>	<b>2.9</b>

The medium-term average growth of the Canadian GDP is forecast to be 2.4 percent a year (2009-2014). Over the longer term (2014-2019), the Canadian GDP is forecast to average 2.2 percent a year. The major assumptions underlying this slowing growth in the medium and long term are the slowing in the increase of the labour force due a lowering in the rate of population growth and an aging of the population. Countering the lower growth in the workforce is increasing labour productivity resulting from capital investment.

For the entire period 2004 to 2019 the average growth of the Canadian GDP is expected to be 2.5 percent a year. Medium and long-term forecasts of Canadian GDP are presented in **Table 1.3**.

<b>TABLE 1.3</b>				
<b>MEDIUM-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – GROSS DOMESTIC PRODUCT</b>				
(Percentage Change)				
	<b>2004-2009</b>	<b>2009-2014</b>	<b>2014-2019</b>	<b>2004-2019</b>
<b>Real GDP</b>	<b>2.9</b>	<b>2.4</b>	<b>2.2</b>	<b>2.5</b>

Source: Private Sector Forecasts and Transport Canada

### **Provincial Forecast**

In the short and medium term all provinces will have good economic growth although **Ontario** and **Alberta** will be the only provinces with average real GDP growth rates of at least 3 percent for the period 2004-2009. **Newfoundland and Labrador** is expected to do well in the next few years due to oil and mining activity but have weak growth in longer term due to population loss. **Prince Edward Island** is expecting low growth in the short term as agricultural output will be low, but in the longer term the province will benefit from positive net migration. The outlook for the Nova Scotia economy is weak due to an expected reduction in mineral fuel production and oil exploration activity. Population expected to remain stable. In **New Brunswick** construction activity will provide strength to the economy in the medium term but again weak demographics will have an effect in the longer term. Both **Quebec** and **Ontario** are expected to benefit from strong exports as manufacturers complete their adjustment to the high dollar, which is expected to stabilize. In **Manitoba** diversified manufacturing will be the main source of growth for the forecast period although the agriculture outlook is healthy. **Saskatchewan** continues to benefit from high commodity prices for uranium and potash. In **Alberta** the energy sector will continue to be the main driver: massive investment in tar sands extraction are expected to total \$53 billion from 2005 to 2015. The outlook for **British Columbia's** export sector is bright and preparations for the 2010 Winter Olympics will increase construction activity. However uncertainty about the softwood lumber dispute puts a dark cloud over the forestry industry. **Table 1.4** gives a summary of provincial GDP growth over the medium to long-term.

**TABLE 1.4**  
**MEDIUM-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC**  
**VARIABLES – PROVINCIAL REAL GROSS DOMESTIC PRODUCT GROWTH**

	(Percentage Change)									
<b>Period</b>	<b>NFLD</b>	<b>PEI</b>	<b>NS</b>	<b>NB</b>	<b>QC</b>	<b>ONT</b>	<b>MAN</b>	<b>SAS</b>	<b>ALTA</b>	<b>BC</b>
<b>2004-2009</b>	<b>1.5</b>	<b>2.2</b>	<b>2.0</b>	<b>2.2</b>	<b>2.6</b>	<b>3.0</b>	<b>2.6</b>	<b>2.4</b>	<b>3.4</b>	<b>2.9</b>
<b>2009-2014</b>	<b>0.9</b>	<b>1.7</b>	<b>1.6</b>	<b>1.7</b>	<b>2.1</b>	<b>2.8</b>	<b>1.9</b>	<b>1.6</b>	<b>2.5</b>	<b>2.2</b>
<b>2014-2019</b>	<b>0.9</b>	<b>1.6</b>	<b>1.3</b>	<b>1.5</b>	<b>1.9</b>	<b>2.5</b>	<b>1.7</b>	<b>1.4</b>	<b>2.3</b>	<b>2.0</b>

Source: Private Sector Forecasts, Transport Canada

### **Impact of GDP Variable on Demand**

The GDP forecast presented above is similar (for the period 2004 to 2019) to the forecast developed a year ago. As a result there should be no substantial change from this indicator on the upcoming (short-term) passenger demand update, assuming no changes in all the other variables affecting the demand.

## 2. Personal Disposable Income

Real disposable income per capita increased by 1.1 percent during 2004 in line with the strong performance of the Canadian economy. With good economic performance expected in the economy this year and next real personal disposable income per capita is expected to increase by 0.7 percent in 2005 and by 1.9 percent in 2006.

**Between 2004 and 2009, real personal disposable income per capita is expected to expand at an average annual rate of 1.6 percent. It is assumed for this forecast that taxes will remain generally at the same level, inflation will stay around two percent and that productivity gains will continue to increase income.**

### Historical

In recent years real personal disposable income per capita (RPDI/cap) growth in Canada has slowed from the strong increases of the late 1990s. During the years 1997-2000 it averaged 2.2 percent, peaking at 3.4 percent in 2000, as the economy expanded at an average annual rate of 4.5 percent. These growth rates are in sharp contrast to generally negative growth rates from 1990 to 1996 when RPDI/cap declined an average of 0.8 percent a year. Since the slowdown in 2001 real per capita disposable income growth has been weak: 0.7 percent in 2001, 0.4 percent in 2002 and negative 0.7 percent in 2003 when the CPI rose 2.8 percent. In 2004 RPDI/cap increased 1.1 percent as employment grew and the high Canadian dollar kept inflation down.

### Forecast

In spite of rising government surpluses there are no tax cuts expected. The surpluses will be needed to pay for both growing health costs of an aging population and debt pay down. Inflation is expected to remain constant at around two percent, while productivity is expected to increase. Combined, these will result in rising incomes. However, as the population ages and its growth rate slows the growth of the labour force will fall reducing the growth of RPDI/cap. These assumptions are what lie behind the RPDI/cap forecast.

With only modest employment and wage growth expected, real personal disposable income per capita is expected to increase by only 0.7 percent in 2005. In 2006 RPDI/cap is forecast to increase by 1.9 percent as the economy picks up. Employment is expected to grow by 1.5 percent in 2005 and 1.8 percent in 2006 resulting in increased income. Employment growth then begins to slow and by 2009 the growth is expected to be 1.2 percent. Over the period 2004-2009 RPDI/Cap is expected to increase by 1.6 percent a year on average. This is presented in **Table 2.1**.

<b>TABLE 2.1</b>							
<b>SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – PERSONAL REAL DISPOSABLE INCOME</b>							
<b>(Percentage Change)</b>							
	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>'04-'09</b>
<b>PRDI/Cap</b>	<b>1.1</b>	<b>0.7</b>	<b>1.9</b>	<b>1.8</b>	<b>1.8</b>	<b>1.6</b>	<b>1.6</b>

Source: Private Sector Forecasts and Transport Canada

One of the major risks to the forecast of PRDI/Cap in the short-to-medium term is the possibility of an economic downturn, which is always a possibility but difficult to predict. Personal tax changes, which affect disposable income, will depend on whether or not the government surpluses are adequate to pay for large programs such as health care.

PRDI/cap is forecast to grow by 1.5 percent a year on average from 2009 to 2014 and by 1.3 percent a year from 2014 to 2019. The slowing in the growth rate reflects the slowing in the growth of the labour force and employment. Labour force growth averages only 0.8 percent from 2009 to 2014 and 0.6 percent from 2014 to 2019. Real personal disposable income growth for 2004 to 2019 is presented in **Table 2.2**.

<b>TABLE 2.2</b>				
<b>SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – PERSONAL REAL DISPOSABLE INCOME</b>				
<b>(Percentage Change)</b>				
	<b>2004-2009</b>	<b>2009-2014</b>	<b>2014-2019</b>	<b>2004-2019</b>
<b>PRDI/Cap</b>	<b>1.6</b>	<b>1.5</b>	<b>1.3</b>	<b>1.4</b>

Source: Private Sector Forecasts and Transport Canada

The higher rates of growth of per capita real personal disposable income in the Atlantic provinces compared to the Western provinces reflect expected population reduction which would leave a tighter labour market and increase wages for those remaining. As well, lower inflation increases in the Atlantic Provinces compared to the West means higher RPDI/cap.

<b>TABLE 2.3</b>										
<b>MEDIUM-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – REAL PERSONAL DISPOSABLE INCOME PER CAPITA GROWTH</b>										
<b>(Percentage Change)</b>										
<b>Period</b>	<b>NFLD</b>	<b>PEI</b>	<b>NS</b>	<b>NB</b>	<b>QC</b>	<b>ONT</b>	<b>MAN</b>	<b>SAS</b>	<b>ALTA</b>	<b>BC</b>
<b>2004-2009</b>	<b>1.8</b>	<b>1.6</b>	<b>1.9</b>	<b>1.9</b>	<b>1.9</b>	<b>1.4</b>	<b>1.2</b>	<b>1.1</b>	<b>1.8</b>	<b>1.7</b>
<b>2009-2014</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>1.5</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>1.1</b>	<b>1.5</b>
<b>2014-2019</b>	<b>1.5</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.3</b>	<b>1.1</b>	<b>1.2</b>	<b>1.2</b>	<b>1.3</b>	<b>1.3</b>

Source: Private Sector Forecasts, Transport Canada

**Impact of RDPI/Cap Variable on Demand**

The RDPI/Cap forecast presented above is slightly less optimistic, (about –0.1% per annum for the period 2004 to 2019) than the forecast developed a year ago. As a result, the impact of the change of this indicator on the upcoming (short-term) passenger demand update, assuming no changes in all the other variables affecting the demand, is expected to be marginal (less than 1 percent per annum).

### 3. Adult Population

Population growth is at the very root of economic growth and an important determinant of almost all components of domestic demand for private and public goods and services. However it is adult population (persons aged 20+) more than total population that helps better explain the decisions related to air travel. An increase in that segment of the population translates into an increase in the labour force and eventually in employment and in income.

**Between 2004 and 2009, the forecast assumes that total population will grow at about 0.8 percent a year and the relative importance of adults is to rise to about 77.0 percent of total population, for an average annual rate increase of 1.3 percent.**

#### Historical

Canada's overall population is aging as the adult population (20 years and over) has been growing faster than the total population. Total population averaged 1.1 percent a year growth from 1989 to 2004 while adult population grew at 1.4 percent a year. This followed the rapid increase in adult population of 2.1 percent a year during the previous fifteen years when total population grew 1.2 percent a year. The average age of the population has risen from 34.9 years in 1989 to 38.3 years in 2004. In 2004 the adult population made up 75.4 percent of the total population compared to 72.2 percent in 1989 and 62.9 percent in 1974.

#### Forecast

There are two key assumptions governing the adult population forecasts. The first is that fertility rates in Canada will continue to be below the replacement level of 2.1, as they have been for a number of years. The second is that international immigration will be about 225,000 persons every year.

Over the period 2004 to 2009, total population is expected to grow at about 0.8 percent a year while adult population is forecast to increase at an average rate of 1.3 per cent. This is presented in **Table 3.1**. The percent of adults is expected to rise to 77.0 percent of total population in 2009.

**TABLE 3.0**  
**MEDIUM-TERM FORECASTS OF THE NUMBER OF CANADIANS BORN OUTSIDE**  
**CANADA INCLUDING NEW IMMIGRANTS BY PROVINCE**  
**(THOUSANDS)**

Year	ATL	QC	ONT	MAN	SAS	ALTA	BC	YT	NWT	TOTAL
2004	64.1	768.0	3,270.6	135.0	46.3	448.1	1,040.3	2.5	2.6	5,777.5
2009	77.1	935.8	3,770.1	154.9	53.6	508.1	1,181.4	2.7	2.8	6,686.5
2014	89.8	1,097.7	4,252.3	174.3	60.6	566.0	1,317.6	2.8	2.9	7,564.1
2019	101.9	1,254.1	4,717.9	192.9	67.4	621.9	1,449.1	3.0	3.1	8,411.4
<b>Average Annual Growth Rates</b>										
2004-09	3.8	4.0	2.9	2.8	3.0	2.5	2.6	1.2	1.2	3.0
2004-14	3.4	3.6	2.7	2.6	2.7	2.4	2.4	1.2	1.1	2.7
2004-19	3.1	3.3	2.5	2.4	2.5	2.2	2.2	1.1	1.1	2.5

Source: Informetrica, Transport Canada

**TABLE 3.1**  
**SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC**  
**VARIABLES – POPULATION**  
**(Percentage Change )**

	2004	2005	2006	2007	2008	2009	'04-'09
<b>Total Population</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>
<b>Adult Population</b>	<b>1.4</b>	<b>1.4</b>	<b>1.3</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.3</b>

Source: Private Sector Forecasts and Transport Canada

Population and growth will slow in the medium and long-term and the population will become older. Over the entire forecast period 2004 to 2019 the forecast of total population is expected to grow at about 0.8 percent a year and the adult population is expected to grow at 1.1 per cent a year. This is presented in **Table 3.2**. The percent of adults is expected to rise to 78.5 percent of total population in 2014 and 79.2 per cent in 2018.

**TABLE 3.2**  
**SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC**  
**VARIABLES – POPULATION**  
**(PERCENTAGE CHANGE )**

	2004-2009	2009-2014	2014-2019	2004-2019
<b>Total Population</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.8</b>
<b>Adult Population</b>	<b>1.3</b>	<b>1.1</b>	<b>0.9</b>	<b>1.1</b>

Source: Private Sector Forecasts and Transport Canada

**Impact of Adult Population Variable on Demand**

The Adult Population forecast presented above is similar (for the period 2004 to 2019) to the forecast developed a year ago. As a result, the impact of the change of this variable, on the upcoming (short-term) passenger demand update, assuming no changes in all the other variables affecting the demand, is expected to be marginal.

## 4. U.S. Economic Outlook

While the U.S. economy began to slow in 2005 following the stellar performance in 2004, disruptions along the Gulf Coast and rising energy prices further dampened economic growth. U.S. GDP is expected to grow by 3.5 percent in 2005. This expansion is expected to accelerate to 3.8 percent in 2006 as reconstruction along the Gulf Coast following Hurricanes Katrina and Rita gives a further boost to growth. Real disposable income grew at 2.4 percent in 2004 as a result of strong GDP growth. However, as the economy slowed and employment started to fall at the end of 2005 real PDI per capita is expected to decrease to 1.4 percent. As the economy begins to accelerate again and employment grows after the Gulf Coast disruptions PDI per capita growth should increase to 2.6 percent in 2006.

**Between 2004 and 2009, U.S. GDP is expected to expand at an average annual rate of 3.3 percent while personal disposable income per capita is expected to post 2.0 percent average growth while total U.S. adult population is expected to increase at an average annual rate of 1.1 percent during the same period.**

### **Gross Domestic Product**

After expanding at 4.2 percent in 2004 the U.S. economy slowed in 2005 and is expected to grow by only 3.5 percent. While the growth was strong in the first half of 2005, it was expected to slow throughout the year. However, the negative effects of Hurricane Katrina are expected to further reduce third quarter growth by one-half percent and fourth quarter growth by one percent. Disruption of the Gulf Coast economy and increases in energy prices brought about by a shut down in Gulf Coast oil refining are causing the reduction in growth. In 2006, however, the U.S. economy is expected to receive a boost from reconstruction and growth of 3.8 percent is forecast. Notwithstanding the effects of Katrina, the U.S. economy remains strong, with business investment and consumer expenditures underpinning domestic demand while the depreciated value of the U.S. dollar is weakening imports and promoting growth of exports.

The U.S. economy is expected to perform at respectable rates in the medium term and GDP growth is expected to average 3.3 percent a year from 2004 to 2009. The effects of Hurricane Katrina are not expected extend past 2006. Major risks to the forecast include the possibility of sustained high oil prices as well as the large trade deficit and the high level of consumer indebtedness.

In the long-term real growth rates are expected to decline, averaging 2.7 percent a year from 2009 to 2014 and 2.3 percent from 2014 to 2019. The slowing in the growth of the labour force, reflecting the aging of the population and slower population growth, is the main factor behind the gradual reduction in the economic growth rate.

