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Economic Cooperation**

Develop Air Connectivity in the APEC Region

CANADA

Tourism Working Group

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Glossary

The following section presents a list of commonly used expressions and abbreviations found in the report.

Connecting Potential – Common rates of passengers connecting beyond/behind when traveling through a hub to/from a particular region.

Induction/Stimulation – Initial spike in passenger demand when new non-stop service is offered due to better accessibility, shorter travel time, lower cost, etc.

Load Factor – The ratio of seats sold to available seats on a particular flight.

List of Abbreviations

PDEW – Passenger daily each way (passenger demand in each direction between a select origin and destination).

SDEW – Seats daily each way (number of seats offered in each direction on a non-stop or one-stop flight segment).

OD – Origin and destination.

Airport Codes:

AAQ – Anapa, RUS

AYP – Ayacucho, PE

BUR – Burbank, US

ACA – Acapulco, MEX

BCD – Negros Occidental,

BWN – Bandar Seri
Begawan, BD

ADL – Adelaide, AUS

PH

BXU – Butuan, PH

AER – Sochi, RUS

BDJ – Banjarmasin, INA

CAN – Guangzhou, PRC

AGU – Aguascalientes,
MEX

BHE – Blenheim, NZ

CBO – Cotabato, PH

BJX – Silao, MEX

CCP – Concepción, CHL

AKJ – Asahikawa, JPN

BKI – Kota Kinabalu, MAS

CEB – Cebu, PH

AKL – Auckland, NZ

BKK – Bangkok, THA

CEI – Chiang Rai, THA

ANF – Antofagasta, CHL

BLI – Bellingham, US

CEK – Chelyabinsk, RUS

AOR – Alor Setar, MAS

BMV – Buon Ma Thuot,

CEN – Ciudad Obregón,
MEX

VN

AQP – Arequipa, CHL

BNA – Nashville, US

ARH – Arkhangelsk, RUS

BNE – Brisbane, AUS

CGK – Jakarta, INA

ASF – Astrakhan, RUS

BOS – Boston, US

CGO – Zhengzhou, PRC

ATL – Atlanta, US

BPN – Balikpapan, INA

CGQ – Changchun, PRC

AUS – Austin, US

CGY – Cagayan de Oro and Iligan, PH	DLI – Da Lat, VN	HND – Tokyo, JPN
CHC – Christchurch, NZ	DME – Domodedovo, RUS	HNL – Honolulu, US
CJA – Cajamarca, PE	DMK – Bangkok, THA	HRB – Harbin, PRC
CJC – Calama, CHL	DPS – Bali, INA	HUI – Hue, VN
CJJ – Cheongwon-gu, ROK	DRW – Darwin, AUS	HUZ – Huizhou, PRC
CJU – Jeju, ROK	DTW – Detroit, US	IAD – Washington, US
CKG – Chongqing, PRC	DUD – Dunedin, NZ	IAH – Houston, US
CLT – Charlotte, US	DVO – Davao City, PH	ICN – Seoul, ROK
CME – Ciudad del Carmen, MEX	EAT – Douglas County, US	ILO – Ilo, PE
CNS – Cairns, AUS	EWR – Newark, US	IQQ – Iquique, CHL
CNX – Chiang Mai, THA	EZE – Buenos Aires, ARG	IQT – Iquitos, PE
CSX – Changsha, PRC	FAT – Fresno, US	ISG – Ishigaki, JPN
CTS – Hokkaido, JPN	FLL – Fort Lauderdale, US	ITM – Osaka, JPN
CTU – Chengdu, PRC	FOC – Fuzhou, PRC	IWK – Iwakuni, JPN
CUN – Cancun, MEX	FSZ – Shizuoka, JPN	JFK – New York, US
CUZ – Cusco, PE	FUK – Fukuoka, JPN	JHB – Johor, MAS
CVG – Cincinnati, US	GDL – Guadalajara, MEX	JIN – Quanzhou, PRC
CXR – Nha Trang, VN	GEG – Spokane, US	JNZ – Jinzhou, PRC
DAD – Da Nang, VN	GMP – Seoul, ROK	JOG – Yogyakarta, INA
DAL – Dallas, US	GUM – Tamuning and Barrigada, GUM	JUL – Juliaca, PE
DCA – Washington, US	GYS – Guangyuan, PRC	KBR – Kota Bharu, MAS
DEN – Denver, US	HAK – Haikou, PRC	KBV – Krabi, THA
DFW – Dallas, US	HAN – Ha Noi, VN	KCH – Kuching, MAS
DGO – Durango, MEX	HGH – Hangzhou, PRC	KGD – Kaliningrad, RUS
DGT – Dumaguete, PH	HKG – Hong Kong, China, HKC	KHH – Kaohsiung, CT
DJB – Jambi City, INA	HKT – Phuket, THA	KHN – Nanchang, PRC
DLC – Dalian, PRC		KIX – Osaka, JPN
		KKE – Kerikeri, NZ
		KLO – Kalibo, PH

KMG – Kunming, PRC	MFM – Macau, MAC	PDG – Sumatra, INA
KNH – Kinmen, PRC	MIA – Miami, US	PEK – Beijing, PRC
KNO – Kuala Namu, INA	MLM – Alvaro Obregon, Michoacan, MEX	PEN – Penang, MAS
KOJ – Kirishima, JPN	MNL – Manilla, PH	PER – Perth, AUS
KRR – Krasnodar, RUS	MRY – Monterey, US	PHL – Philadelphia, US
KUF – Samara, RUS	MSP – Minneapolis–Saint Paul, US	PHX – Phoenix, US
KUL – Kuala Lumpur, MAS	MTT – Cosoleacaque, MEX	PIU – Piura, PE
KWL – Guilin, PRC	MTY – Apodaca, MEX	PLM – Palembang, INA
KZN – Tatarstan, RUS	MZG – Magong City, CT	PLW – Palu, INA
LAS – Las Vegas, US	NBC – Nizhnekamsk, RUS	PMC – Puerto Montt, CHL
LAX – Los Angeles, US	NGB – Ningbo, PRC	PMR – Palmerston North City, NZ
LED – Saint Petersburg, RUS	NGO – Nagoya, JPN	PNK – Pontianak, INA
SVX – Yekaterinburg, RUS	NKG – Nanjing, PRC	POM – Port Moresby, PNG
LGA – NY–La Guardia, US	NKM – Nagoya, JPN	PPQ – Paraparaumu, NZ
LGK – Padang Matsirat, Langkawi, MAS	NNG – Nanning, PRC	PQC – Phu Quoc, VN
LHW – Lanzhou, PRC	NPE – Napier, NZ	PSP – Palm Springs, US
LIM – Lima, PE	NPL – New Plymouth, NZ	PUS – Busan, ROK
LOP – Lombok, INA	NRT – Tokyo, JPN	PVG – Shanghai, PRC
LPF – Liupanshui, PRC	NSN – Nelson, NZ	PVR – Puerto Vallarta, MEX
LPT – Lampang, THA	NTG – Nantong, PRC	PXU – Pleiku, VN
MBT – Masbate City, PH	OAK – Oakland, US	PYX – Pattaya, THA
MCC – Sacramento, US	OAX – Oaxaca, MEX	RDU – Raleigh, Durham, US
MCO – Orlando, US	OKA – Naha, JPN	REP – Siem Reap, KHM
MDW – Chicago, US	OOL – Gold Coast, AUS	REX – Reynosa, US
MDZ – Mendoza, ARG	ORD – Chicago, US	RGN – Mingaladon, MMR
MEL – Melbourne, AUS	OVB – Novosibirsk, RUS	
MEX – Mexico City, MEX	OZC – Ozamiz, PH	