**Personal Disposable Income**

With strong economic growth and employment forecast for the near term, RPDI/cap is expected to grow at an average of 2.0 percent for the years 2004-2009. There is some concern, however, that the tax rates may be raised to deal with the growing federal deficit. As the pace of economic growth slows in the medium and long-term growth in RPDI/cap will fall. For the years 2009-2014 RPDI/cap is forecast to grow at an average rate of 1.8 percent a year and at a rate of 1.4 percent a year for the years 2014-2019.

<b>TABLE 4.1</b>							
<b>SHORT-TERM FORECASTS OF SELECTED U.S. MACROECONOMIC VARIABLES</b>							
<b>(percentage change except as noted)</b>							
	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>'04-'09<sup>(4)</sup></b>
<b>Real GDP <sup>(1)</sup></b>	<b>4.2</b>	<b>3.5</b>	<b>3.8</b>	<b>2.8</b>	<b>3.2</b>	<b>3.3</b>	<b>3.3</b>
<b>PRDI/Cap <sup>(2)</sup></b>	<b>2.4</b>	<b>1.4</b>	<b>2.6</b>	<b>1.8</b>	<b>1.9</b>	<b>2.2</b>	<b>2.0</b>
<b>Total Population</b>	<b>1.0</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>
<b>Adult Population <sup>(3)</sup></b>	<b>1.2</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>
<b>Consumer Price Index</b>	<b>2.7</b>	<b>3.2</b>	<b>2.8</b>	<b>2.4</b>	<b>2.4</b>	<b>2.5</b>	<b>2.6</b>

1. Real gross domestic product at basic prices.  
 2. Personal real disposable income per capita.  
 3. 20 years of age and over.  
 4. Average annual growth rate, %.

Source: Conference Board; Economy.com

<b>TABLE 4.2</b>				
<b>SHORT-TERM FORECASTS OF SELECTED U.S. MACROECONOMIC VARIABLES</b>				
<b>(AVERAGE ANNUAL GROWTH RATE, % )</b>				
	<b>2004-2009</b>	<b>2009-2014</b>	<b>2014-2019</b>	<b>2004-2019</b>
<b>Real GDP</b>	<b>3.3</b>	<b>2.7</b>	<b>2.3</b>	<b>2.8</b>
<b>PRDI/Cap</b>	<b>2.0</b>	<b>1.8</b>	<b>1.4</b>	<b>1.7</b>
<b>Total Population</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>0.9</b>
<b>Adult Population</b>	<b>1.1</b>	<b>1.0</b>	<b>0.8</b>	<b>1.0</b>

Source: Conference Board; Economy.com

**Impact of U.S. GDP Variable on Demand**

The U.S. GDP forecast presented above is slightly less optimistic (about -0.3% per annum for the period 2004 to 2009) than the forecast developed a year ago. As a result, the impact of the change proposed for this indicator on the upcoming (short-term) passenger demand update, assuming no changes in all the other variables affecting the demand, is expected to be marginal (less than 1 percent per annum).

## 5. Airline Yields

Yield defined, as the ratio of passenger revenue to revenue-passenger kilometres, is a key performance indicator measure. In the recent past, yield (measured in constant dollars) has declined steadily as a result of competition in the industry and increasing proportion of traffic carried out on discount fares, especially in the 1990s. Factors that influence future yield are:

- (1) The competition in the industry
- (2) The growing presence of low cost carriers in the domestic as well as the international markets; and
- (3) Labor productivity increase after the restructuring of many North American carriers.

**The forecast assumes that real system (all sectors) yields will remain flat and experience no significant growth between 2004-2014 and generally follow the pattern presented in Table 5-1.**

### Historical

From 1988 to 1995, Level I Canadian carriers' yield (revenue per passenger-kilometres), measured in constant dollar, declined steadily in the other international sector but remained relatively unchanged in the domestic and transborder sectors.

Since 1995, however, yields in the domestic sector have declined steadily as a result of increasingly strong competition from the low-cost and "charter" air carriers. In the transborder sector, the impact of the Open-sky agreement between Canada and the United States, implemented during 1994/95 resulted in higher yields as a result of the addition of many short-haul routes operated by regional air carriers with smaller equipment after 1995.

More recently between 2000 and 2004, yields dropped by 29.8 percent in the domestic sector and by 21.2 percent in the transborder sector and remained fairly stable in the other international sector. This severe downturn has been the result of a number of negative events that have impacted the industry one after the other: i) 2000 - The economic slowdown following the meltdown in the Hi-Tech sector; ii) 2001 - 9/11 terrorist attacks; iii) 2003 – the SARS epidemic and the war in Iraq. In addition to the aforementioned, the significant drop in the domestic sector yields has also been affected by the "cut-throat" competition between Air Canada and WestJet.

**Forecast**

Future trends in airline yields are subject to two conflicting forces. The first is the desire by the airlines to raise yields to restore profitability and then hopefully recover their recent losses. The other is the need to keep fares competitive with other airlines. While passenger traffic continues to grow, apparently unabated by the recent increases in jet fuel prices, at an average rate of about 7 percent for the period Jan-July 2005, it appears very likely that the air carriers, who have absorbed the full brunt of the recent price increases in jet fuel thus far, will sooner or later have to pass on to the consumers through higher air fares or fuel surcharges.

In the domestic sector, strong travel demand, fare increases and fuel surcharges have enabled Air Canada to withstand the instability of rising cost of jet fuel, however, they continue to face the challenges of fierce competition from WestJet Airlines and sky-high jet fuel prices in an era of record high crude oil prices. It is expected that the average yield in the domestic market will experience marginal increases.

In the transborder sector, ACE Aviation already faces new competition from WestJet Airlines, which is extending its aggressive foray into the United States. While it will take many years before the low-cost air carriers can threaten ACE's domination of that market, yields are expected to continue to decrease slightly in the transborder sector.

Finally yields in the other international sector are also anticipated to slip modestly as a result of continuing competition on the North Atlantic and Pacific routes and a general increase in labour productivity following the restructuring of many legacy carriers and their new tendency to use facets of low-cost carrier in their business models.

It is estimated that real system yields (all sectors) will remain flat and experience no significant growth between 2004 and 2014. This is presented in **Table 5.1**.

**TABLE 5.1**  
**CANADIAN LEVEL I AIRLINE YIELD**  
**(1996 CENTS PER RPK)**

<b>Year</b>	<b>Domestic</b>	<b>Transborder</b>	<b>Other Int'l</b>	<b>System</b>
1988	15.1	9.9	8.5	11.5
1989	15.5	10.3	8.1	11.4
1990	16.4	10.1	8.3	11.9
1991	16.2	9.8	8.2	11.7
1992	15.1	8.9	7.7	10.7
1993	15.1	8.3	6.9	10.0
1994	15.6	9.3	7.2	10.5
1995	15.2	9.8	7.0	10.2
1996	14.1	10.6	6.4	9.6
1997	13.7	11.5	6.1	9.4
1998	13.8	12.1	6.0	9.5
1999	14.4	13.0	6.2	10.0
2000	14.5	13.0	6.5	10.2
2001	13.0	12.2	6.1	9.3
2002	13.4	12.8	6.3	9.5
2003	11.3	11.0	6.7	9.0
2004	10.2	10.2	6.5	8.2
2005	10.7	10.3	6.4	8.3
2006	11.1	10.4	6.5	8.5
2007	10.9	10.3	6.4	8.3
2008	10.8	10.2	6.3	8.2
2009	10.7	10.1	6.3	8.2
2014	10.7	10.1	6.3	8.2
2019	10.7	10.1	6.3	8.2
<b>Average Annual Percentage Change (%)</b>				
<b>2004-2014</b>	<b>0.4%</b>	<b>-0.1%</b>	<b>-0.3%</b>	<b>0.0%</b>
<b>2014-2019</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>

Source: Statistics Canada and Transport Canada

## 6. Fleet/Average Aircraft Size

Five major factors are expected to impact the average aircraft size during the next few years namely:

1. The introduction of smaller aircraft by Air Canada namely the 70-seat CRJ-700, the 73-seat EMB-175 and the 93-seat EMB-190
2. The introduction by Air Canada of the wide-body Boeing 777 and the new Boeing 787 Dreamliners to modernize its existing fleet and improve operating efficiencies
3. The replacement by Air Canada of some of the Regional Jet (RJ) by larger jet aircraft in the transborder sector
4. WestJet's continuing expansion with their new 136-seat B737-700, some B737-600 and B737-800.
5. An increasing effort by airlines to match the aircraft size with the demand on any market with the transfer of non-profitable routes to small independent operators operating smaller aircraft.

**The forecast assumes that the historical trend on higher density markets towards the use of larger aircraft with larger seating capacity will continue; the matching of aircraft size to demand levels will prevail and that the average seating capacity is expected to change as indicated in Table 6.3.**

### Historical

The average aircraft size is defined as the ratio of the number of arriving and departing seats at Canadian airports to the number of arriving and departing aircraft. The national forecast is based on the replacement schedule of the current aircraft fleet as shown in Table 6-1 and the number of passengers projected for the major Canadian markets during the most recent General Forecast Update (GFU 2004/05). This is presented in **Table 6.1**

Airliner	Seating Capacity	2005	2006	2007	2008	2009	2010	2011	2012
CRJ-200	50	11	13	12	12	12			
CRJ-705	75	6							
EMB-175	73	12		10	5				
EMB-190	93	4	16	16	17	17	16	4	
A340-500	267		3	1					
A340-600	380							4	2
B737-600	119	2	8	2					
B737-700	136	2	6	7	12	10			

Source: Fleet PC ( BACK) and Web Site

In September 2004, Air Canada decided to make greater use of smaller aircraft and ordered Bombardier and Embraer aircraft as part of its North American fleet strategy. The Bombardier order consisted of 50-seat CRJ-200 and 74-seat CRJ-705 aircraft. Air Canada new fleet strategy, with a larger number of 90 to 100-seat regional jets, is directed mainly to serve the North American market. These jets are cheaper to operate than larger aircraft, and can pull in profits in small markets that cannot fill large planes.

WestJet Airlines fleet strategy is expected to be the continuing replacement of older B-737 aircraft by the B737-600-700-800 aircraft. **Table 6.2A** presents the fleet forecasts for the major carriers in Canada namely Air Canada, WestJet, Canjet, Skyservice, First Air and Air Transat. **Table 6.2B** presents the aircraft forecasts for the regional/local air carriers in Canada.

TABLE 6.2A MAJOR CANADIAN AIR CARRIERS - AIRCRAFT FLEET FORECASTS												
Aircraft	Seat	1998	1999	2000	2001	2002	2003	2004	2005	2009	2014	2019
CRJ-200	50	26	24	25	25	25	25	25	25	25	25	25
EMB-175	73								3	15	27	27
EMB-190	93									30	40	45
A319-100	120	16	35	35	35	44	48	51	51	50	59	61
A320-211	148	52	53	54	54	48	52	57	51	50	49	44
A321-100	166					17	14	13	10	12	15	20
A310	259			4	4	5	5	9	10	10	10	10
A330-300	272	5	5	6	14	12	12	12	11	12	12	12
A340-313	284	8	10	10	9	9	9	9	10	14	10	8
A340-500	267							2	2	4	6	6
A340-600	380										6	6
B727-200	72	6	6	6	6	6	6	6	6	3		
B737-200	110	40	40	37	48	24	11	6				
B737-240	120	29	30	37	35	26	24	24	22	20	15	10
B737-600	119									10	12	14
B737-700	136				3	18	24	32	40	48	55	70
B737-800	166								5	11	16	22
B767-200	194	23	23	21	21	19	14	11	13			
B767-300	208	17	18	20	30	34	33	29	35	32	18	8
B757-200	228	8	9	10	11	2	1	2	3	3	4	5
B777-200	290										5	15
B777-300	365										5	15
B787	235										16	42
B747-200	426	10	4	4	4	4	2					
B747-400	296	3	3	3	3	3	3	3				
F-100								10	5			
CD9	91	35	28	21	16	4						
MD80	160	0	0	0	4	6	10	14	5			
L1011/15	332	24	24	24	14	8	9	1				
<b>Total</b>		<b>302</b>	<b>312</b>	<b>317</b>	<b>336</b>	<b>314</b>	<b>302</b>	<b>316</b>	<b>307</b>	<b>349</b>	<b>405</b>	<b>465</b>
Source: Fleet PC (BACK)												

**TABLE 6-2B  
CANADIAN REGIONAL & LOCAL AIR CARRIERS - AIRCRAFT FLEET FORECASTS**

Aircraft	Seat	2001	2002	2003	2004	2005	2009	2014	2019
Beech	19	11	13	16	7	5	10	20	22
EMB-110P1	19	0	2	2	2	3	0	0	0
SD3-60-300	36	0	8	6	6	6	3	0	0
Dash 8--100	37	63	56	54	45	43	41	40	35
Dash 8-300	50	26	26	26	26	26	26	25	20
BAe 146-200A	77	10	10	10	10	6	6	6	4
Fokker F28	65	28	10	0	0	0	0	0	0
DH6	17	8	8	5	1	1	0	0	0
ATR42	42	0	0	4	5	6	4	2	0
HS7	41	8	8	8	5	3	2	0	0
CRJ-200	50	0	5	10	10	25	40	50	72
CRJ-705	70	0	0	0	0	9	17	25	35
<b>Total</b>		<b>154</b>	<b>146</b>	<b>141</b>	<b>117</b>	<b>133</b>	<b>149</b>	<b>168</b>	<b>188</b>

Source: Fleet PC (BACK)

### **Forecast**

The forecast assumes that Air Canada (ACE Aviation) will continue its strategy to (a) make greater use of smaller aircraft in the North American market (b) to renew its wide-body fleet by introducing the Boeing 777 and the new Boeing 787 Dreamliners to modernize its existing fleet and improve operating efficiencies. The Boeing 777 is expected to serve mainly other international markets.

The forecast assumes that WestJet Airlines will be the second dominant Canadian air carrier in the domestic and transborder sectors with a fleet of 80 aircraft by 2014. While most of these aircraft are expected to be 136-seat B737-700 airliner, the air carrier is also buying smaller aircraft such as B737-600 airliner with 118 seats to their fleet to serve smaller markets and bigger aircraft such as B737-800 (166 seats) to serve the bigger markets.

### **Major Domestic Carriers**

At the end of 2002, the average aircraft size in the domestic sector had increased significantly from 131 seats per aircraft in 2000 to 148 seat per aircraft in 2002. This significant increase in aircraft size was the result of two independent factors namely, the merger of Air Canada and CAIL (2000) and the rapid expansion of the low-cost air carriers. However by 2005, increased competition and the use of smaller aircraft on smaller routes, in order to match the demand, had resulted in a substantial drop of the average aircraft size in the domestic sector to the pre-merger level of 2000.

Critical issues in the short-term outlook will be the ability of the New Air Canada to compete and adapt to a new environment characterized by (a) strong competition from low-cost air carriers on all high-density markets; (b) point-to-point air service between many most medium-to-high density markets and (c) severe constraints in the ability of the air carriers to increase air fares significantly.

A drop in the average seating capacity is expected in the domestic sector in the short-term (2006-2009) as Air Canada continues to acquire smaller aircraft in this sector to offer more direct non-stop air service. A modest increase in average seating capacity is expected in the medium term beyond 2009 as WestJet Airlines continues to expand its capacity mostly with 136-seat aircraft and Air Canada introduces the new Boeing 787 on fast growing markets.

### **Major Transborder Carriers**

In the transborder sector, the major forecast assumption is the replacement of 50-seat CRJ-200 by 74-seat CRJ-705 on many “more mature” fast growing markets. It is expected that by 2014 ACE Aviation will have replaced all its 50-seat aircraft by larger jet aircraft in this sector. The forecast also assumes that WestJet Airlines will expand its operation in the transborder sector using B737-700 airliners in the near term and thus contribute to the increase the average aircraft size from 99 in 2003 to 109 at the end of the forecast horizon (2019).