RNO – Reno, US	STW – Stavropol Krai, RUS	TSA – Songshan, CT
ROC – Rochester, US	SUB – Surabaya, INA	TSN – Tianjin, PRC
ROT – Rotokawa, NZ	SVO – Moscow, RUS	TTJ – Tottori, JPN
ROV – Rostov-on-Don, RUS	SVX – Koltsovo, RUS	TXG – Taichung, CT
RSU – Yeosu, ROK	SWA – Jieyang Chaoshan, PRC	TYN – Taiyuan, PRC
RTW – Saratov City, RUS	SYD – Sydney, AUS	UFA – Ufa, RUS
RXS – Roxas City, PH	SYO – Sakata, JPN	UIH – Qui Nhon, VN
SAN – San Diego, US	SYX – Sanya, PRC	UKB – Kobe, JPN
SCL– Santiago, CHL	SZX – Shenzhen, PRC	UPG – Makassar, INA
SEA – Seattle, US	TAC – Tacloban, PH	URC – Urumqi, PRC
SFO – San Francisco, US	TAM – Tampico, MEX	USM – Koh Samui, THA
SGN – Ho Chi Minh, VN	TAO – Qingdao, PRC	VCL – Chu Lai, VN
SHA – Shanghai, PRC	TAV – Tau, ASM	VDH – Dong Hoi, VN
SHE – Shenyang, PRC	TBP – Tumbes, PE	VER – Veracruz, MEX
SIN – Singapore, SGP	TDX – Trat, THA	VII – Vinh, VN
SIP – Simferopol, UKR	TGG – Kuala Terengganu, MSA	VKO – Moscow, RUS
SJC – San Jose, US	TGZ – Chiapa de Corzo, MEX	VOZ – Voronezh, RUS
SJD – San Jose del Cabo, MEX	TIJ – Tijuana, MEX	VSA – Villahermosa, MEX
SLC – Salt Lake City, US	TKG – Bandar Lampung, INA	VVO – Vladivostok, RUS
SLP – San Luis Potosi, MEX	TLC – Toluca, MEX	WAG – Whanganui, NZ
SMF – Sacramento, US	TNA – Jinan, PRC	WEH – Weihai, PRC
SNA – Santa Ana, US	TPE – Taipei, CT	WLG – Wellington, NZ
SOC - Solo/Surakarta, INA	TPP – Tarapoto, PE	WNZ – Wenzhou, PRC
SPN – Saipan, US	TRC – Torreón, MEX	WRE – Whangarei city, NZ
SRG – Semarang, INA	TRU – Trujillo, PE	WUH – Wuhan, PRC
STL – St. Louis, US		WUX – Wuxi, PRC
		XIY – Xi'an, PRC
		XMN – Xiamen, PRC

YEG – Edmonton, CDA

YGJ – Yonago, PRC

YHZ – Halifax, CDA

YKA – Kamloops, CDA

YLW – Kelowna, CDA

YNJ – Yanji, PRC

YOW – Ottawa, CDA

YPR – Prince Rupert, CDA

YQM – Moncton, CDA

YQR – Regina, CDA

YSJ – Saint John, CDA

YTS – Timmins, CDA

YUL – Montreal, CDA

YVR – Vancouver, CDA

YWG – Winnipeg, CDA

YXC – Cranbrook, CDA

YXS – Prince George, CDA

YXT – Terrace-Kitimat,
CDA

YYB – North Bay, CDA

YYC – Calgary, CDA

YYJ – Victoria, CDA

YYZ – Toronto, CDA

YZP – Sandspit, CDA

YZR - Sarnia, CDA

ZAL – Valdivia, CHL

ZCL – Calera de Victor
Rosales, MEX

ZQN – Queenstown, NZ

ZUH – Zhuhai, PRC

1. Introduction to the project

The APEC Secretariat and Economies have observed that the flow of goods, services, capital and people in the APEC Region is constrained by air connectivity limitations and gaps that exist between the APEC economies, particularly between the Americas and Asia Pacific. Improving connectivity is a long-term target of the APEC economies. The APEC Tourism Working Group (TWG) and Transport Working Group (TPTWG) are particularly interested in pursuing this long-term target.

This Project (the “Project”) was proposed in 2014 by Thailand and co-sponsored by Australia; Indonesia; Malaysia; Peru; the Philippines; and Chinese Taipei and with the aim of developing air connectivity in the APEC Region and in turn stimulate a more efficient flow of goods, services, capital and people. The Project has the following objectives:

- To develop market-demand-based recommendations for potential new routes, improved flight schedule connection times and hubs between APEC economies based on analysis of air passenger flow, schedules and new aircraft range capability, including analysis of the number of seats, flights and air traffic.
- To help airlines and regulators develop more accurate demand predictions so they can in turn help APEC economies by providing better air connectivity services, capacity and schedules.

The Project was approved in December 2014 with IATA Consulting selected as the consultant in May 2015. IATA was mandated to complete the following tasks:

1. Develop market-demand-based recommendations for potential new routes.
2. Provide recommendations to improve connection between flights at the main hubs linking the APEC economies.
3. Determine which APEC market-pairs could benefit from the introduction of new aircraft with an extended range.

2. Approach followed and data used

This section explains the methodology applied by IATA and presents the data used to feed the various underlying analysis.

To conduct the analysis, IATA took systematic steps identified in Figure 1.

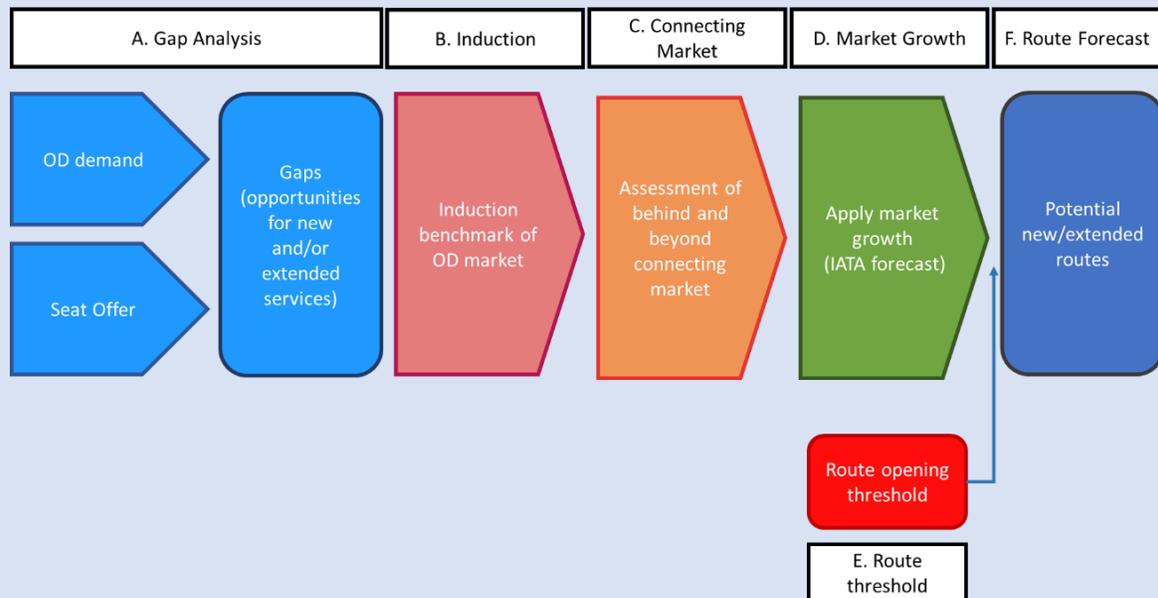


Figure 1: Process used to complete analytical work

The first step involved a demand-supply gap analysis aiming at identifying unserved routes presenting potential demand for future development. The size that this potential demand could actually represent if turned into a direct service in the future was subsequently forecast, using realistic assumptions related to induction, connecting potential and demand growth.

2.1 Data fueling the model

Principal data for the model originates from Airport IS. IATA’s Airport IS system uses IATA billing and settlement plan data to provide detailed demand information on total air traffic. The database is complemented by a supply module (SRS Analyser) provided by Innovata. This data has been available for over a 10-year historical period (since 2005).

Approximately 18,500 international APEC routes were analyzed in the execution of this project. Airport IS data was particularly relevant in the gap analysis and assumption development.

Academic articles and published ratios were also used to justify some of the assumptions, including induction and origin destination traffic captured through direct service.

For some of the other variables used in the final traffic determination, economic forecasts were extracted from IHS Global Insight, one of the world’s largest commercially available economic databases.

Tourism data was extracted from the United Nations World Tourism Organization.

2.2 Gap analysis

IATA applied a funnel approach in conducting the analysis. It first considered the market at the economy pair level, followed by city pairs leading to a market potential assessment (see figure 2 below). Both seat supply and passenger demand were considered in the analysis to identify gaps in air service.

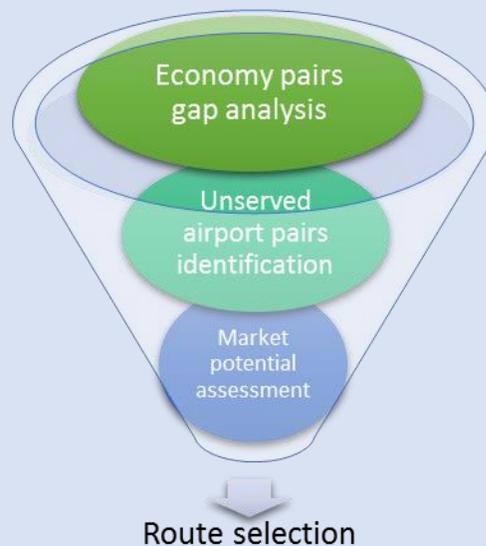


Figure 2: Funnel approach used to conduct analysis

The economy-pair analysis allowed IATA to identify unserved markets.

The analysis showed that there was an average daily demand of 649 Passengers Daily Each Way (PDEW) in 2015 that fly via existing connecting routes between Canada and the Philippines where only an average of 478 direct (on non-stop service) seats were offered daily each way.

When extending the analysis down to the city pairs, it was possible to identify the large unserved markets between the two economies: 224 Passengers Daily Each Way (PDEW) travelled between YYZ and MNL in 2015.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand (PDEW)	non-stop seats in 2015 (SDEW)	1-stop seats in 2015 (SDEW)
YYZ	Canada	MNL	The Philippines	224	0	184
YYZ	Canada	SGN	Viet Nam	70	0	0
YYC	Canada	ITM	Japan	66	0	0
YUL	Canada	PVG	China	63	0	0
YYZ	Canada	SYD	Australia	62	0	289
YYC	Canada	MNL	The Philippines	60	0	0
YYZ	Canada	CAN	China	60	0	0
YVR	Canada	BKK	Thailand	57	0	0
YWG	Canada	MNL	The Philippines	55	0	0
YVR	Canada	ITM	Japan	53	0	0
YVR	Canada	BNE	Australia	52	0	0
YYZ	Canada	BKK	Thailand	51	0	0
YVR	Canada	MEL	Australia	50	0	0
YYC	Canada	HKG	Hong Kong, China	48	0	0
YEG	Canada	MNL	The Philippines	44	0	0
YUL	Canada	LIM	Peru	43	0	0
YYZ	Canada	FUK	Japan	40	0	0
YYC	Canada	ICN	Republic of Korea	39	0	0
YUL	Canada	MNL	The Philippines	39	0	0
YYZ	Canada	SIN	Singapore	38	0	0
YYC	Canada	PEK	China	38	0	0
YVR	Canada	SGN	Viet Nam	38	0	0
YVR	Canada	SIN	Singapore	37	0	0
YUL	Canada	BKK	Thailand	35	0	0
YYZ	Canada	MEL	Australia	31	0	0
YOW	Canada	PEK	China	31	0	0
YUL	Canada	NRT	Japan	29	0	0
YVR	Canada	LIM	Peru	29	0	0
YYZ	Canada	ITM	Japan	29	0	0
YUL	Canada	SCL	Chile	27	0	0

Table 1: Top 30 unserved routes from Canada, 2015 data

2.3 Induction

To determine realistic estimates of the success of new air service, various assumptions were considered and applied to current passenger demand.