### **Major Other International Carriers**

The decline of the average aircraft size in the other international sector in 2004 (from 267 in 2002 to 243) is due mainly to the replacement of the B747 by smaller aircraft such as the A340 and B777 airliners. In the short term, it is expected that the carriers will continue to add new point-to-point air service on the north Atlantic and Pacific routes. However, the average aircraft size is expected to increase slightly in the short-term horizon because of the continued use of older wide-body aircraft. In the Mid-to-long term, with continuing strong passenger growth in this sector and the addition to the carriers’ fleet of new generation large airliners such the A380, A340-600 and B777 the average aircraft size should increase from 243 seats in 2004 to 262 in 2019

### **Regional/Local Carriers**

**Domestic:** Since the merger of Canadian Airlines and AC, Air Canada’s Jazz has been the only major national regional-local air carrier serving many short-haul markets previously served by two regional feeders (e.g. Time Air and Air BC in the Pacific Region). The forecast assumes that there will be new competition to Air Canada’s Jazz in this air travel segment from one or more regional air carriers particularly in Ontario and Western Canada. More competition in this sector is expected to result in increasing effort by Jazz and the new regional air carriers to better match the aircraft size with the market size and to the transfer of non-profitable routes to small independents charter operators operating smaller aircraft. Based on fleet orders, average aircraft size in the regional/local category is expected to increase from 29 in 2004 to 36 in 2019. The increase is explained in part by Jazz’s replacement of some DH8 (37 seats) with the 50-seat CRJ-200.

**Transborder:** During the recent drop in air travel in the transborder sector, there was a significant transfer of passengers from the major U.S carriers to their regional feeders to maintain frequencies on a number of transborder short-haul city-pair markets. With returning activity in this sector, it is anticipated that there will be a gradual return of the larger air carriers on many aircraft downsized markets.

A summary of the forecast for each sector and category discussed above is presented in **Table 6.3**.

Year	MAJOR AIR CARRIERS			REGIONAL /LOCAL		CHARTER	ALL AIR CARRIERS
	Domestic (1)	Transb. (2)	Other Int. (3)	Domestic (4)	Transb. (5)	Total (6)	Total (7)
1990	125	145	260				
1991	123	145	265				
1992	122	145	272				
1993	122	145	273				
1994	122	138	277				
1995	123	126	276				
1996	119	119	278				
1997	116	120	278				
1998	119	117	275				
1999	123	110	263				
2000	131	108	264	33	40	236	113
2001	142	106	269	32	38	245	117
2002	148	105	267	31	39	217	117
2003	135	100	250	29	40	194	108
2004	132	98	243	29	44	181	107
2005	130	97	242	31	45	180	107
2006	128	98	242	32	45	181	106
2007	126	99	243	32	46	182	106
2008	126	100	244	33	46	183	107
2009	126	101	245	33	46	183	108
2014	130	105	258	35	47	185	113
2019	133	107	262	36	47	186	115

Sources: The historical data in columns (1), (2) and (3) are from Statement 6; those in column (4) and (5) are from Statement 4, those in column (6) are from Statement 2, and (7) are weighted averages.  
Source: Statistics Canada and Transport Canada

## 7. Passenger Load Factors

Achievement of high load factors, along with high productivity and low unit costs, are essential for airlines' profitability.

Three major factors are expected to affect load factors during the next few years, namely:

1. Continuing passenger traffic demand;
2. The effort by the airline to match the aircraft size with the size of the market
3. The competition between the carriers to maintain their market share on some key domestic routes.

**The forecast assumes relatively stable load factors as indicated in Table 7-1.**

### **Historical**

The passenger load factor is defined as the ratio of the number of arriving-and-departing passengers to the number of arriving-and-departing seats at Canadian airports. Throughout the 1990s, load factors have been increasing steadily across all traffic sectors, reflecting the impact of airline deregulation; airline restructuring and the extensive use of yield management systems. For similar reasons, load factors for the regional/local carriers have also been increasing steadily.

As traffic rebounded in 2004, major air carriers' experienced higher load factors in all sectors with substantial increases in the domestic and transborder markets and to a lesser degree in the other international market. Regional/local air carriers' also saw an overall rise in load factors with moderate increases in the domestic sector. The restructuring of Air Canada and the increasing importance of low-cost and charter air carriers in the domestic sector have contributed to the higher load factors in this sector.

### **Forecast**

The load factor assumptions are closely coupled with the average aircraft assumptions discussed in the previous section, since any changes in average aircraft size will in turn affect average load factors at any given traffic level.

### **Major Domestic Carriers**

Load factors are expected to increase in 2005 because of the continued traffic rebound across all sectors and the airlines' effort to match the aircraft size with the size of the market. In the medium term (2006 to 2009), the load factors are expected to remain unchanged because of the increased level of competition between the carriers to maintain

their market share on some key domestic markets. Over the long term, the load factors of the major domestic carriers are expected to reach and hold steady at 68% throughout the forecast horizon.

### **Major Transborder Carriers**

In the transborder sector, load factors are expected to remain steady at 66% over the forecast horizon. However, the transborder load factors are expected to continue to remain slightly lower than load factors in the domestic sector. The major reason for this difference between the domestic and transborder load factors threshold is the significant number of low density transborder markets which are served by both a Canadian and a U.S. air carrier but with insufficient demand to support two airlines.

### **Major Other International Carriers**

Other International load factors are expected to remain at very high levels hovering around 80%, a practical limit for scheduled international operations.

### **Regional/Local Carriers**

As discussed in the previous section, the forecast assumes more competition to Air Canada's Jazz in the domestic air travel R/L segment and increasing effort by Jazz and new regional air carriers to better match the aircraft size with the market size and the transfer of non-profitable routes to small independents operators operating smaller aircraft.

Despite the accrued competition load factors for the regional/local segment and air carriers are expected to reach 69% and 60% respectively for domestic and transborder operations, at the end of the forecast horizon. These represent upper limit thresholds for load factors in the regional/local feeder environment.

A summary of the forecast for each sector and category discussed above is presented in **Table 7.1**.

<b>TABLE 7.1 LOAD FACTORS – ALL CANADIAN AIRPORTS</b>							
	<b>MAJOR AIR CARRIERS</b>			<b>REGIONAL /LOCAL</b>		<b>CHARTER</b>	<b>ALL AIR CARRIERS</b>
<b>Year</b>	<b>Domestic</b>	<b>Transb.</b>	<b>Other Int.</b>	<b>Domestic</b>	<b>Transb.</b>	<b>Total</b>	<b>Total</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
1990	0.57	0.57	0.76	0.58			
1991	0.57	0.53	0.73	0.58			
1992	0.57	0.53	0.74	0.58			
1993	0.58	0.56	0.76	0.60			
1994	0.57	0.57	0.75	0.59	0.45	0.45	0.45
1995	0.57	0.54	0.74	0.58	0.47	0.42	0.47
1996	0.62	0.60	0.74	0.63	0.50	0.57	0.51
1997	0.67	0.61	0.75	0.66	0.59	0.62	0.59
1998	0.68	0.61	0.74	0.66	0.53	0.59	0.53
1999	0.67	0.63	0.76	0.67	0.53	0.63	0.54
2000	0.67	0.63	0.76	0.67	0.55	0.59	0.56
2001	0.63	0.59	0.74	0.64	0.52	0.56	0.52
2002	0.57	0.62	0.79	0.61	0.51	0.56	0.52
2003	0.60	0.60	0.79	0.62	0.60	0.59	0.60
2004	0.65	0.66	0.82	0.67	0.61	0.62	0.61
2005	0.67	0.66	0.82	0.68	0.60	0.61	0.60
2006	0.67	0.66	0.81	0.68	0.60	0.61	0.60
2007	0.67	0.66	0.81	0.68	0.60	0.61	0.60
2008	0.67	0.66	0.80	0.68	0.60	0.61	0.60
2009	0.67	0.66	0.80	0.68	0.60	0.61	0.60
2014	0.68	0.65	0.80	0.68	0.60	0.60	0.60
2019	0.68	0.66	0.80	0.69	0.60	0.60	0.60

Sources: The historical data in columns (1), (2) and (3) are from Statement 6; those in column (4) and (5) are from Statement 4, those in column (6) are from Statement 2, and (7) are weighted averages.  
Source: Statistics Canada and Transport Canada

## 8. Labour Cost/Productivity

Labour constitutes the largest single cost component for Canadian air carriers. The performance of Canadian carriers depends in part on unit cost of labour. Unit cost of labour depends on employee productivity and average wage. To increase performance, airlines improved the average annual productivity of their employees at an annual rate of 3.2% between 1995 and 2004.

**Employee productivity is projected to increase by 1.2 percent per year between 2004 and 2014, a situation, which is expected to come mainly from increased worker motivation and satisfaction and continued investment in new technology. As a result, unit labour cost, on average, will decrease by 0.8 percent per year between 2004 and 2014.**

### Historical

Labour constitutes the largest controllable cost component for Canadian air carriers. In 2004, labour costs of Level 1 and II carriers accounted for 25.1 percent of their operating expenses.

Unit labour cost, as defined in the Cost and Fare Model, is the ratio of average salaries per employee in real terms to labour productivity. From 1995 to 2004, the unit labour cost in the airline industry has decreased by 0.8% per year mostly because of the increase of the labour productivity.

### Forecast

Over the forecasting period, wages are expected to increase at the rate of about 0.5 percent to the end of the forecast horizon. This forecast assumes that there will be pressure from the various unions, in the mid-to-long term, to gain back some of the wage concessions made during the 2003/2004 restructuring. It should be noted that, under this assumption, real wages in 2019 are some 7 percent higher than they were in 2004. Under this scenario, employee productivity is expected to increase by 1.1 percent between 2004 and 2019. As a result, unit labour cost, on average, is expected to decrease by about 0.6 percent on an annual basis during the forecast period.

This is presented in **Tables 8.1 and 8.2.**

There are both upside and downside risks to this forecast. On the negative side, the ability of the major air carriers to manage their costs is a prerequisite to the forecast. On the positive side, the low cost carriers may provide the additional impetus to get the major air carriers to get this done.

<b>TABLE 8.1</b>				
<b>LABOUR UNIT COST AND EMPLOYEE PRODUCTIVITY</b>				
	<b>TOTAL TONNE- KILOMETRES FLOWN (000,000) (A)</b>	<b>NUMBER OF EMPLOYEES (C)</b>	<b>EMPLOYEE PRODUCTIVITY (000,000) (A)/(C)</b>	<b>ANNUAL CHANGE (%)</b>
1988	7,845	48,109	0.163	0.0%
1989	8,142	50,670	0.161	-1.5%
1990	8,588	51,976	0.165	2.8%
1991	7,615	49,737	0.153	-7.3%
1992	7,703	47,329	0.163	6.3%
1993	7,741	43,711	0.177	8.8%
1994	8,354	43,765	0.191	7.8%
1995	9,236	46,303	0.199	4.5%
1996	10,379	47,005	0.221	10.7%
1997	11,545	48,506	0.238	7.8%
1998	11,944	53,023	0.225	-5.4%
1999	12,327	53,864	0.229	1.6%
2000	12,815	59,052	0.217	-5.2%
2001	12,426	57,752	0.215	-0.9%
2002	11,529	45,639	0.253	17.4%
2003	10,605	43,021	0.247	-2.4%
2004	11,599	43,881	0.264	7.2%
2005	12,229	45,081	0.271	10.0%
2006	12,803	46,281	0.277	2.0%
2007	13,266	47,431	0.280	1.1%
2008	13,730	48,581	0.283	1.1%
2009	14,222	49,781	0.286	1.1%
2014	16,684	55,781	0.299	0.9%
2019	19,189	61,781	0.311	0.8%

Source: Statistics Canada and Transport Canada

<b>TABLE 8-2</b>			
<b>UNIT LABOUR COSTS</b>			
<b>(AVERAGE ANNUAL GROWTH RATE, %)</b>			
<b>Period</b>	<b>Wage Rate</b>	<b>Productivity</b>	<b>Unit Cost</b>
1989	0.1%	-1.5%	1.5%
1990	-0.8%	2.8%	-3.7%
1991	-2.1%	-7.3%	5.2%
1992	-3.1%	6.3%	-9.4%
1993	-0.4%	8.8%	-9.2%
1994	0.7%	7.8%	-7.0%
1995	3.9%	4.5%	-0.6%
1996	4.2%	10.7%	-6.5%
1997	-1.1%	7.8%	-8.9%
1998	-0.9%	-5.4%	4.4%
1999	6.3%	1.6%	4.7%
2000	1.8%	-5.2%	7.0%
2001	2.0%	-0.9%	2.9%
2002	9.0%	17.4%	-8.4%
2003	-6.8%	-2.4%	-4.4%
2004	-1.7%	7.2%	-9.0%
2005	0.0%	10.0%	-10.0%
2006	0.5%	2.0%	-1.5%
2007	0.5%	1.1%	-0.6%
2008	0.5%	1.1%	-0.6%
2009	0.5%	1.1%	-0.6%
2014	0.5%	0.9%	-0.4%
2019	0.5%	0.8%	-0.3%

Source: Statistics Canada and Transport Canada

## 9. Fuel Cost/Fuel Efficiency

Fuel cost is another key element in the cost of operating an airline. The average annual real price of turbo-fuel has increased from 1988 to 2004 at an annual rate of 1.4% and fuel efficiency, measured in litres per output (TTK), has improved at an annual rate of 1.8 percent.

**Oil prices are expected to stay relatively high in 2005 and 2006 at around \$60 US a barrel. After 2006 oil prices should drop slightly to reach \$46 US (2004 constant \$) a barrel or \$49 US in current dollars by 2009. In the longer term, the price is expected to increase gradually to \$50 US (2004 constant \$) a barrel or \$70 US in nominal terms in 2019.**

**Fuel efficiency is expected to continue to improve at a rate of 0.8 percent per annum over the forecast horizon as a result of more fuel-efficient aircraft being introduced in the air carriers' fleet. As a result unit fuel cost is expected to decline by about 0.7 percent per year over the forecast period 2004-2019.**

### Historical

Fuel also constitutes a significant cost component for Canadian air carriers. In 2004, Level 1 and II carriers spent 17.7 percent of their operating expenses on fuel.

During the period, 1988 to 2004, unit fuel costs for Canadian air carriers, defined as the ratio of fuel cost to fuel efficiency, has declined on average by 0.4 percent a year, the increasing aircraft fuel efficiency is responsible of this declined. During 2004, we saw a rapid escalation of jet fuel prices and as a result, unit fuel costs are expected to increase by about 14% over 2003. This is presented in **Table 9.1** and **Table 9.2**.

The reference price of crude oil has increased dramatically over the last two years. Averaging \$US 31.53 per barrel in 2003, it climbed to \$US 41.85 in 2004. On August 30, 2005, it was trading at \$US 70.28 on the New York Mercantile Exchange (NYMEX), more than double its 2003 average price.

### **Short-term factors affecting oil prices**

Several short-term factors make investors nervous and have contributed to push crude oil prices above normal levels on mercantile exchanges.

Among those factors is the fact that North Americans are consuming more gasoline than ever. This trend does not show any sign of abating in the near future and this make the markets nervous. With U.S. refineries already operating at 95% capacity, there is a fear that any disruption in production and supply will lead to shortages. This should not,

rationality, affect the price of oil but it does. The price of crude increased significantly in the spring when some refineries had to temporarily shut down.

Hurricanes and other natural disasters have also become a major worry for investors who fear that oil extraction and refinery production in the Gulf of Mexico may be severely disrupted.

There are also concerns about the general availability of crude oil. The world's spare capacity is deemed too small to guarantee sufficient supply in case of major disruptions.

Threats of strikes by Nigerian and Norwegian oil workers have contributed to push oil prices upward this year.

The possibility of terrorist strikes against oil installations and supply lines, both in the Middle East and North America, also makes investors nervous and contribute to the pessimistic outlook on oil prices.

Some of the current nervousness on the markets is likely to diminish over time. Several analysts predict that oil prices will temporarily decrease over the next few years. However, some of these factors are likely to persist for a long time.

In 2005, the average oil price is expected to be at \$58.50 US. In 2006, the oil price should remain close to the 2005 level around \$60 US,

### **Forecast**

Some of the most important issues identified as having the potential to affect the complex behavior of oil prices are (a) the growing demand for oil from emerging markets including the two most populous nations in the world, China and India, and the North-American demand for oil which shows no sign of slowing down; (b) the fear of terrorism, which is not going to go away anytime soon and which will continue to put upward pressures on oil prices; and (c) the supply from conventional oil fields.

Growing demand - China and India are experiencing exceptional economic growth rates and are expected to continue to do so over the forecast period. Economic growth implies increasing demand for energy and the Chinese and Indian government have shown their concern over future supply by trying to buy foreign oil companies in order to introduce a certain level of certainty in their future access to crude oil.

Fear of terrorism – The uncertainty associated with fuel price forecast, in regard to the situation in the Middle East, is expected to continue to put upward pressure on oil price for many years to come. In the case of Iraq, it is not so much the fear that the Americans will stay over for the next 10 years that keep oil prices up but rather the fear of what will happen after they leave. The prospect of a Civil war between Sunnis, Shias and Kurds remain a possibility and there is also a fear that Iran could intervene in such a conflict, destabilizing the entire Middle-East.

Saudi Arabia is also a political concern. Since 1953, the sons of the founder of the country have succeeded each other on the throne and in most of the important political positions. But the number of surviving brothers is rapidly declining and the next generation of Saudi princes is largely unknown to the West. Concerns about the succession (conflict between the numerous cousins eligible to the throne, emergence of more radical kings and leaders, etc.) as well as a fear that the regime might fall and be replaced by an Islamic republic will continue to bring pressure on oil prices

Supply from conventional fields – There is a growing concern that conventional oil fields will meet the future demand. Saudi Arabia is already producing at nearly full capacity. This year, it has been unable to increase production significantly enough to keep oil prices down. Besides, there is no new field of light sweet oil. Future increases in production will come from heavy crude oil that is more costly to extract and process.

Additional supply will have to come from costlier sources such as tar sands. But oil companies are wary of investing heavily in costly production process without a significant degree of certainty in high oil prices. It seems that \$20 a barrel (a worst case scenario for the oil industry) is still used as a benchmark to evaluate new projects. And, at that price, many project are rejected as unprofitable.

A survey of price forecast from major organizations is presented below. All price forecasts are in nominal dollars. The conversion of the NRCan numbers was done using U.S. G.D.P. price indices as forecast by the Conference Board.

		Price Forecast: Crude Oil in nominal U.S. \$ per barrel						
		2005	2006	2007	2008	2009	2010	2020
Annual Average (0)		54.5						
Natural Resources Canada (1)	August 2005	61.7	n/a	n/a	54.2	49.7	50.5	61.6
Conference Board of Canada	July 2005	50.2	46.8	44.9	43.1	42.2	n/a	n/a
Global Insight	2nd quarter 2005	51.9	49.8	46.4	n/a	n/a	45.0	n/a
Jeff Rubin, C.I.B.C. (2)	August 2005	n/a	n/a	n/a	n/a	n/a	100.0	n/a
C.E.R.I. (3)	Jun-05	n/a	43.5	n/a	n/a	n/a	n/a	n/a
Alan Greenspan	2-Apr-05	"could reach \$100 per barrel before consumption starts to decrease"						
Martin King, F.E.C.C. (4)	Apr-05	50.0	52.0	54.0	54.5	55.0		
Goldman Sachs	Mar-05	50.0	55.0	"could reach \$105 per barrel before consumption starts to decrease"				
T.C. Economic Analysis	August 2005-Low	58.3	54.4	52.1	50.2	49.0	50.1	74.6
T.C. Economic Analysis	August 2005-High	59.5	74.0	70.4	67.9	66.8	68.3	101.7

(0) Average price for 2005 is based on the period ending on August 25

(1) Converted to nominal U.S. dollars using U.S. G.D.P. deflator as forecast by the Conference Board of Canada

(2) Canadian Imperial Bank of Commerce

(3) Canadian Energy Research Institute

(4) First Energy Capital Corp., Calgary

Transport Canada forecast is for oil prices to stay relatively high in 2005 and 2006 at around \$60 US a barrel. After 2006 oil prices should drop slightly to reach \$46 US (2004 constant \$) a barrel or \$49 US in current dollars by 2009. In the longer term, the price is

expected to increase gradually to \$55 US (2004 constant \$) a barrel or \$70 US in nominal terms in 2019.

Aircraft fuel efficiency is expected to continue to improve at a rate of 0.8 percent per annum as a result of more fuel efficient aircraft used. The net result of these forecasts is that unit fuel cost will increase on average at an annual growth rate of 0.9% above inflation from 2004 to 2019.

**TABLE 9.1  
FUEL CONSUMPTION, FUEL PRICE AND FUEL UNIT COST**

	<b>TOTAL TONNE- KILOMETRES FLOWN (000,000) (A)</b>	<b>TURBO FUEL LITRES (000,000) (B)</b>	<b>COST PER LITRE (CURRENT CENTS)</b>	<b>COST PER LITRE (1996 CENTS)</b>	<b>ANNUAL CHANGE (%)</b>	<b>FUEL EFFICIENCY (A) / (B)</b>	<b>ANNUAL CHANGE (%)</b>
1988	7,845	4,501	24.68	30.81	0.0%	1.74	0.0%
1989	8,142	4,690	25.21	29.97	-2.7%	1.74	-0.4%
1990	8,588	4,605	29.93	33.97	13.3%	1.87	7.4%
1991	7,615	4,065	28.02	30.11	-11.4%	1.87	0.4%
1992	7,703	3,962	26.33	27.88	-7.4%	1.94	3.8%
1993	7,741	3,851	26.31	27.35	-1.9%	2.01	3.4%
1994	8,354	4,209	26.01	26.99	-1.3%	1.98	-1.2%
1995	9,236	4,645	26.48	26.89	-0.4%	1.99	0.2%
1996	10,379	5,012	28.90	28.90	7.5%	2.07	4.2%
1997	11,545	5,243	29.18	28.71	-0.7%	2.20	6.3%
1998	11,944	5,614	24.92	24.28	-15.4%	2.13	-3.4%
1999	12,327	5,669	26.07	24.97	2.9%	2.17	2.2%
2000	12,815	5,806	40.00	37.29	49.3%	2.21	1.5%
2001	12,426	5,621	37.48	34.08	-8.6%	2.21	0.2%
2002	11,529	4,841	33.24	29.56	-13.3%	2.38	7.7%
2003	10,605	4,555	39.21	33.93	14.8%	2.33	-2.3%
2004	11,599	4,982	45.29	38.51	13.5%	2.33	0.0%
2005	12,229		58.36	48.80	26.7%	2.45	5.1%
2006	12,803		58.85	48.57	-0.5%	2.46	0.6%
2007	13,266		53.58	43.73	-10.0%	2.47	0.5%
2008	13,730		52.07	41.89	-4.2%	2.49	0.5%
2009	14,222		51.21	40.58	-3.1%	2.50	0.5%
2014	16,684		58.70	42.65	1.0%	2.55	0.4%
2019	19,189		68.22	45.27	1.2%	2.63	0.7%

Source: Statistics Canada and Transport Canada

<b>TABLE 9.2</b>			
<b>UNIT FUEL COSTS</b>			
<b>(AVERAGE ANNUAL GROWTH RATE, %)</b>			
<b>Period</b>	<b>Fuel Price</b>	<b>Fuel Efficiency</b>	<b>Unit Cost</b>
1989	-2.72	-0.40	-2.32
1990	13.34	7.43	5.91
1991	-11.36	0.44	-11.80
1992	-7.40	3.80	-11.20
1993	-1.89	3.38	-5.27
1994	-1.34	-1.25	-0.09
1995	-0.35	0.16	-0.52
1996	7.47	4.16	3.31
1997	-0.65	6.32	-6.97
1998	-15.44	-3.36	-12.08
1999	2.86	2.20	0.66
2000	49.33	1.51	47.82
2001	-8.60	0.15	-8.76
2002	-13.26	7.74	-21.00
2003	14.76	-2.26	17.01
2004	13.51	0.00	13.51
2005	26.71	5.06	21.65
2006	-0.46	0.57	-1.03
2007	-9.98	0.53	-10.51
2008	-4.21	0.50	-4.71
2009	-3.12	0.47	-3.59
2014	1.68	0.34	1.34
2019	1.29	0.60	0.68

Source: Statistics Canada and Transport Canada

## 10. Airline Costs Other than Fuel and Labour

Next to labour and fuel expenses, capital costs, airport fees, purchase of services and other costs, represent about 57 percent of the airline costs. During the 1990s, three major events have had a substantial impact on the relative importance of individual cost components namely (1) airlines' decision to lease rather than to buy new aircraft, (2) the transfer of airports and air navigation services to private non-profit organizations and more recently (3) increases in insurance coverage and the imposition of new safety and security costs.

**The forecast assumes that airline costs other than fuel and labour will generally follow the pattern presented in Table 10.1.**

Four additional categories are:

- **Airports Fees** includes landing fees and navigation fees,
- **Capital Costs** refer primarily to aircraft location and interest and amortization costs
- **Purchase of Services** include purchased repair services
- **Other Costs** refers to all other expenses such as defined other expenses in the Statement 21.

### **Forecast**

In addition to the four cost categories mentioned above, the Total Weighted Index presented in Table 10.1 includes an item on profit/net earnings (or loss), which is not shown explicitly in the table. The forecast assumes that the industry will generate a 5 % profit (annual average) throughout the forecast horizon starting in 2005 with a 1.5% profit.

The following assumptions have been developed to determine the airline cost indicators, which are presented in **Tables 10.1**.

### **Landing, Air Navigation and Other Fees**

Total costs in this category include air navigation, landing fees, airport improvement fees (AIF) and the Air Travelers Security Charge (ATSC). Please note that the AIF and the ATSC are collected on behalf of the airport authorities but they are not a cost to the air carriers. However these charges have been included in Tables 10.1 to 10.4 for completeness and to identify all the costs affecting future airfares. This cost item represented 7.7% of the total air carrier cost in 2004.

This cost item is expected to decrease in real terms throughout the period because it is expected that airport improvement fees and Air Travelers Security Charge will decrease in real terms. A breakdown of this cost item is presented in Table 10.2.

**Capital Costs**

Costs in this category include aircraft location, interest payments and amortization costs. This cost item is expected to decrease at an average annual rate of  $-0.8\%$  per year from 2004-2019. This cost item represented 14.4 percent of the total air carrier cost in 2004.

**Purchase of Services**

Purchase and service costs included: Purchased Repair Services, Passenger Liability Insurance, Purchased Services, Commissions, Advertising & Publicity, Communications Purchased and Purchased Repair Services. This cost item is expected to increase by about 0.2 percent between 2004 and 2019. This cost item represented 10.3 percent of the total air carrier costs in 2004.

**Other costs** refer to food expenses, cycle expenses, and all other costs associated with direct aircraft operations. This cost item is expected to increase at an average annual growth rate of 0.1% per year during the forecast horizon. This item represented 24.8% of the total air carrier costs.

A summary of the specific assumptions for total air carrier unit cost indicators for each of the categories described in Sections 8, 9 and 10 of the report is presented in Table 10.1. In **Table 10.2**, Air Navigation Fees and Airports Fees have been split into 3 categories, Air Navigation Fees, Landing Fees and Airport Fees. Finally, a total air carrier cost breakdown, historical and forecast is presented respectively in **Tables 10.3 and 10.4**.

<b>TABLE 10.1 TOTAL AIR CARRIERS UNIT COSTS UNIT COST INDEX – 2003 = 1.00</b>							
	<b>Labour</b>	<b>Fuel</b>	<b>Landing Air Navigation and Other Fees</b>	<b>Capital Costs (a)</b>	<b>Purchase of Services (b)</b>	<b>Other (c)</b>	<b>Total Weighted Index</b>
<b>2004</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>
<b>FORECAST</b>							
<b>2005</b>	<b>0.97</b>	<b>1.24</b>	<b>1.06</b>	<b>1.00</b>	<b>1.03</b>	<b>1.00</b>	<b>1.05</b>
<b>2006</b>	<b>0.96</b>	<b>1.22</b>	<b>1.06</b>	<b>0.99</b>	<b>1.04</b>	<b>1.00</b>	<b>1.04</b>
<b>2007</b>	<b>0.95</b>	<b>1.10</b>	<b>1.05</b>	<b>0.98</b>	<b>1.04</b>	<b>1.00</b>	<b>1.02</b>
<b>2008</b>	<b>0.95</b>	<b>1.04</b>	<b>1.05</b>	<b>0.97</b>	<b>1.03</b>	<b>1.00</b>	<b>1.01</b>
<b>2009</b>	<b>0.94</b>	<b>1.01</b>	<b>1.05</b>	<b>0.96</b>	<b>1.03</b>	<b>1.00</b>	<b>1.00</b>
<b>2014</b>	<b>0.92</b>	<b>1.04</b>	<b>1.02</b>	<b>0.93</b>	<b>1.03</b>	<b>1.01</b>	<b>0.99</b>
<b>2019</b>	<b>0.91</b>	<b>1.07</b>	<b>0.99</b>	<b>0.89</b>	<b>1.03</b>	<b>1.02</b>	<b>0.99</b>
<b>Real Percent Change – 2004 to 2019</b>							
<b>2004/2009</b>	<b>-1.1%</b>	<b>0.1%</b>	<b>0.9%</b>	<b>-0.7%</b>	<b>0.7%</b>	<b>0.1%</b>	<b>0.0%</b>
<b>2009/2014</b>	<b>-0.4%</b>	<b>0.6%</b>	<b>-0.4%</b>	<b>-0.7%</b>	<b>0.0%</b>	<b>0.1%</b>	<b>-0.1%</b>
<b>2014/2019</b>	<b>-0.3%</b>	<b>0.5%</b>	<b>-0.6%</b>	<b>-0.9%</b>	<b>-0.1%</b>	<b>0.1%</b>	<b>-0.1%</b>
(a) Refers primarily to aircraft location and interest and amortization costs. (b) Purchase of Services including Passengers Insurance Costs. (c) Refers primarily to food expenses, cycle expenses, and all other costs associated with direct aircraft operations. Source: Statistics Canada and Transport Canada							

<b>TABLE 10.2</b>					
<b>LANDING, AIR NAVIGATION AND OTHER FEES <sup>1</sup></b>					
<b>UNIT COST INDEX <sup>2</sup> - 2003 = 1.00</b>					
	<b>Air Navigation <sup>3</sup></b>	<b>Landing Fees</b>	<b>Airport Fees</b>	<b>Security Charge <sup>4</sup></b>	<b>Total</b>
<b>2004</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>
<b>FORECAST</b>					
<b>2005</b>	<b>1.00</b>	<b>1.08</b>	<b>1.08</b>	<b>1.00</b>	<b>1.06</b>
<b>2006</b>	<b>1.00</b>	<b>1.08</b>	<b>1.07</b>	<b>0.99</b>	<b>1.06</b>
<b>2007</b>	<b>1.00</b>	<b>1.08</b>	<b>1.07</b>	<b>0.98</b>	<b>1.05</b>
<b>2008</b>	<b>1.00</b>	<b>1.09</b>	<b>1.06</b>	<b>0.97</b>	<b>1.05</b>
<b>2009</b>	<b>1.00</b>	<b>1.09</b>	<b>1.05</b>	<b>0.96</b>	<b>1.05</b>
<b>2010</b>					
<b>2011</b>					
<b>2012</b>					
<b>2013</b>					
<b>2014</b>	<b>1.00</b>	<b>1.10</b>	<b>1.01</b>	<b>0.89</b>	<b>1.02</b>
<b>2015</b>					
<b>2016</b>					
<b>2017</b>					
<b>2018</b>					
<b>2019</b>	<b>1.00</b>	<b>1.10</b>	<b>0.95</b>	<b>0.83</b>	<b>0.99</b>
<b>Real Percent Change – 2004 to 2019</b>					
<b>2004/2009</b>	<b>0.0%</b>	<b>1.7%</b>	<b>1.0%</b>	<b>-0.9%</b>	<b>0.9%</b>
<b>2009/2014</b>	<b>0.0%</b>	<b>0.1%</b>	<b>-0.8%</b>	<b>-1.4%</b>	<b>-0.4%</b>
<b>2014/2019</b>	<b>0.0%</b>	<b>0.1%</b>	<b>-1.2%</b>	<b>-1.5%</b>	<b>-0.6%</b>
<ol style="list-style-type: none"> <li>1. In 2004, air navigation fees, landing fees, airport fees (AIF) and security charges accounted for approximately 26%, 30%, 23% and 21% respectively of total cost for this category.</li> <li>2. Cost per seat in constant dollars</li> <li>3. NAV CANADA air navigation fees were fully introduced in March 1999 to replace the Air Transportation Tax (ATT).</li> <li>4. Air Travelers Security Charge (ATSC)</li> </ol> <p>Please note that the AIF and the ATSC are collected on behalf of the airport authorities but they are not a cost to the air carriers.</p>					

### **Air Travellers Security Charge (ATSC)**

The ATSC is payable by the purchaser of an air transportation service and is collected by the air carrier at the time of payment for the air travel. Where applicable, the total cost of the charge includes the goods and services tax (GST) or the federal portion of the harmonized sales tax (HST). For air travel within Canada the total cost of the charge is \$5 per enplanement, to a maximum of \$10 for round trip travel. For transborder air travel to the continental United States the charge is \$8.5; and for other international air travel the charge is \$17

(Source: Budget 2005 – Annex 7).