Induction is a well proven concept that explains how new direct air service has a significant impact on increasing the total number of O&D passengers on a city pair market. This is due to product improvement: shorter travel time, greater convenience and more affordable ticket prices. The extent to which the market will be stimulated varies based on current levels of service (price and flight frequency) offered on a particular route. As stated in the Successful Air Service Development presentation (ICF International, 2014) a market's first non-stop flight can stimulate demand by 100% to 300%.

IATA quantified this induction value to show a relationship between two primary factors: region pair and the size of the market before a new route is initiated.

The table below shows the stimulation rates considered for this analysis of Canada. For some instances where inadequate data (less than 4 routes) to conduct a region pair analysis was available, other variables were considered, including the average of all routes, the average of long-haul routes or the average of short-haul routes depending on the specific market.

Market	Base of 10,000 Annual Pax	Base of 25,000 Annual Pax	Base of 50,000 Annual Pax
All APEC Economies	130%	42%	18%
Long Haul	101%	36%	16%
Short Haul	150%	50%	21%
North America-Asia	104%	40%	
North America-China	137%	55%	
North America-North East Asia	70%	26%	
North America-Peru, Chile	90%	28%	

Table 2: Stimulation rates applied to the analysis

2.4 Connecting potential

Increasing the quality of connections through alliance agreements, codeshares, shorter journey times or fewer stops increases overall travel demand in connecting markets. It is a normal phenomenon for new routes to not only increase demand for the city pairs served, but also for beyond and behind destinations that are now more easily accessible (Swan, 2008). On long-haul routes, often two-thirds of the passengers will make a connection.

IATA's analysis found that connecting markets would stimulate at various rates depending on the region of origin and the hub airport being flown through. These ratios are applied in determining the impact of a new route on connecting flows.

Connecting rates to be applied in this project for flights connecting at the main Canadian hubs were estimated based on traffic from various regions flying YVR, YYC, YYZ and YUL, as well as the foreign hubs being flown to and from Canada.

	YVR	YYC	YYZ	YUL
North America	30.30%	31.90%	36.50%	24.10%
Australasia	51.30%		54.30%	
Asia	30.20%	47.30%	21.10%	81.30%
South East Asia	80.40%		49.60%	
China	28.50%		25.90%	
North Asia	27.50%	33.10%	31.40%	53.20%
Peru-Chile			70.60%	

Table 3: Average rate of connecting passengers at hub airports in Canada

2.5 Demand growth

This refers to the consideration of the natural growth observed on a market segment. IATA Economics publishes a detailed inter- and intra-regional global traffic forecast. These demand growth forecasts were used to provide a regionally specific rate of growth to and from Canadian between 2016 and 2018. Growth was typically seen to be approximately 5%. Demand growth also refers to the fact that approximately 80% of a market will choose a non-stop flight option if it is available (Belobaba, 2015).

2.6 Other

Other factors, including distance and unused traffic rights, were used to refine the assessment of potential new services to be opened. Distance considers the possibility of offering a non-stop flight with existing technology, using 15,000km as a maximum distance for a non-stop flight. Unused traffic rights consider the bilateral agreements between economies and the current use of those bilateral rights.

2.7 Final route forecast

After conducting the gap analysis and applying the established rates from the various assumptions, the future market potential was estimated, as illustrated in Figure 3 below for the YYZ-BKK route.

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deirect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Calculations	
YYZ	BKK	Thailand	(A) 51	(B) 80%	(C) 54%	(D) 54%		
				(1) 41	23		(1) = Ax B	
				(2)			(2) = 1xC	
			Subtotal	(3)	63		(3) = 1+2	
			YYZ - BKK Total Market Potential (2015 Base)				(4) 138	(4) = 3/(1-D)

Figure 3: Example of the various assumptions being applied to determine the potential for new air service

3. Canada

A summary of Canada’s economy and demographics, aviation demand, and airport-specific information is presented in this section.

3.1 Economy and demographics

Canada is the world's second-largest nation by total area and the largest North American economy. Canada extends from the Pacific to the Atlantic and north to the Arctic Ocean. The United States-Canadian border is the longest land border in the world.

3.1.1 Demographics

Canada’s population was estimated at 36.3 million in 2016 (United Nation 2015). The majority of Canadians live in a narrow Southern belt along the border with the United States. Canada is one of the most sparsely populated countries in the world, with much of its land inhospitable. The economy’s population density was just 4 persons per square kilometer in 2016 (United Nation, 2015).

The most common ethnic origins in Canada are European (77%), Asian (14%) and Aboriginal (4%) (2011 Census). English and French are the official languages of Canada. More than half of Canadians reported English being their first language and around 23.2% reported French. The only other language in Canada that is the mother tongue of more than a million people is Chinese.

Canada’s population is expected to continue growing at a historical rate of approximately 0.81% p.a. over the next 10 years (United Nation, 2015).

Canada is highly urbanized with approximately 81.8% of the population living in urban areas. More than half of Canadians live in just two provinces: Ontario, where one in three Canadians live, and Quebec, where almost a quarter of Canadians live. Major urban provinces/territories and populations include:

Province	Population (millions)
1. Ontario	13.9
2. Quebec	8.3
3. British Columbia	4.7
4. Alberta	4.2
5. Manitoba	1.3
6. Saskatchewan	1.1
7. Nova Scotia	0.9

Table 4: Largest Canada provinces (2016 estimates, Statistics Canada)

3.1.2 Economy

Canada's economy is largely driven by its manufacturing, mining and service sectors in the past decades. The petroleum sector is rapidly expanding, as Alberta's oil sands significantly boosted Canada's proven oil reserves. Canada now ranks third in the world in proven oil reserves, behind Saudi Arabia and Venezuela, and is the world's fifth-largest oil producer. (Central Intelligence Agency). As with other developed economies, the Canadian economy is dominated by the service sector, which makes up 70.5% of its GDP, followed by industry (28.9%) and agriculture (1.6%) (Central Intelligence Agency). In 2015, Canada ranked 10th in terms of economy size and 15th in terms of per capita income. Falling oil prices have negatively affected the Canadian economy in recent years; its GDP growth has been approximately 1.97% p.a. over the past three years (Intereconomyal Monetary Fund, 2016).

The U.S. is Canada's principal trading partner, thanks to the 1989 U.S.-Canada Free Trade Agreement (FTA) and the 1994 North American Free Trade Agreement (NAFTA) (which includes Mexico). Canada enjoys a substantial trade surplus with the U.S., which absorbs about three-fourths of Canadian merchandise exports each year. Canada is the U.S.'s largest foreign supplier of energy, including oil, gas and electric power, and a top source of U.S. uranium imports. Other major trading partners of Canada include China and Mexico (Central Intelligence Agency).

Economic growth in Canada is projected to recover in 2016 and reach 2.3% in 2017. The drag from falling energy investments should fade away by early 2016, while non-energy exports lead the subsequent pick-up with business investment following. Reducing barriers to foreign direct investment in telecommunications, broadcasting and airlines, and continued efforts to increase the quantity and productivity of R&D would raise long-term growth prospects (OECD).

3.1.3 Tourism

Tourism is Canada’s largest service export and is important to all regions of the economy. It is present in both urban and rural areas, as well as in indigenous communities and in the North.

Domestic travel within Canada has grown steadily since 2000, while the number of intereconomiesal arrivals to Canada has been relatively static since 2009. In 2015, Canada received 17.8 million international tourists, a growth of 7.5% from the previous year, while the growth in international tourist arrivals globally was 4.4%. The United States is Canada’s most important market, with a 70% share of overnight visitors in 2015. The number of international arrivals to Canada is expected to increase to 25.4 million by 2026, at an annual rate of 2.8%. In 2015, the travel and tourism sector contributed (directly and indirectly) to 6.4% of GDP, with the direct contribution estimated at 1.8% (World Travel and Tourism Council, 2016).

3.2 Aviation demand

3.2.1 Recent Demand Growth

In 2015, an estimated 131 million enplaned and deplaned passengers were reported at Canadian airports, up by 0.3% compared to 2014, comprising 78.4 million in domestic services, 25.6 million on cross-border services (to U.S.) and 17.0 million on other international services. Between 2005 and 2015, total enplaned and deplaned air passenger traffic grew by 38%, or 3.3% per year on average (Transport Canada, 2016).

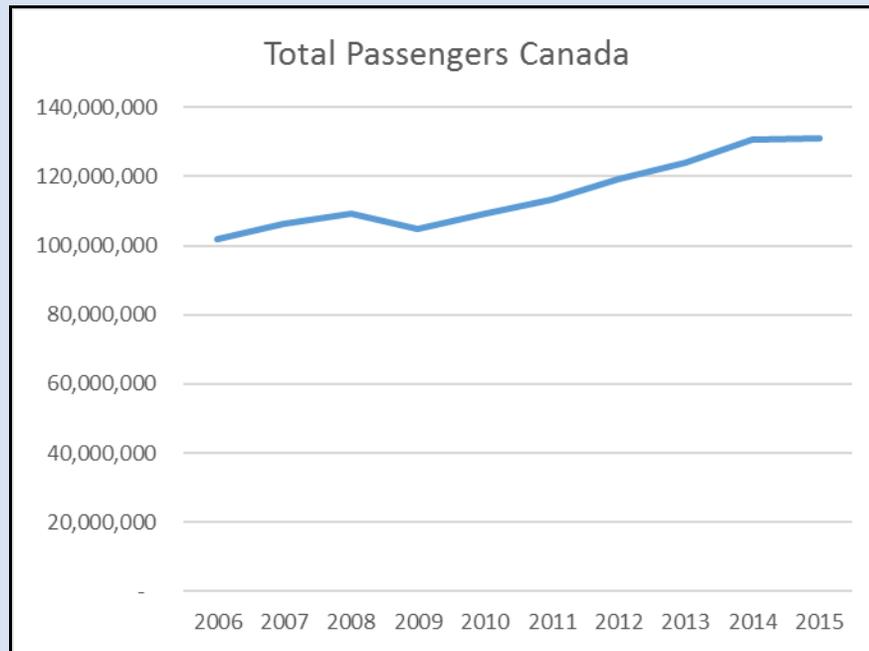


Figure 4: Total air traffic Canada 2006-2015 (Transport Canada, 2016).

In 2015, Canadian airports loaded and unloaded an estimated 1.2 million tonnes of freight, up by 7.2% from 2014. The value of Canada's international air cargo trade amounted to \$128.1 billion in 2015, an increase of 9.6% over 2014. High-value commodity groups carried by air were mainly machinery and electronic equipment, aircraft material, precious minerals/stone and pharmaceutical products (Transport Canada, 2016).

3.2.2 Air Service to Canada

International capacity to Canada has grown from 22.3 million inbound seats in 2005 to 33.5 million in 2015. The growth has mainly been driven from North America (U.S., Mexico, etc.), Europe (UK, France, Germany, etc.), Asia (Hong Kong and China, Japan, etc.) and the Caribbean (Cuba, Dominican Republic, Jamaica, etc.) (Airport IS, 2016).

In 2015 the strongest direct aviation capacity growth within the APEC region was to the Philippines (up by 34%), Japan (up by 18.2%) and Peru (up by 17.4%) (Airport IS, 2016).

3.2.3 Aviation and the Economy

Economic Footprint

In 2012 the aviation industry directly supported 141,000 jobs, producing \$10.6 billion in direct GDP (2012 dollars). Including multiplier effects and inflation, the air transportation industry supported almost 405,000 jobs in 2012, generating \$34.9 billion in GDP (Conference Board of Canada, 2013).

Consumer Benefits

The aviation industry has benefits for vacationing overseas and enables long-haul holidays. In 2013, among all modes of transport, air transport accounted for 30% of overnight stays made by Canadian residents to the United States for non-business purpose. And this percentage increases to 100% when Canadian residents make overnight trips to other non-U.S. overseas destinations (Statistics Canada, 2015).