<b>TABLE 10.3</b>						
<b>TOTAL AIR CARRIERS COST BREAKDOWN</b>						
<b>(PERCENT BREAKDOWN, %)</b>						
	<b>ACTUAL</b>					
<b>Cost Items</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>Labour</b>	24.6%	24.0%	26.9%	27.8%	27.6%	25.1%
<b>Fuel</b>	12.2%	16.0%	16.5%	13.3%	15.3%	17.7%
<b>Total Fees</b>	6.3%	5.8%	6.4%	6.4%	7.5%	7.7%
<b>Capital Costs</b>	16.2%	14.9%	14.4%	14.0%	15.1%	14.4%
<b>Purchase Services</b>	13.7%	11.0%	10.2%	8.8%	9.8%	10.3%
<b>Other</b>	27.0%	28.3%	25.7%	29.6%	24.7%	24.8%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Statement 21 and Transport Canada for Airport Fees

<b>TABLE 10.4</b>			
<b>TOTAL AIR CARRIERS COST BREAKDOWN</b>			
<b>(PERCENT BREAKDOWN, %)</b>			
	<b>FORECAST*</b>		
<b>Cost Items</b>	<b>2009</b>	<b>2014</b>	<b>2019</b>
<b>Labour</b>	24.0%	23.6%	23.4%
<b>Fuel</b>	17.9%	18.6%	19.2%
<b>Total Fees</b>	8.2%	8.0%	7.8%
<b>Capital Costs</b>	14.1%	13.7%	13.1%
<b>Purchase Services</b>	10.8%	10.8%	10.8%
<b>Other</b>	25.1%	25.4%	25.7%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

\*Order of magnitude only  
Source: Statistics Canada and Transport Canada

## 11. Passenger Traffic Allocation Assumptions

Essentially, the Passenger Traffic Allocation Model (PTAM) converts an exogenous set of scheduled zone-pair passenger origin-destination demand forecasts, produced by the Passenger Origin-/Destination Model (PODM), into the corresponding set of station activity for major Canadian airports. Furthermore PTAM does all this on a system-wide basis, taking into account the interactions of each airport with the others. Many assumptions required for PTAM involve assumptions on the aircraft fleet, aircraft size, and load factors, which have already been discussed earlier in this report.

### **Major PTAM Assumptions:**

- **A significant number of new routes will be added for the target years 2009, 2014 and 2019. (See list on Table 11.2)**
- **The number of markets with direct air service is expected to increase significantly during the forecast horizon. Most of the increase will be in markets with Non Stop Service Factors (Seats Over O/D passengers) of values between 0.5 to 1.5 (See Table 11.3D)**
- **A major improvement in the number of passengers able to fly to an international gateway without having to make a domestic connection first is predicted in the transborder and international sectors.**

Essentially, the Passenger Traffic Allocation Model (PTAM) converts an exogenous set of scheduled zone-pair passenger origin-destination demand forecasts, produced by the Passenger Origin-/Destination Model (PODM), into the corresponding set of station activity for major Canadian airports. Furthermore PTAM does all this on a system-wide basis, taking into account the interactions of each airport with the others.

At the heart of the approach adopted in PTAM is the concept of taking a base year aircraft route structure – as operated by the carriers – and converting it, incrementally, to the corresponding forecast year structure. This conversion is accomplished through a series of sequential processes which involve assumptions on the aircraft fleet, aircraft size, and new direct flights where the demand reaches a certain level. The essential function of this process is to "grow" incrementally the air services on the route network of the base year to accommodate the predicted level of traffic for some future year.

The assumptions on the aircraft fleet, aircraft size, and load factors have already been discussed earlier in this report. However three basic building blocks of the PTAM allocation procedure need to be addressed: the identification of **new routes** not present in the base year, the **incremental increase of seat capacity** for each route segment in the model and finally an **attractiveness factor** for each alternative passenger route serving a particular zone-pair.

Passenger assignments are made in terms of alternative aircraft routes. Passenger routes represent the paths taken by passengers in moving from origin to destination. The path may be direct, or it may involve one or more transits at intermediate stations. It may also require one or more connections, where the passenger changes from one aircraft to another.

### New routes

The great majority of Canadians, traveling within Canada, are able to fly direct non-stop to their destinations. Based on the most recent information from the PTAM validation (2004/2005), some 85% of Canadians traveling by air were able to fly to their destination without having to change plane in Canada. However these proportions varied significantly between regions as shown in Table 11.1. In the domestic sector, the proportion of travelers who were able to fly non-stop was the highest in the Ontario Region reaching 90 percent and the lowest in the Atlantic Region reaching only 70%.

<b>Proportion of Traveler who were able to fly direct-non-stop to their destination</b>			
	<b>DOM</b>	<b>TB*</b>	<b>OI**</b>
<b>ATL</b>	70%	25%	60%
<b>QUE</b>	85%	85%	90%
<b>ONT</b>	90%	95%	85%
<b>CENT</b>	80%	75%	40%
<b>WEST</b>	85%	85%	80%
<b>TOTAL</b>	85%	85%	80%

\* To First U.S. Entry Point \*\* To First other International Entry Point  
Source - PTAM

In the transborder sector, a high proportion of Canadians, traveling to the United States, were also able to fly direct non-stop to their first point of entry in the United States. It should be noted that the PTAM analysis does not extend to traffic connections outside of Canada's airport network. As in the domestic sector, the need to change plane in order to get to the final destination (first U.S. entry point) varied significantly between regions as shown in Table 11.1. U.S. bound travelers' origination from Ontario enjoyed the highest proportion of direct routings (95%) while the proportion dropped to 75% for trips originating in Central Canada and to 25% for trips originating in Atlantic Canada.

Finally most Canadians traveling to other international final destinations (other than Canada and the U.S.) were able to fly direct non-stop to the first foreign entry point of their journey. Again the proportions varied significantly between regions. Travelers' origination in the Quebec Region enjoyed the highest proportion of direct routings (90%) while the proportion dropped to 60% for trips originating in Central Canada and to 40% for trips originating in Atlantic Canada.

The most recent PTAM base network in 2004 included 543 pairs of cities linked non-stop. Of this number, 272 pairs were Domestic routes, 179 Transborder routes, and 392 Other International routes.

The decision to add a new passenger route between a given zone-pair or to add incremental seat capacity to an existing route segment is based on a number of factors the most important being the O/D passenger forecast and the city-pair/market threshold level. This threshold level for a given city-pair can be estimated based on the great-circle distance, the critical aircraft for this city-pair and a minimum weekly frequency. If the analyst determines that a zone-pair is a candidate for direct non-stop service in the future, then a “new route” is added to the PTAM network. In the current PTAM analysis, 78 new routes (city-pairs linked non-stop) have been added in 2009, 54 new routes in 2014 and 42 routes in 2019. In general, the number of seats added on such new routes target approximately 40% of the total O/D demand, since it is assumed that a certain proportion of the demand will continue to be satisfied by other existing routes, involving a transit or connection, for their convenience to some passengers. Table 11.2 shows the non-stop routes that have been added to the model for the target years 2009, 2014 and 2019.

A summary of the specific assumptions on the new routes is presented in **Table 11.2**.

<b>TABLE 11.2</b>		
<b>NEW NON-STOP ROUTES IN PTAM (*)</b>		
<b>2006-2009</b>	<b>2010-2014</b>	<b>2015-2019</b>
YEG/FRA (Frankfurt, Germany)	YEG/LGA (New York, USA)	YCD/SEA (Washington, USA)
YEG/LHR (London, England)	YHM/DTW (Michigan, USA)	YEG/CVG (Ohio, USA)
YEG/SFO (California, USA)	YHZ/ATL (Georgia, USA)	YHM/PIT (Pennsylvania, USA)
YEG/YXH (Medecine Hat, ALTA)	YHZ/DCA (District of Columbia, USA)	YHZ/ORD (Illinois, USA)
YHM/LGA (New York, USA)	YLW/YQU (Grande Prairie, AB)	YHZ/YQR (Regina, SASK)
YHZ/PHL (Pennsylvania, USA)	YOW/MSP (Minnesota, USA)	YLW/YCD (Nanaimo, BC)
YHZ/YQB (Quebec, QUE)	YOW/YQR (Regina, SASK)	YLW/YQR (Regina, SASK)
YOW/CDG (Paris, France)	YQB/BOS (Massachusetts, USA)	YOW/MEX (Mexico, Central America)
YOW/DFW (Texas, USA)	YQB/CVG (Ohio, USA)	YOW/YSJ (Saint John, NB)
YOW/LAX (California, USA)	YUL/HKG (Hong Kong, Far East)	YQM/BOS (Massachusetts, USA)
YOW/YFC (Fredericton, NB)	YUL/SJU (Puerto Rico, USA)	YQT/YXE (Saskatoon, SASK)
YOW/YQM (Moncton, NB)	YUL/YXE (Saskatoon, SASK)	YQT/YXU (London, ON)
YQB/YQM (Moncton, NB)	YUL/YXU (London, ON)	YSB/YXU (London, ON)
YQM/CDG (Paris, France)	YVR/DCA-BWI (District of Columbia, USA)	YUL/GIG (Brazil, South America)
YQM/YFC (Fredericton, NB)	YVR/PHL (Pennsylvania, USA)	YUL/NRT (Narita, Japan)
YQM/YSJ (Saint John, NB)	YVR/STL (Missouri, USA)	YUL/YQR (Regina, SASK)
YSB/YWG (Winnipeg, MB)	YVR/WIQ-WIH (Taiwan, Far East)	YUL/YQT (Thunder Bay, ON)
YSB/YXU (London, ON)	YVR/YHZ (Halifax, NS)	YUL/YSB (Sudbury, ON)
YUL/DEN (Colorado, USA)	YVR/YXU (London, ON)	YVR/FCO (Rome, Italy)
YUL/STL (Missouri, USA)	YWG/CDG (Paris, France)	YVR/PRG (Prague, Czech Rep, )

YUL/TLV (Israel, Middle East)	YWG/LAX (Las Vegas, USA)	YVR/SDU-CGH-GIG (Brazil, South America)
YVR/CAN (Guangzhou, China)	YWG/LGA (New York, USA)	YVR/YZF (Yellowknife, NWT)
YVR/CDG (Paris, France)	YWG/YHZ (Halifax, NS)	YWG/DFW (Texas, USA)
YVR/DEL (India, Far East)	YWG/YYJ (Victoria, BC)	YWG/YLW(Kelowna, BC)
YVR/SAN-SMF (California, USA)	YXX/LAX-SFA (California, USA)	YWG/YQM (Moncton, NB)
YVR/SYD (Australia, Pacific)	YYC/BOS (Massachusetts, USA)	YXE/ORD (Illinois, USA)
YWG/LAS-PHX (Nevada, USA)	YYC/DCA (District of Columbia, USA)	YXU/ORD (Illinois, USA)
YWG/LHR-LGW (London, England)	YYC/HKG (Hong Kong, Far East)	YYC/FCO (Rome, Italy)
YWG/YSB (Sudbury, ON)	YYC/HNL (Hawaii, USA)	YYC/PDX (Oregon, USA)
YYC/LGA (New York, USA)	YYC/PHL (Pennsylvania, USA)	YYC/PRG (Prague, Czech Rep. )
YYC/NRT (Narita, Japan)	YYC/PSP (California, USA)	YYC/YQM (Moncton, NB)
YYJ/LAX (California, USA)	YYC/STL (Missouri, USA)	YYC/YXY (Whitehorse, YT)
YYZ/AUS(Austin, Texas, USA)	YYC/YTH (Thompson, MAN)	YYT/BOS (Massachusetts, USA)
YYZ/AVL(Henderson, NC, USA)	YYJ/PHX (Arizona, USA)	YYT/YFC (Fredericton, NB)
YYZ/BHM(Birmingham,AL, USA)	YYJ/YQR (Regina, SASK)	YYZ/DLH (Duluth, MN, USA)
YYZ/CAI (Egypt, North Africa)	YYZ/AZO (Kalamazoo, MI, USA)	YYZ/LAN (Lansing, MI, USA)
YYZ/DXB (Dubai, United A. Emir)	YYZ/BIL (Billings, MO, USA)	YYZ/MSN (Madison, WI, USA)
YYZ/GRB (Greenbay, WI, USA)	YYZ/CAK (Akron, OH, USA)	YYZ/SYD (Australia, Pacific)
YYZ/HNL (Hawaii, USA)	YYZ/CRW (Charleston, PA, USA)	
YYZ/OAK (Oakland, CA, USA)	YYZ/FWA (Fort Wayne, IN, USA)	
YYZ/ONT (Ontario, CA, USA)	YYZ/JNB (Johannesburg, SA)	
YYZ/SDF (Louisville, KY, USA)	YYZ/MYR (Myrtle B, FL, USA)	
YYZ/SRQ (Sarasota, FL, USA)	YYZ/OKC (Oklahoma City, USA)	
YYZ/SYR (Syracuse, NY, USA)	YYZ/OMA (Nebraska, USA)	
YYZ/TLH (Tallahassee, FL, USA)	YYZ/ORF (Norfolk, VA, USA)	
YYZ/YDF (Deer Lake, NFLD)	YYZ/PDX (Portland, OR, USA)	
	YYZ/RIC (Richmond, VA, USA)	
	YYZ/SIN (Singapore, Southeast Asia)	
	YYZ/SJO (San Jose, CA, USA)	
	YYZ/SLC (Salt Lake, UT, USA)	
	YYZ/XNA (Nashville, TE, USA)	
	YYZ/YQX (Gander, NFLD)	

**Incremental increase of seat capacity**

A central element of the route forecasts process is the non-stop service factor (NNSF), which represents the ratio of non-stop capacity (seats) to the origin-destination passenger demand on any given city-pair. Most historical values fall between 1.5 and 5.0 while they actually range from zero (no non-stop service) to about ten or even higher on some markets.

Very high values (non-stop service factor greater than 5.0) occur principally when a route links two regional hubs, each serving several low-density city-pairs which cannot support direct non-stop service. Examples of city-pairs with very high NNSF values in 2004 in the domestic sector are Montreal-Quebec (10.7), Ottawa-Montreal (9.3), Halifax-Charlottetown (7.9) and Halifax-Sydney (7.4).