Long-term impact

Economically, aviation has a long-term impact in Canada. According to the Conference Board of Canada (2013), air travel enables long-term economic growth by:

- Providing better access to foreign markets for Canadian-based business. Canada is a trade-dependent economy, with one in three jobs dependent on exports. Thus, Canadian business relies on Canada's air transportation networks to test markets, meet customers, and deliver goods and services overseas. Many of the tangible products Canada produces come from remote and northern regions, where roads may be unavailable during winter, and many of Canada's raw materials and services are imported from overseas. As such, air infrastructure is a crucial enabler for international trade.

- Attracting skilled foreign labour. New Canadians value the connectivity offered by air travel, as they will often travel back to their home of origin to visit friends and family or have their families visit them. This is demonstrated by the fact that 17% of Canadian residents' overnight trips abroad are VFR (visiting friends and relatives) and 27% of overnight trips by visitors to Canada are VFR. As such, air transportation is key to advancing the Canadian economy, given the skill shortage and demographic challenge Canada faces today and will likely face well into the future.
- Two of the fastest-growing regions in the world in terms of demand for air travel are Asia and Latin America. Growth of these regions is forecast to continue to be much higher than North America and Europe. According to Boeing's forecast (2015), Asia's annual traffic growth will be 6.2% over the next 20 years and Latin America 6.6%, compared with 2.4% for North America and 3.3% for Europe. China, the world's top tourism source market, increases expenditure abroad by 27% in 2014 to reach a total of USD 165 billion. This widened the gap in tourism expenditure between China and the second largest spender, the United States, to USD 54 billion (World Tourism Organization 2015). Canadian airports are well positioned to be connecting points for traffic between China/Japan/Republic of Korea and Latin America (Mexico and Central South America). Generally, flight distances are too long to be flown non-stop on most of these routes.

3.2.4 Government Position on Aviation

Transport Canada collaborates with other Canadian government departments, airport authorities, airlines and, where applicable, Canada's bilateral partners to develop and promote measures that facilitate the efficient, safe and secure flow of international passenger and cargo traffic. The Canadian government has been taking a pro-active approach to the liberalization of air transport agreements (ATA). As of May 2016, Canada has concluded open sky agreements with 46 economies that cover approximately 70% of Canada's international passenger traffic. Currently, about 98% of Canada's overall international passenger traffic is covered by ATAs that are either open or contain sufficient capacity to meet current or foreseeable demand. Since 2006, the number of bilateral partners has gone from 73 to 115 (58% increase). In 2015 alone, Canada concluded a number of expanded air transport agreements with key bilateral partners. For instance, Canada expanded its agreements with China (5th-largest market) and Australia (16th-largest market) (Transport Canada).

The Canadian government also puts high emphasis on aviation safety. In 2014, Canada and China reached an agreement on the Bilateral Aviation Technical Arrangement (BATA), which represents the next step in the evolution of Canada's civil aviation safety relationship with China. The BATA will help streamline the approval process for aeronautical products between the two economies and eliminate the need for individual technical arrangements.

3.3 Canada-specific information

Canada's National Airports System (NAS) includes 26 nationally significant airports. The NAS, established in 1994, includes those airports considered essential to Canada's air transportation system, supporting both domestic prosperity and international competitiveness. Airports maintaining annual passenger levels of 200,000 for three consecutive years are candidates for inclusion in the NAS. Conversely, airports other than those serving national, provincial or territorial capitals, whose traffic falls below 200,000 passengers for three consecutive years, will no longer be considered part of the NAS. Currently, the 26 NAS airports serve 94% of all scheduled passenger and cargo traffic in Canada and are the points of origin and destination for almost all interprovincial and international air service in Canada (TransportCanada, 2016).

3.3.1 Busiest Airports in Canada

Rank	Airport	Most Recent Annual Traffic Statistics in million, (2015)	% of Total Canadian Market
1	YYZ	39.0	29.77%
2	YVR	19.2	14.66%
3	YUL	14.4	10.99%
4	YYC	14.3	10.92%
5	YEG	7.3	5.57%
6	YOW	4.3	3.28%
	Other Airports	32.5	24.81%

Table 5: Top 6 busiest airports in Canada (Source: Transport Canada, 2015).



Figure 5: Map of Canada National Airport System (Source: Transport Canada)

Toronto Pearson International Airport (YYZ)

Toronto Pearson International Airport is located 22.5km northwest of downtown Toronto, serving the city of Toronto, Ontario, Canada, its metropolitan area, and the Golden Horseshoe – an urban cluster of 8.7 million people. YYZ is the largest and busiest airport in Canada. In 2015, it handled 39 million passengers and 446,000 aircraft movements. YYZ is the main hub for Air Canada, WestJet and cargo airline FedEx Express. The airport offers an extensive network of domestic flights to all major and many secondary cities across all provinces of Canada, with more than 75 airlines serving 180+ international destinations. The airport has two active terminals, Terminal 1 and Terminal 3. Both terminals are designed to handle all three sectors of travel (domestic, trans-border, and international), which results in terminal operations at Pearson being grouped for airlines and airline alliances, rather than for domestic and international routes. A third terminal, the Infield Terminal (IFT), is not currently used for regular operations at Pearson.

Vancouver International Airport (YVR)

Vancouver International Airport is located on Sea Island in Richmond, British Columbia, Canada, about 12km (7.5 mi) from downtown Vancouver. YVR is the second-busiest airport in Canada by aircraft movements and passengers (19.2 million in 2015). It offers daily non-stop flights to Asia, Europe, Oceania, the United States, Mexico and other airports in Canada. It is a hub for Air Canada, as well as a focus city for WestJet. It is also an operating base for Air Transat. The airport has two terminals and three runways.

Montreal Pierre Elliott Trudeau International Airport (YUL)

Montreal Pierre Elliott Trudeau International Airport is a Canadian airport located on the Island of Montreal, 20km from Montreal's downtown core. It is an international airport serving Greater Montreal and the adjacent regions in Ontario, Vermont and New York. YUL is the busiest airport in the province of Quebec, the third-busiest airport in Canada by passenger traffic with 14.4 million passengers in 2015. It is one of four Air Canada hubs. There are currently three runways in operation, two parallel runways aligned both in a north-south direction and one single runway in an east-west direction. YUL consists of one terminal only, on two levels, divided into four different zones: the public area (departures and arrivals level), the domestic jetty, the international jetty and the trans-border jetty.

Calgary International Airport (YYC)

Calgary International Airport serves Calgary, Alberta, Canada, and the surrounding region; it is situated approximately 17km northeast of downtown Calgary. YYC offers scheduled non-stop flights to major cities in Canada, the United States, Mexico, the Caribbean, Europe and East Asia. It serves as headquarters for WestJet and as a hub airport for Air Canada and Air Canada Express. In 2015, it handled 14.3 million passengers. The airport currently has one terminal; a new terminal, which will be almost double the size of the current terminal, is under construction and is scheduled to open for service on October 31, 2016.

Edmonton International Airport (YEG)

Edmonton International Airport is the primary air passenger and air cargo facility in the Edmonton region of the Canadian province of Alberta. Located 26km south-west of downtown Edmonton, YEG served 7.3 million passengers in 2015. It has one terminal and two runways.

Ottawa Macdonald-Cartier International Airport (YOW)

Ottawa Macdonald-Cartier International Airport is located in the south end of the city, 5.5 nautical miles (10.2km) south of downtown Ottawa. It is Canada's sixth-busiest airport and Ontario's second-busiest airport by airline passenger traffic, with 4.3 million passengers in 2015. YOW is an Air Canada focus city and the home base for First Air. It consists of one terminal and three runways.

3.3.2 Principal Airline Operators

The major Canadian airlines include Air Canada, WestJet, Air Transat and Jazz. In addition to these four major carriers, a number of carriers also offer service to various international and domestic destinations.

Air Canada

Air Canada is the flag carrier and largest airline of Canada. The airline, founded in 1937, provides scheduled and charter air transport for passengers and cargo to 182 destinations worldwide. It is the world's 10th-largest passenger airline by fleet size and is a founding member of the Star Alliance. The carrier's operating divisions include Air Canada Cargo, Air Canada Express and Air Canada rouge. Air Canada has four hubs in Canada, with the largest one at YYZ, located in Mississauga, Ontario. The airline's fleet comprises of 131 aircrafts. International APEC destinations served by Air Canada are Australia, Canada, Chile, China, Hong Kong, China, Japan, Mexico, Republic of Korea and the United States.

WestJet

WestJet is a Canadian airline that began as a low-cost alternative to the economy's competing major airlines. Founded in 1996, it is currently the second-largest Canadian air carrier. The airline has hubs at YYC and YYZ. Regional airline WestJet Encore is its fully owned subsidiary. WestJet has a fleet of 118 aircrafts. International APEC destinations it serves are Mexico and the United States.

Air Transat

Air Transat is a Canadian airline based in YUL, operating scheduled and charter flights, serving 60 destinations in 25 countries. Its main Canadian gateways are YUL and YYZ. Its fleet consists of 34 aircrafts. International APEC destinations it serves are Mexico and the United States.

Jazz

Jazz is a Canadian regional airline based at YHZ in Enfield. Jazz Aviation provides regional and charter airline services in Canada and the United States, primarily under contract to Air Canada, using the brand name Air Canada Express and Jazz Charters. With 127 aircrafts, it is Canada's third-largest airline in terms of fleet size. The only international APEC destination Jazz serves is the United States.

4. Medium-Term New Route Opportunities

This section of the report is dedicated to explaining potential future air service developments to and from Canada within the APEC region over the next three years. Service gaps, route traffic forecasts and high level feasibility analysis conducted are hereby presented.

4.1 Service gaps

As part of the process, air service to Canada was considered on both an economy-pair and city-pair basis.

4.1.1 Economy-Pair Analysis

The following table outlines supply and demand for air travel between Canada and other APEC economies. The data essentially shows the economy pairs where:

- Non-stop service is sufficiently supplied (in green).
- Air service is adequate but may need to be improved in the long term (in yellow).
- Air service is at a shortfall and should be improved in the medium term (in red).

Origin Economy	Demand (PDEW)	Non-Stop Seat Offer (SDEW)	One-Stop Seat Offer (SDEW)	Ratio of Demand to Supply
Australia (AUS)	589	317	290	97%
Brunei Darussalam (BD)	1	0	0	*
Canada (CAN)	85,776	158,571	19,999	48%
Chile (CHL)	141	193	0	73%
People's Republic of China (PRC)	2,227	2,634	169	79%
Hong Kong, China (HKC)	988	1,843	0	54%
Indonesia (INA)	89	0	0	**
Japan (JPN)	1,214	1,335	0	91%
Republic of Korea (ROK)	523	673	0	78%
Malaysia (MAS)	57	0	0	*
Mexico (MEX)	4,580	5,084	205	87%
New Zealand (NZ)	153	193	0	79%
Papua New Guinea (PNG)	0	0	0	*
Peru (PE)	192	110	0	174%
The Republic of Philippines (PH)	663	477	159	104%
Russia (RUS)	8	0	0	*
Singapore (SGP)	111	0	0	**
Chinese Taipei (CT)	259	639	0	41%
Thailand (THA)	232	0	0	***
United States (US)	34,145	47,682	2,777	68%
Viet Nam (VN)	225	0	0	***

Table 6: Total demand-to-supply ratio PDEW (Source: IATA analysis of Airport IS Data)

*Delineates an economy pair with no air service that has inadequate demand to consider air service in the long term

**Delineates an economy pair with no air service that may have adequate demand for service in the long term (next 10 years)

Typical ratios found in highly liberalized international markets with adequate capacity for demand range from 60% to 80%.

In some cases, the demand-to-supply ratio is less than 60%; however, supply is still adequate because the low percentage figure may be representative of high rates of connecting passengers flying between economies (not shown in the above table; only OD traffic is displayed).

Where demand-to-supply ratios are higher than 80%, seat offer should be increased between economy pairs (e.g. Canada and Australia at 97%, where the non-stop supply barely covers the total demand between the economies).

Based on the above analysis at the economy level, Canada may have an opportunity to improve service to seven economies in the long-term (highlighted in yellow in the above table) and could take action to improve service to Australia, Japan, Mexico, Peru, the Philippines, Thailand and Viet Nam in the medium term (highlighted in red).

The following section will look into greater detail at these shortfalls in supply at a city pair level.