In the transborder sector, there are several markets with high NNSF. In this sector, this occurs when a Canadian regional hub serves a major US entry hub. Examples of city-pairs with very high NNSF values in 2004 in the transborder sector are Edmonton-Minneapolis (19.5), Winnipeg-Minneapolis (12.8), Halifax-New-York (11.9) and Calgary-Minneapolis (11.1).

There are no examples of high NNSF in the other international sector

Very low values (non-stop service factor smaller than 0.5) occur principally when there is high frequency service including one-stop connecting route competing with infrequent direct non-stop service between an airport and a regional/national hub. As a result passenger give preference to high frequencies over the advantage of flying direct non-stop. An example of a city-pairs with very low NNSF values in 2004 in the domestic sector are Sydney-Toronto (0.4) and Sydney-Montreal (0.2). Please note alternative routes with high frequencies Sydney-Halifax (7.4) Halifax-Toronto (2.2) and Halifax-Montreal (2.7).

The strategy used in the initial phase of adding seat capacity to the PTAM network is to maintain or slightly alter existing NNSF values to reflect the addition of new non-stop routes and ensuring that the forecast PTAM network has sufficient capacity to accommodate the passenger O/D forecast demand while at the same time ensuring that the load factors on all the segments are within reasonable limits.

Actual and predicted non-stop service factors values are presented in Table 11.3 (A to D) while disaggregated NNSF values for all markets are presented in the PTAM Report (refer to web site).

<b>Table 11.3 A</b>					
<b>Non-Stop Service Factors (Seats / O&amp;D passengers)</b>					
<b>PTAM City-Pairs - Top 10 Airports</b>					
<b>DOMESTIC SECTOR</b>					
	<b>&gt; 5.0</b>	<b>1.5 to 5.0</b>	<b>0.5 to 1.5</b>	<b>&lt; 0.5</b>	<b>ALL</b>
<b>2004</b>	9	60	25	12	106
<b>2009</b>	9	62	29	13	113
<b>2014</b>	9	62	37	11	119
<b>2019</b>	10	62	41	9	122

<b>Table 11.3 B</b>					
<b>Non-Stop Service Factors (Seats / O&amp;D passengers)</b>					
<b>PTAM City-Pairs – Top 10 Airports</b>					
<b>TRANSBORDER SECTOR</b>					
	<b>&gt; 5.0</b>	<b>1.5 to 5.0</b>	<b>0.5 to 1.5</b>	<b>&lt; 0.5</b>	<b>ALL</b>
<b>2004</b>	10	43	12	5	70
<b>2009</b>	9	43	18	10	80
<b>2014</b>	9	43	23	15	90
<b>2019</b>	8	43	28	15	94

<b>Table 11.3 C</b>					
<b>Non-Stop Service Factors (Seats / O&amp;D passengers)</b>					
<b>PTAM City-Pairs – Top 10 Airports</b>					
<b>OTHER INTERNATIONAL SECTOR</b>					
	<b>&gt; 5.0</b>	<b>1.5 to 5.0</b>	<b>0.5 to 1.5</b>	<b>&lt; 0.5</b>	<b>ALL</b>
<b>2004</b>	0	9	16	8	33
<b>2009</b>	0	13	19	8	40
<b>2014</b>	0	13	25	6	44
<b>2019</b>	0	13	35	6	54

<b>Table 11.3 D</b>					
<b>Non-Stop Service Factors (Seats / O&amp;D passengers)</b>					
<b>PTAM City-Pairs – Top 10 Airports</b>					
<b>ALL SECTORS</b>					
	<b>&gt; 5.0</b>	<b>1.5 to 5.0</b>	<b>0.5 to 1.5</b>	<b>&lt; 0.5</b>	<b>ALL</b>
<b>2004</b>	19	112	53	25	209
<b>2009</b>	18	118	66	31	233
<b>2014</b>	18	118	85	32	253
<b>2019</b>	18	118	104	30	270

It can be seen that the number of markets with direct air service is expected to increase significantly during the forecast horizon, from 209 PODM markets in 2004 to 270 in 2018. Most of the increase will be in markets with NNSF of values 0.5 to 1.5.

#### **Attractiveness factor**

The attractiveness factors are derived from historical data and approximate the passenger preferences for some routes. For example, a non-stop flight will be preferred at a transit flight, and a transit flight will be preferred to a connecting flight.

Historical and predicted distribution of origin and destination passenger's traveling route by preference, at the Top 10 national airports, are presented in Table 11.4 (A to C). As expected the vast majority of domestic passengers, approximately 85.2% during 2004, are able to travel direct non-stop to their destinations. The proportion of non-stop travel drops sharply when considering international air travel, namely approximately 61.4% in the transborder sector and 43.1% in the other international sector also during 2004.

It should be noted that a major improvement is predicted in the international sector where the proportion of non-stop travel is expected to reach 63.2% in the transborder sector and 51.4% in the other international sector by the end of the forecast horizon.

<b>Table 11.4A</b>					
<b>Distribution of O&amp;D Passengers by Route Preference</b>					
<b>PTAM City-Pairs – Top 10 Airports</b>					
<b>DOMESTIC SECTOR</b>					
	<b>DNS</b>	<b>1-CNT</b>	<b>2-CNT</b>	<b>3-CNT</b>	<b>4-CNT</b>
<b>2004</b>	85.2%	13.4%	1.3%	0.1%	0.0%
<b>2009</b>	85.2%	13.3%	1.4%	0.1%	0.0%
<b>2014</b>	84.8%	13.7%	1.5%	0.1%	0.0%
<b>2019</b>	84.6%	13.9%	1.4%	0.1%	0.0%

<b>Table 11.4B</b>					
<b>Distribution of O&amp;D Passengers by Route Preference</b>					
<b>PTAM City-Pairs – Top 10 Airports</b>					
<b>TRANSBORDER SECTOR<sup>2</sup></b>					
	<b>DNS</b>	<b>1-CNT</b>	<b>2-CNT</b>	<b>3-CNT</b>	<b>4-CNT</b>
<b>2004</b>	61.4%	35.6%	2.8%	0.1%	0.0%
<b>2009</b>	62.8%	34.5%	2.6%	0.1%	0.0%
<b>2014</b>	62.8%	34.3%	2.8%	0.1%	0.0%
<b>2019</b>	63.2%	33.9%	2.7%	0.1%	0.0%

<sup>2</sup> Connections beyond the first transborder gateway are not included in this analysis

	<b>DNS</b>	<b>1-CNT</b>	<b>2-CNT</b>	<b>3-CNT</b>	<b>4-CNT</b>
<b>2004</b>	43.1%	46.5%	9.7%	0.6%	0.0%
<b>2009</b>	45.9%	44.8%	8.7%	0.6%	0.0%
<b>2014</b>	49.7%	42.2%	7.6%	0.5%	0.0%
<b>2019</b>	51.4%	40.5%	7.6%	0.4%	0.0%

A growth rate comparison between origin-destination passengers and connecting passengers by sector, is presented in Table 11.5.

	<b>2004-2009</b>		<b>2004-2014</b>		<b>2004-2019</b>	
	<b>O&amp;D</b>	<b>CNT</b>	<b>O&amp;D</b>	<b>CNT</b>	<b>O&amp;D</b>	<b>CNT</b>
<b>DOM</b>	3.0%	2.6%	2.5%	3.0%	2.2%	2.4%
<b>TB</b>	4.8%	4.8%	4.2%	4.5%	3.9%	4.3%
<b>OI</b>	4.9%	4.2%	4.6%	3.7%	4.3%	3.4%
<b>TOT</b>	3.9%	3.9%	3.4%	3.7%	3.2%	3.4%

Source: PTAM

<sup>3</sup> Connections beyond the first other international gateway are not included in this analysis

## 12. Impact of New Factors

### 1. Impact of Videoconferencing

Despite the fact that the technology has existed for many years, there is very little evidence of any significant amount of travel substitution resulting from the technology. Nevertheless, the question of whether videoconferencing replaces, modifies or generates travel remains more relevant than ever, particularly in light of the recent terror attacks in the United States and in Spain and the unstable world situation in some parts of the world.

At the beginning of the videoconferencing era, in the 1970s, it was widely held that as much as 25% of business air travel could be substituted and replaced by the technology, but these early predictions failed and a more nuanced view of the relationship has emerged. Rather than replacing travel, it was suggested that videoconferencing would simply complement travel patterns. That is while there would be some replacement to business air travel, productivity gains and increase efficiency in communications from the new technology would translate into “new air travel” thus offsetting some or all replaced business air travel.

Transport Canada has reviewed a number of recent studies on the impact of video/teleconferencing, which suggest that between 3% and 23% of business travel might be diverted to teleconferencing. (1) A recent study by the Institute of Transport Economics entitled “Impact of videoconferencing on business travel: the Norwegian experience” and available on line (28 July 2004), concludes that videoconferencing has only limited effects on business air travel with substitution rates of 2.5 to 3.5%. The study indicates a low sensitivity to the threat of terror and the instability that has followed September 11 in the U.S. According to the study, videoconferencing is expected to grow but remain supplementary to personal contact. (2) In a study on teleconferencing (“The impact of new business practices and information technologies on business air travel demand”, Journal of Air Transport Management, no. 4, 1998), professor Jacques Roy suggested that in the longer-term, teleconferencing could displace up to 15 percent of business travel. (3) An FAA-sponsored research prepared by Apogee Research suggests minimum and maximum diversion of 3% and 11% while (4) an Arthur D. Little Inc. analysis for Boston’s Logan International airport proposes diversion ranging between 13% and 23%.

*For this upcoming General Forecast Update, Transport Canada proposes to continue to use a substitution rate of 6 percent on new business air travel generated by the forecasting model. That is to reduce by 6 percent only the number of “new” air travel trips forecasted, excluding the base forecasts, since the historical database has already been reduced by the new technology. This figure is seen as a balance between gains made due to technology (productivity of travelers and globalization) and offsetting alternatives to travel.*

## 2. Impact of New Improved Surface Transit

While there have been a number of announcements to the effect that there may be a major improvement to the rail mode in the Quebec-Windsor corridor, there has not been any substantial information as to when and where the anticipated improvements could happen.

Such improvements to the surface mode would likely have a small impact on air passenger traffic in the Windsor-Quebec corridor. In the Transport Canada demand model (PODM-V2), competition to the air mode by the surface mode is represented by the amount of time required to travel by car between city pairs. This variable could be used to determine the impact of traffic substitution following a major improvement to the rail mode in the Quebec-Windsor corridor.

*For this upcoming General Forecast Update, Transport Canada proposes to assume no changes to the surface mode.*

## 3. Impact of In Transit Passengers

In-transit pre-clearance allows international passengers destined for the U.S. via a Canadian airport ( i.e. arriving international in transit passengers who have not cleared Canadian customs and immigration ) to go directly into U.S. pre-clearance. In-transit pre-clearance allows Canadian airports to become more effective international gateways to the United States.

In 1997, the Vancouver Airport housed the in-transit pre-clearance pilot project, which allowed for a more efficient in-transit passage of travelers through Canada en route to the U.S. In-transit pre-clearance eliminates the need for passengers to report to Canada Customs and Immigration before proceeding to U.S. customs and immigration pre-clearance officers, reducing a two-step process to one step. The improved efficiency made Vancouver International Airport, and the airlines that serve it, more competitive to international travelers proceeding to the U.S. The entry into force of the pre-clearance agreement, on May 2, 2003, formalized in-transit pre-clearance at Vancouver and allowed for its introduction at Calgary, Montreal and Toronto.

*For this upcoming General Forecast Update, Transport Canada predicts that In transit passengers will continue to grow as indicated in Table 12.1 at above average growth rates stimulated by (1) increasing congestion at U.S. international Hubs (2) airlines alliances (3) the prospect of further air liberalization.*

	<b>2004 Est</b>	<b>2009</b>	<b>2014</b>	<b>2019</b>
U.S to World	630,287	814,700	1,094,800	1,351,700
World to U.S	630,287	814,700	1,094,800	1,351,700
		5.3%	6.1%	4.3%

### 3. Impact of Polar Routes

With the end of the Cold War, airspace over Russia and China has opened up to commercial traffic. Polar routes offer an alternative to existing routes between North America and Asia. The Feasibility Study examined several factors and concluded that polar routes implementation is both feasible and desirable. The new cross-polar routes connect eastern and interior regions of North America to Asian cities via the North Polar Region ([fig. 1](#)). These airways provide an attractive shortcut to Asia, which can open new air travel markets. These shortcuts also make service to existing city pairs more efficient through reduced fuel consumption and associated emissions.

The main cross-polar route, known as Polar 1, generally offers efficient routing from West Coast cities such as Vancouver and Los Angeles to destinations on the Indian subcontinent. The other main cross-polar routes, Polar 2, 3, and 4, generally are for flights connecting cities in eastern and central North America with destinations in China and East Asia.

The governments of Russia, China, Canada, and the United States are continuing to develop the polar route system through the ongoing activities of the Russian-American Coordinating Group for Air Traffic. Support from the airlines through the International Air Transport Association has been very important and will continue to be critical to the future development of the polar route system.

Recently, NAV CANADA, the country's provider of civil air navigation services, prepared a feasibility study, which identified 33 potential city pairs that could benefit from polar routes. Statistics were compiled to determine the actual number of passengers that traveled between the selected cities during a one-year period. The city pairs were primarily longer than 6,600 nautical miles apart. The development of modern aircraft with a 6,000 to 9,000 mile range enables use of these routes. Some of the main benefits of direct polar routes are the saving of passengers travel time since the new routes are shorter, and smaller operation costs with the avoidance of stopovers reducing fuel, maintenance and operation costs.

The detailed economic analysis which was performed for the Canadian and Russian parts of the polar routes, included calculation of associated costs, including capital, operating and maintenance costs for each of the countries. It also included an assessment of the potential revenues, minus the loss of revenues that could occur due to re-routing of some existing flights from current routes to polar routes.

Direct polar routes save passengers travel time and cost less. The new routes are shorter. Stopovers are avoided, reducing both passenger travel time and airline operating costs. Airline flight times are reduced and fuel, maintenance and operation costs are reduced.

Some examples of timesavings in minutes and dollars per flight identified in the NavCanada study include:

Atlanta - Seoul	124 minutes	\$44,000
Boston - Hong Kong	138 minutes	\$33,000
Los Angeles - Bangkok	142 minutes	\$33,000
New York - Singapore	209 minutes	\$44,000
Vancouver - Beijing	108 minutes	\$33,000
Vancouver - Hong Kong	125 minutes	\$33,000

It is for all of these reasons that the study concludes that polar routes are both feasible and desirable.

*For this upcoming General Forecast Update, Transport Canada predicts that Polar Routes will continue to grow as indicated in Table 12.2 at above average growth rates stimulated by (1) the availability of modern aircraft with a 6,000 to 9,000 mile range and (2) the continuing development of the polar route system through the ongoing activities of the Russian-American Coordinating Group for Air Traffic.*

	<b>2004 Est</b>	<b>2009</b>	<b>2014</b>	<b>2019</b>
<b>Capacity</b>	228,000	384,000	972,000	1,768,000
<b>AAGR</b>		13.9%	20.4%	12.7%

### III. Questionnaire

#### How To Fill Out The Questionnaire...

Before completing the survey questionnaire, you are invited to read the description text that explains the proposed set of assumptions to be used to update the forecasts. **The survey questionnaire then aims at soliciting your expert views on the changes you are envisioning in the coming years on the various key factors under consideration.** If you need additional clarifications for completing the questionnaire at the back of this document, please contact Robert Duclos at (613-990-3820) to get assistance.

Given the wide range of factors considered here, it is expected that some readers may want to comment on only some of the factors listed. Also, some readers may wish to address factors, which have not been listed. All of these ways of completing the questionnaire will prove to be very useful in validating the assumptions to be used to derive the air forecasts.

Once you have filled out the questionnaire, please send it with your answers/comments either by fax or by courier by **November 30, 2005** or earlier to:

Robert Duclos  
Chief, Aviation Forecasts,  
Transport Canada,  
"Tower C", Place de Ville,  
Ottawa, Ontario, Canada  
Fax – (613) 957-3280  
K1A 0N5

Or electronically to Robert Duclos at the following:  
e-mail address: [duclosr@tc.gc.ca](mailto:duclosr@tc.gc.ca)

# 1. Gross Domestic Product –

[Assistance: pages 10,11,12, 13](#)

TABLE 1.1 SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – GROSS DOMESTIC PRODUCT (Percentage Change )							
	2004	2005	2006	2007	2008	2009	'04-'09
Real GDP	3.1	2.6	2.9	2.8	2.9	3.1	2.9
CPI	1.9	2.3	2.2	2.0	2.0	2.0	2.1

Source: Private Sector Forecasts and Transport Canada

TABLE 1.3 MEDIUM-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – GROSS DOMESTIC PRODUCT (Percentage Change)				
	2004-2009	2009-2014	2014-2019	2004-2019
Real GDP	2.9	2.4	2.2	2.5

Source: Private Sector Forecasts and Transport Canada

**Please indicate alternative forecast, if applicable, below in appropriate box.**

TABLE 1.1A SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – GROSS DOMESTIC PRODUCT (Percentage Change )							
	2004	2005	2006	2007	2008	2009	'04-'09
Real GDP							
CPI							

<b>TABLE 1.3A</b> <b>MEDIUM-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC</b> <b>VARIABLES – GROSS DOMESTIC PRODUCT</b> <b>(Percentage Change)</b>				
	2004-2009	2009-2014	2014-2019	2004-2019
<b>Real GDP</b>				
Source: Private Sector Forecasts and Transport Canada				

**Please provide any comments you have on this topic**

Comments:

## 2. Personal Disposable Income—

[Assistance: pages 14,15,16](#)

TABLE 2.1							
SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – PERSONAL REAL DISPOSABLE INCOME							
(Percentage Change)							
	2004	2005	2006	2007	2008	2009	'04-'09
PRDI/Cap	1.1	0.7	1.9	1.8	1.8	1.6	1.6

Source: Private Sector Forecasts and Transport Canada

TABLE 2.2				
SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – PERSONAL REAL DISPOSABLE INCOME				
(Percentage Change)				
	2004-2009	2009-2014	2014-2019	2004-2019
PRDI/Cap	1.6	1.5	1.3	1.4

Source: Private Sector Forecasts and Transport Canada

**Please indicate alternative forecast, if applicable, below in appropriate box.**

TABLE 2.1A							
SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – PERSONAL REAL DISPOSABLE INCOME							
(Percentage Change)							
	2004	2005	2006	2007	2008	2009	'04-'09
PRDI/Cap							

<b>TABLE 2.2A</b> <b>SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC</b> <b>VARIABLES – PERSONAL REAL DISPOSABLE INCOME</b> <b>(Percentage Change)</b>				
	2004-2009	2009-2014	2014-2019	2004-2019
<b>PRDI/Cap</b>				
Source: Private Sector Forecasts and Transport Canada				

**Please provide any comments you have on this topic**

Comments:

### 3. Adult Population— [Assistance: pages 17, 18, 19](#)

TABLE 3.1 SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – POPULATION (Percentage Change )							
	2004	2005	2006	2007	2008	2009	'04-'09
<b>Total Population</b>	0.9	0.9	0.8	0.8	0.8	0.8	0.8
<b>Adult Population</b>	1.4	1.4	1.3	1.2	1.2	1.2	1.3

Source: Private Sector Forecasts and Transport Canada

TABLE 3.2 SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – POPULATION (PERCENTAGE CHANGE )				
	2004-2009	2009-2014	2014-2019	2004-2019
<b>Total Population</b>	0.8	0.8	0.7	0.8
<b>Adult Population</b>	1.3	1.1	0.9	1.1

Source: Private Sector Forecasts and Transport Canada

**Please indicate alternative forecast, if applicable, below in appropriate box.**

TABLE 3.1A SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC VARIABLES – POPULATION (Percentage Change )							
	2004	2005	2006	2007	2008	2009	'04-'09
<b>Total Population</b>							
<b>Adult Population</b>							

<b>TABLE 3.2A</b> <b>SHORT-TERM FORECASTS OF SELECTED CANADIAN MACROECONOMIC</b> <b>VARIABLES – POPULATION</b> <b>(PERCENTAGE CHANGE )</b>				
	2004-2009	2009-2014	2014-2019	2004-2019
<b>Total Population</b>				
<b>Adult Population</b>				

Source: Private Sector Forecasts and Transport Canada

**Please provide any comments you have on this topic**

Comments:

## 4. U.S. Economic Outlook— [Assistance: pages 20, 21](#)

TABLE 4.1							
SHORT-TERM FORECASTS OF SELECTED U.S. MACROECONOMIC VARIABLES							
(percentage change except as noted)							
	2004	2005	2006	2007	2008	2009	'04-'09 <sup>(4)</sup>
Real GDP <sup>(1)</sup>	4.2	3.5	3.8	2.8	3.2	3.3	3.3
PRDI/Cap <sup>(2)</sup>	2.4	1.4	2.6	1.8	1.9	2.2	2.0
Total Population	1.0	0.9	0.9	0.9	0.9	0.9	0.9
Adult Population <sup>(3)</sup>	1.2	1.1	1.1	1.1	1.1	1.1	1.1
Consumer Price Index	2.7	3.2	2.8	2.4	2.4	2.5	2.6

1. Real gross domestic product at basic prices.  
 2. Personal real disposable income per capita.  
 3. 20 years of age and over.  
 4. Average annual growth rate, %.

Source: Conference Board; Economy.com

TABLE 4.2				
SHORT-TERM FORECASTS OF SELECTED U.S. MACROECONOMIC VARIABLES				
(AVERAGE ANNUAL GROWTH RATE, % )				
	2004-2009	2009-2014	2014-2019	2004-2019
Real GDP	3.3	2.7	2.3	2.8
PRDI/Cap	2.0	1.8	1.4	1.7
Total Population	0.9	0.9	0.8	0.9
Adult Population	1.1	1.0	0.8	1.0

**Please indicate alternative forecast, if applicable, below in appropriate box**

TABLE 4.2A				
SHORT-TERM FORECASTS OF SELECTED U.S. MACROECONOMIC VARIABLES				
(AVERAGE ANNUAL GROWTH RATE, % )				
	2004-2009	2009-2014	2014-2019	2004-2019
Real GDP				
PRDI/Cap				
Total Population				
Adult Population				

**Please provide any comments you have on this topic**

Comments:

## 5. Airline Yield— [Assistance: pages 22, 23, 24](#)

TABLE 5.1 CANADIAN LEVEL I AIRLINE YIELD (1996 CENTS PER RPK)				
Year	Domestic	Transborder	Other Int'l	System
2003	11.3	11.0	6.7	9.0
2004	10.2	10.2	6.5	8.2
2005	10.7	10.3	6.4	8.3
2006	11.1	10.4	6.5	8.5
2007	10.9	10.3	6.4	8.3
2008	10.8	10.2	6.3	8.2
2009	10.7	10.1	6.3	8.2
2014	10.7	10.1	6.3	8.2
2019	10.7	10.1	6.3	8.2

**Please indicate alternative forecast, if applicable, below in appropriate box.**

TABLE 5.1A CANADIAN LEVEL I AIRLINE YIELD (1996 CENTS PER RPK)				
Year	Domestic	Transborder	Other Int'l	System
2003	11.3	11.0	6.7	9.0
2004	10.2	10.2	6.5	8.2
2005				
2006				
2007				
2008				
2009				
2014				
2019				

**Please provide any comments you have on this topic**

Comments:

## 6. Fleet / Average aircraft Size –

[Assistance: pages 25, 26, 27, 28, 29, 30](#)

<b>TABLE 6.3</b>							
<b>AVERAGE SEAT PER AIRCRAFT – ALL CANADIAN AIRPORTS</b>							
<b>Year</b>	<b>Major Air Carriers</b>			<b>Regional/Local</b>		<b>CHARTER</b>	<b>ALL AIR CARRIERS</b>
	<b>Domestic</b>	<b>Transb.</b>	<b>Other Int.</b>	<b>Domestic</b>	<b>Transb.</b>	<b>Total</b>	<b>Total</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
<b>2003</b>	<b>135</b>	<b>100</b>	<b>250</b>	<b>29</b>	<b>40</b>	<b>194</b>	<b>108</b>
<b>2004</b>	<b>132</b>	<b>98</b>	<b>243</b>	<b>29</b>	<b>44</b>	<b>181</b>	<b>107</b>
<b>2005</b>	<b>130</b>	<b>97</b>	<b>242</b>	<b>31</b>	<b>45</b>	<b>180</b>	<b>107</b>
<b>2006</b>	<b>128</b>	<b>98</b>	<b>242</b>	<b>32</b>	<b>45</b>	<b>181</b>	<b>106</b>
<b>2007</b>	<b>126</b>	<b>99</b>	<b>243</b>	<b>32</b>	<b>46</b>	<b>182</b>	<b>106</b>
<b>2008</b>	<b>126</b>	<b>100</b>	<b>244</b>	<b>33</b>	<b>46</b>	<b>183</b>	<b>107</b>
<b>2009</b>	<b>126</b>	<b>101</b>	<b>245</b>	<b>33</b>	<b>46</b>	<b>183</b>	<b>108</b>
<b>2014</b>	<b>130</b>	<b>105</b>	<b>258</b>	<b>35</b>	<b>47</b>	<b>185</b>	<b>113</b>
<b>2019</b>	<b>133</b>	<b>107</b>	<b>262</b>	<b>36</b>	<b>47</b>	<b>186</b>	<b>115</b>

**Sources:** The historical data in columns (1), (2) and (3) are from Statement 6; those in column (4) and (5) are from Statement 4, those in column (6) are from Statement 2, and (7) are weighted averages.  
**Source:** Statistics Canada and Transport Canada

**Please indicate alternative forecast, if applicable, below in appropriate box.**

TABLE 6.3A AVERAGE SEAT PER AIRCRAFT – ALL CANADIAN AIRPORTS							
Year	MAJOR AIR CARRIERS			REGIONAL /LOCAL		CHARTER	ALL AIR CARRIERS
	Domestic (1)	Transb. (2)	Other Int. (3)	Domestic (4)	Transb. (5)	Total (6)	Total (7)
2003	135	100	250	29	40	194	108
2004	132	98	243	29	44	181	107
2005							
2006							
2007							
2008							
2009							
2014							
2019							

Sources: The historical data in columns (1), (2) and (3) are from Statement 6; those in column (4) and (5) are from Statement 4, those in column (6) are from Statement 2, and (7) are weighted averages.  
Source: Statistics Canada and Transport Canada

**Please provide any comments you have on this topic**

Comments:

## 7. Passenger Load Factors –

[Assistance: pages 31, 32, 33](#)

<b>TABLE 7.1 LOAD FACTORS – ALL CANADIAN AIRPORTS</b>							
<b>Year</b>	<b>MAJOR AIR CARRIERS</b>			<b>REGIONAL /LOCAL</b>		<b>CHARTER</b>	<b>ALL AIR CARRIERS</b>
	Domestic (1)	Transb. (2)	Other Int. (3)	Domestic (4)	Transb. (5)	Total (6)	Total (7)
<b>2003</b>	<b>0.60</b>	<b>0.60</b>	<b>0.79</b>	<b>0.62</b>	<b>0.60</b>	<b>0.59</b>	<b>0.60</b>
<b>2004</b>	<b>0.65</b>	<b>0.66</b>	<b>0.82</b>	<b>0.67</b>	<b>0.61</b>	<b>0.62</b>	<b>0.61</b>
<b>2005</b>	<b>0.67</b>	<b>0.66</b>	<b>0.82</b>	<b>0.68</b>	<b>0.60</b>	<b>0.61</b>	<b>0.60</b>
<b>2006</b>	<b>0.67</b>	<b>0.66</b>	<b>0.81</b>	<b>0.68</b>	<b>0.60</b>	<b>0.61</b>	<b>0.60</b>
<b>2007</b>	<b>0.67</b>	<b>0.66</b>	<b>0.81</b>	<b>0.68</b>	<b>0.60</b>	<b>0.61</b>	<b>0.60</b>
<b>2008</b>	<b>0.67</b>	<b>0.66</b>	<b>0.80</b>	<b>0.68</b>	<b>0.60</b>	<b>0.61</b>	<b>0.60</b>
<b>2009</b>	<b>0.67</b>	<b>0.66</b>	<b>0.80</b>	<b>0.68</b>	<b>0.60</b>	<b>0.61</b>	<b>0.60</b>
<b>2014</b>	<b>0.68</b>	<b>0.65</b>	<b>0.80</b>	<b>0.68</b>	<b>0.60</b>	<b>0.60</b>	<b>0.60</b>
<b>2019</b>	<b>0.68</b>	<b>0.66</b>	<b>0.80</b>	<b>0.69</b>	<b>0.60</b>	<b>0.60</b>	<b>0.60</b>

**Sources:** The historical data in columns (1), (2) and (3) are from Statement 6; those in column (4) and (5) are from Statement 4, those in column (6) are from Statement 2, and (7) are weighted averages.  
**Source:** Statistics Canada and Transport Canada

**Please indicate alternative forecast, if applicable, below in appropriate box.**

TABLE 7.1A LOAD FACTORS – ALL CANADIAN AIRPORTS							
Year	MAJOR AIR CARRIERS			REGIONAL /LOCAL		CHARTER	ALL AIR CARRIERS
	Domestic (1)	Transb. (2)	Other Int. (3)	Domestic (4)	Transb. (5)	Total (6)	Total (7)
2003	0.60	0.60	0.79	0.62	0.60	0.59	0.60
2004	0.65	0.66	0.82	0.67	0.61	0.62	0.61
2005							
2006							
2007							
2008							
2009							
2014							
2019							

Sources: The historic data in columns (1), (2) and (3) are from Statement 6; those in column (4) and (5) are from Statement 4, those in column (6) are from Statement 2, and (7) are weighted averages.  
Source: Statistics Canada and Transport Canada

**Please provide any comments you have on this topic**

Comments:

## 8. Labour Cost and Productivity –

[Assistance: pages 34, 35, 36](#)

<b>TABLE 8.2</b>			
<b>UNIT LABOUR COSTS</b>			
<b>(AVERAGE ANNUAL GROWTH RATE, %)</b>			
<b>Period</b>	<b>Wage Rate</b>	<b>Productivity</b>	<b>Unit Cost</b>
2003	-6.8%	-2.4%	-4.4%
2004	-1.7%	7.2%	-9.0%
2005	0.0%	10.0%	-10.0%
2006	0.5%	2.0%	-1.5%
2007	0.5%	1.1%	-0.6%
2008	0.5%	1.1%	-0.6%
2009	0.5%	1.1%	-0.6%
2014	0.5%	0.9%	-0.4%
2019	0.5%	0.8%	-0.3%

Source: Statistics Canada and Transport Canada

**Please provide any comments you have on this topic**

Comments:

## 9. Fuel Cost/ Fuel Efficiency–

[Assistance: pages 37, 38, 39, 40, 41, 42](#)

<b>TABLE 9.2</b>			
<b>UNIT FUEL COSTS</b>			
<b>(AVERAGE ANNUAL GROWTH RATE, %)</b>			
<b>Period</b>	<b>Fuel Price</b>	<b>Fuel Efficiency</b>	<b>Unit Cost</b>
<b>2003</b>	<b>14.76</b>	<b>-2.26</b>	<b>17.01</b>
<b>2004</b>	<b>13.51</b>	<b>0.00</b>	<b>13.51</b>
<b>2005</b>	<b>26.71</b>	<b>5.06</b>	<b>21.65</b>
<b>2006</b>	<b>-0.46</b>	<b>0.57</b>	<b>-1.03</b>
<b>2007</b>	<b>-9.98</b>	<b>0.53</b>	<b>-10.51</b>
<b>2008</b>	<b>-4.21</b>	<b>0.50</b>	<b>-4.71</b>
<b>2009</b>	<b>-3.12</b>	<b>0.47</b>	<b>-3.59</b>
<b>2014</b>	<b>1.68</b>	<b>0.34</b>	<b>1.34</b>
<b>2019</b>	<b>1.29</b>	<b>0.60</b>	<b>0.68</b>

Source: Statistics Canada and Transport Canada

**Please provide any comments you have on this topic**

Comments:

## 10. Airline Costs Other than Fuel and Labour— [Assistance: pages 43, 44, 45, 46, 47](#)

<b>TABLE 10.4</b>			
<b>TOTAL AIR CARRIERS COST BREAKDOWN</b>			
<b>(PERCENT BREAKDOWN, %)</b>			
<b>Cost Items</b>	<b>FORECAST</b>		
	<b>2009</b>	<b>2014</b>	<b>2019</b>
<b>Labour</b>	<b>22.9%</b>	<b>22.5%</b>	<b>22.2%</b>
<b>Fuel</b>	<b>21.5%</b>	<b>22.4%</b>	<b>23.2%</b>
<b>Total Fees</b>	<b>7.8%</b>	<b>7.7%</b>	<b>7.4%</b>
<b>Capital Costs</b>	<b>13.5%</b>	<b>13.0%</b>	<b>12.5%</b>
<b>Purchase Services</b>	<b>10.3%</b>	<b>10.3%</b>	<b>10.3%</b>
<b>Other</b>	<b>24.0%</b>	<b>24.2%</b>	<b>24.4%</b>
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Statistics Canada and Transport Canada

**Please provide any comments you have on this topic**

Comments:

# 11. Passenger Traffic Allocation

## Assumptions - [Assistance: pages 48, 49, 50, 51, 52, 53, 54, 55, 56](#)

Essentially, the Passenger Traffic Allocation Model (PTAM) converts an exogenous set of scheduled zone-pair passenger origin-destination demand forecasts, produced by the Passenger Origin-/Destination Model (PODM), into the corresponding set of station activity for major Canadian airports. Furthermore PTAM does all this on a system-wide basis, taking into account the interactions of each airport with the others. Many assumptions required for PTAM involve assumptions on the aircraft fleet, aircraft size, and load factors, which have already been discussed earlier in this report.