4.1.2 City Pair Analysis by APEC Economy

When considering the shortfall in service to city pairs, 27 have a demand of more than 30 PDEW with no non-stop service, as illustrated in table 8 below. These 27 routes are spread throughout the different economies identified at the economic pair analysis in the previous section. This section explains in greater detail the economy pairs with air service development potential to Canada.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand (PDEW)
YYZ	Canada	SYD	Australia	62
YVR	Canada	BNE	Australia	52
YVR	Canada	MEL	Australia	50
YYZ	Canada	MEL	Australia	31
YUL	Canada	PVG	China	63
YYZ	Canada	CAN	China	60
YYC	Canada	PEK	China	38
YOW	Canada	PEK	China	31
YYC	Canada	HKG	Hong Kong, China	48
YUL	Canada	HKG	Hong Kong, China	48
YYC	Canada	ITM	Japan	66
YVR	Canada	ITM	Japan	53
YVR	Canada	FUK	Japan	40
YUL	Canada	LIM	Peru	43
YYZ	Canada	MNL	The Philippines	224
YYC	Canada	MNL	The Philippines	60
YWG	Canada	MNL	The Philippines	55
YEG	Canada	MNL	The Philippines	44
YUL	Canada	MNL	The Philippines	39
YYC	Canada	ICN	Republic of Korea	39
YYZ	Canada	SIN	Singapore	38
YVR	Canada	SIN	Singapore	37
YVR	Canada	BKK	Thailand	57
YYZ	Canada	BKK	Thailand	51
YUL	Canada	BKK	Thailand	35
YYZ	Canada	SGN	Viet Nam	70
YVR	Canada	SGN	Viet Nam	38

Table 7: APEC routes to Canada with more than 30 PDEW and no non-stop service¹ (Source: IATA Analysis of Airport IS data).

4.2 High-level feasibility considerations

City pairs with more than 30 PDEW (10,950 annual passengers one-way) were considered as the minimum threshold for analysis. 27 city pairs to and from Canada met this criterion as shown above.

To further define a potentially viable route, IATA used two metrics: distance and market size. Due to aircraft range restrictions, distance eliminated any city pairs more than 15,000km from one another.

The second criteria used the application of induction and connection potential rates (unique to each region and route type) to existing OD demand to determine whether the route would garner a minimum demand of 158PDEW for ultra-long-haul routes (over 12,000km), 130 PDEW for long-haul

¹ Air Canada operates one stop YYZ –SYD with a stop in YVR. Air Canada launched non-stop YVR-BNE in June 2016.

routes (between 4,000km and 12,000km) or 75 PDEW for short-haul routes (under 4,000km) in the coming three years with behind and beyond potential and OD stimulation factored in (see section 4.3 below for a detailed breakdown of the factors).

This filtering process led to the selection of seven routes that are presented in the table below, with more details in the next section.

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand	2015 Estimated Market Potential	Distance viable for non-stop flight with current technology	Market size adequate for non-stop service in the long term	Potential Route in the long term
YVR	Canada	BNE	Australia	52	131	✓	✓	Yes
YVR	Canada	MEL	Australia	50	128	✓	✓	Yes
YYZ	Canada	CAN	China	60	130	✓	✓	Yes
YYZ	Canada	MNL	The Philippines	224	397	✓	✓	Yes
YVR	Canada	BKK	Thailand	57	169	✓	✓	Yes
YYZ	Canada	BKK	Thailand	51	138	✓	✓	Yes
YYZ	Canada	SGN	Viet Nam	70	154	✓	✓	Yes
YYZ	Canada	SYD	Australia	62	156	✗	✓	No
YYZ	Canada	MEL	Australia	31	105	✓	✗	No
YUL	Canada	SCL	Chile	27	58	✓	✗	No
YVR	Canada	PVG	Chile	25	56	✓	✗	No
YUL	Canada	PEK	China	63	90	✓	✗	No
YYC	Canada	PEK	China	38	77	✓	✗	No
YOW	Canada	CTU	China	31	62	✓	✗	No
YVR	Canada	FOC	China	27	59	✓	✗	No
YYZ	Canada	HKG	China	26	57	✓	✗	No
YYC	Canada	HKG	Hong Kong, China	48	113	✓	✗	No
YUL	Canada	HKG	Hong Kong, China	48	113	✓	✗	No
YYC	Canada	ITM	Japan	66	112	✓	✗	No
YVR	Canada	ITM	Japan	53	89	✓	✗	No
YVR	Canada	FUK	Japan	40	75	✓	✗	No
YUL	Canada	NRT	Japan	29	99	✓	✗	No
YYZ	Canada	ITM	Japan	29	67	✓	✗	No
YYC	Canada	MEX	Mexico	27	31	✓	✗	No
YYC	Canada	MEX	Mexico	27	31	✓	✗	No
YUL	Canada	LIM	Peru	43	73	✓	✗	No
YVR	Canada	LIM	Peru	29	60	✓	✗	No
YYC	Canada	MNL	The Philippines	60	85	✓	✗	No
YWG	Canada	MNL	The Philippines	55	80	✓	✗	No
YBG	Canada	MNL	The Philippines	44	69	✓	✗	No
YUL	Canada	MNL	The Philippines	39	65	✓	✗	No
YYC	Canada	ICN	Republic of Korea	39	81	✓	✗	No
YYZ	Canada	SIN	Singapore	38	106	✓	✗	No
YVR	Canada	SIN	Singapore	37	131	✓	✗	No
YUL	Canada	BKK	Thailand	35	111	✓	✗	No
YVR	Canada	SGN	Viet Nam	38	133	✓	✗	No

Table 8: Summary of high-level route feasibility considerations

4.3 Proposed route analysis

IATA narrowed the above selection to seven routes from Canada. This section examines the route potential and presents a forecast of current demand in the medium term.

4.3.1 Route #1 YYZ-MNL

YYZ-MNL 2015 total route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Calculations	
YYZ	MNL	The Philippines	(A) 224	(B) 80%	(C) 11%	(D) 50%		
				(1) 180	21		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	200		(3) = 1+2	
			BNE-MNL Total Market Potential (2015 Base)				(4) 397	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that YYZ-MNL presents a potential of 397 PDEW for direct service between the two cities.

This potential would grow to 459 by 2018, as displayed in the short-term forecast in the following table. This forecast uses 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Canada-Philippines	YYZ-MNL	397	417	438	459

4.3.2 Route #2 YYZ-SGN

YYZ-SGN 2015 total route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Calculations	
YYZ	SGN	Viet Nam	(A) 70	(B) 80%	(C) 39%	(D) 50%		