### Major PTAM Assumptions:

- A significant number of new routes will be added for the target years 2009, 2014 and 2019. (See list on Table 11.2)
- The number of markets with direct air service is expected to increase significantly during the forecast horizon. Most of the increase will be in markets with Non Stop Service Factors (Seats Over O/D passengers) of values between 0.5 to 1.5 (See Table 11.3D)
- A major improvement in the number of passengers able to fly to an international gateway without having to make a domestic connection first is predicted in the transborder and international sectors.

TABLE 11.2		
NEW NON-STOP ROUTES IN PTAM (*)		
2006-2009	2010-2014	2015-2019
YEG/FRA (Frankfurt, Germany)	YEG/LGA (New York, USA)	YCD/SEA (Washington, USA)
YEG/LHR (London, England)	YHM/DTW (Michigan, USA)	YEG/CVG (Ohio, USA)
YEG/SFO (California, USA)	YHZ/ATL (Georgia, USA)	YHM/PIT (Pennsylvania, USA)
YEG/YXH (Medecine Hat, ALTA)	YHZ/DCA (District of Columbia, USA)	YHZ/ORD (Illinois, USA)
YHM/LGA (New York, USA)	YLW/YQU (Grande Prairie, AB)	YHZ/YQR (Regina, SASK)
YHZ/PHL (Pennsylvania, USA)	YOW/MSP (Minnesota, USA)	YLW/YCD (Nanaimo, BC)
YHZ/YQB (Quebec, QUE)	YOW/YQR (Regina, SASK)	YLW/YQR (Regina, SASK)
YOW/CDG (Paris, France)	YQB/BOS (Massachusetts, USA)	YOW/MEX (Mexico, Central America)
YOW/DFW (Texas, USA)	YQB/CVG (Ohio, USA)	YOW/YSJ (Saint John, NB)
YOW/LAX (California, USA)	YUL/HKG (Hong Kong, Far East)	YQM/BOS (Massachusetts, USA)

YOW/YFC (Fredericton, NB)	YUL/SJU (Puerto Rico, USA)	YQT/YXE (Saskatoon, SASK)
YOW/YQM (Moncton, NB)	YUL/YXE (Saskatoon, SASK)	YQT/YXU (London, ON)
YQB/YQM (Moncton, NB)	YUL/YXU (London, ON)	YSB/YXU (London, ON)
YQM/CDG (Paris, France)	YVR/DCA-BWI (District of Columbia, USA)	YUL/GIG (Brazil, South America)
YQM/YFC (Fredericton, NB)	YVR/PHL (Pennsylvania, USA)	YUL/NRT (Narita, Japan)
YQM/YSJ (Saint John, NB)	YVR/STL (Missouri, USA)	YUL/YQR (Regina, SASK)
YSB/YWG (Winnipeg, MB)	YVR/WIQ-WIH (Taiwan, Far East)	YUL/YQT (Thunder Bay, ON)
YSB/YXU (London, ON)	YVR/YHZ (Halifax, NS)	YUL/YSB (Sudbury, ON)
YUL/DEN (Colorado, USA)	YVR/YXU (London, ON)	YVR/FCO (Rome, Italy)
YUL/STL (Missouri, USA)	YWG/CDG (Paris, France)	YVR/PRG (Prague, Czech Rep, )
YUL/TLV (Israel, Middle East)	YWG/LAX (Las Vegas, USA)	YVR/SDU-CGH-GIG (Brazil, South America)
YVR/CAN (Guangzhou, China)	YWG/LGA (New York, USA)	YVR/YZF (Yellowknife, NWT)
YVR/CDG (Paris, France)	YWG/YHZ (Halifax, NS)	YWG/DFW (Texas, USA)
YVR/DEL (India, Far East)	YWG/YYJ (Victoria, BC)	YWG/YLW (Kelowna, BC)
YVR/SAN-SMF (California, USA)	YXX/LAX-SFA (California, USA)	YWG/YQM (Moncton, NB)
YVR/SYD (Australia, Pacific)	YYC/BOS (Massachusetts, USA)	YXE/ORD (Illinois, USA)
YWG/LAS-PHX (Nevada, USA)	YYC/DCA (District of Columbia, USA)	YXU/ORD (Illinois, USA)
YWG/LHR-LGW (London, England)	YYC/HKG (Hong Kong, Far East)	YYC/FCO (Rome, Italy)
YWG/YSB (Sudbury, ON)	YYC/HNL (Hawaii, USA)	YYC/PDX (Oregon, USA)
YYC/LGA (New York, USA)	YYC/PHL (Pennsylvania, USA)	YYC/PRG (Prague, Czech Rep, )
YYC/NRT (Narita, Japan)	YYC/PSP (California, USA)	YYC/YQM (Moncton, NB)
YYJ/LAX (California, USA)	YYC/STL (Missouri, USA)	YYC/YXY (Whitehorse, YT)
YYZ/AUS (Austin, Texas, USA)	YYC/YTH (Thompson, MAN)	YYT/BOS (Massachusetts, USA)
YYZ/AVL (Henderson, NC, USA)	YYJ/PHX (Arizona, USA)	YYT/YFC (Fredericton, NB)
YYZ/BHM (Birmingham, AL, USA)	YYJ/YQR (Regina, SASK)	YYZ/DLH (Duluth, MN, USA)
YYZ/CAI (Egypt, North Africa)	YYZ/AZO (Kalamazoo, MI, USA)	YYZ/LAN (Lansing, MI, USA)
YYZ/DXB (Dubai, United A. Emir)	YYZ/BIL (Billings, MO, USA)	YYZ/MSN (Madison, WI, USA)
YYZ/GRB (Greenbay, WI, USA)	YYZ/CAK (Akron, OH, USA)	YYZ/SYD (Australia, Pacific)
YYZ/HNL (Hawaii, USA)	YYZ/CRW (Charleston, PA, USA)	
YYZ/OAK (Oakland, CA, USA)	YYZ/FWA (Fort Wayne, IN, USA)	
YYZ/ONT (Ontario, CA, USA)	YYZ/JNB (Johannesburg, SA)	
YYZ/SDF (Louisville, KY, USA)	YYZ/MYR (Myrtle B, FL, USA)	
YYZ/SRQ (Sarasota, FL, USA)	YYZ/OKC (Oklahoma City, USA)	
YYZ/SYR (Syracuse, NY, USA)	YYZ/OMA (Nebraska, USA)	
YYZ/TLH (Tallahassee, FL, USA)	YYZ/ORF (Norfolk, VA, USA)	
YYZ/YDF (Deer Lake, NFLD)	YYZ/PDX (Portland, OR, USA)	
	YYZ/RIC (Richmond, VA, USA)	

	<b>YYZ/SIN (Singapore, Southeast Asia)</b>	
	<b>YYZ/SJO (San Jose, CA, USA)</b>	
	<b>YYZ/SLC (Salt Lake, UT, USA)</b>	
	<b>YYZ/XNA (Nashville, TE, USA)</b>	
	<b>YYZ/YQX (Gander, NFLD)</b>	

Table 11.2 shows the non-stop routes that have been added to the model for the target years 2009, 2014 and 2019.

**Please provide any comments you have on this topic**

Comments:

<b>Table 11.3 D</b> <b>Non-Stop Service Factors (Seats / O&amp;D passengers)</b> <b>PTAM City-Pairs – Top 10 Airports</b> <b>ALL SECTORS</b>					
	<b>&gt; 5.0</b>	<b>1.5 to 5.0</b>	<b>0.5 to 1.5</b>	<b>&lt; 0.5</b>	<b>ALL</b>
<b>2004</b>	19	112	53	25	209
<b>2009</b>	18	118	66	31	233
<b>2014</b>	18	118	85	32	253
<b>2019</b>	18	118	104	30	270

It can be seen that the number of markets with direct air service is expected to increase significantly during the forecast horizon, from 209 PODM markets in 2004 to 270 in 2019. Most of the increase will be in markets with NNSF of values 0.5 to 1.5.

**Please provide any comments you have on this topic**

Comments:

<b>Table 11.4A</b>					
<b>Distribution of O&amp;D Passengers by Route Preference</b>					
<b>PTAM City-Pairs – Top 10 Airports</b>					
<b>DOMESTIC SECTOR</b>					
	<b>DNS</b>	<b>1-CNT</b>	<b>2-CNT</b>	<b>3-CNT</b>	<b>4-CNT</b>
<b>2004</b>	85.2%	13.4%	1.3%	0.1%	0.0%
<b>2009</b>	85.2%	13.3%	1.4%	0.1%	0.0%
<b>2014</b>	84.8%	13.7%	1.5%	0.1%	0.0%
<b>2019</b>	84.6%	13.9%	1.4%	0.1%	0.0%

<b>Table 11.4B</b>					
<b>Distribution of O&amp;D Passengers by Route Preference</b>					
<b>PTAM City-Pairs – Top 10 Airports</b>					
<b>TRANSBORDER SECTOR<sup>4</sup></b>					
	<b>DNS</b>	<b>1-CNT</b>	<b>2-CNT</b>	<b>3-CNT</b>	<b>4-CNT</b>
<b>2004</b>	61.4%	35.6%	2.8%	0.1%	0.0%
<b>2009</b>	62.8%	34.5%	2.6%	0.1%	0.0%
<b>2014</b>	62.8%	34.3%	2.8%	0.1%	0.0%
<b>2019</b>	63.2%	33.9%	2.7%	0.1%	0.0%

<b>Table 11.4C</b>					
<b>Distribution of O&amp;D Passengers by Route Preference</b>					
<b>PTAM City-Pairs – Top 10 Airports</b>					
<b>OTHER INTERNATIONAL SECTOR<sup>5</sup></b>					
	<b>DNS</b>	<b>1-CNT</b>	<b>2-CNT</b>	<b>3-CNT</b>	<b>4-CNT</b>
<b>2004</b>	43.1%	46.5%	9.7%	0.6%	0.0%
<b>2009</b>	45.9%	44.8%	8.7%	0.6%	0.0%
<b>2014</b>	49.7%	42.2%	7.6%	0.5%	0.0%
<b>2019</b>	51.4%	40.5%	7.6%	0.4%	0.0%

<sup>4</sup> Connections beyond the first transborder gateway are not included in this analysis

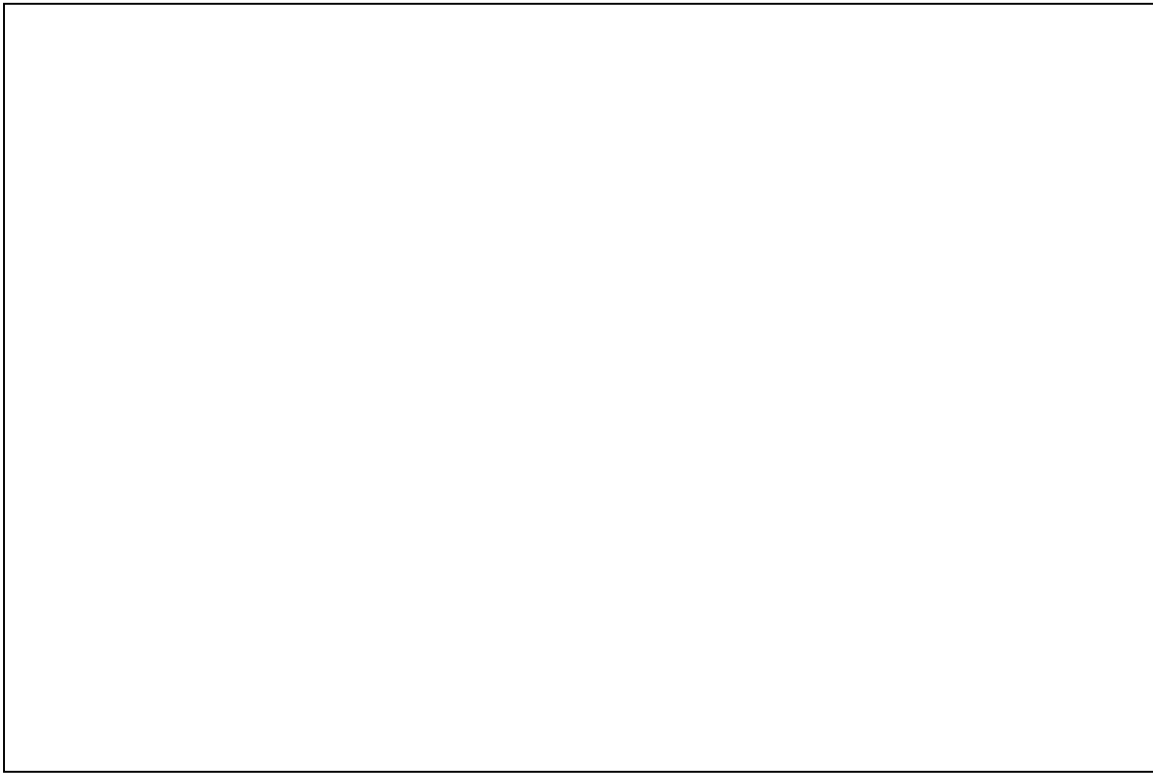
<sup>5</sup> Connections beyond the first other international gateway are not included in this analysis

Historical and predicted distribution of origin and destination passenger's traveling route by preference, at the Top 10 national airports, are presented in Table 11.4 (A to C). As expected the vast majority of domestic passengers, approximately 85.2% during 2004, are able to travel direct non-stop to their destinations. The proportion of non-stop travel drops sharply when considering international air travel, namely approximately 61.4% in the transborder sector and 43.1% in the other international sector also during 2004.

**Please provide any comments you have on this topic**


Comments:

## 12. New Technology - [Assistance: pages 57, 58, 59, 60](#)



**Please provide any comments you have on this topic**

Comments:



## **Any Other Factor Not Included in This Report:**

**Please provide any comments you have on this topic**

Comments:

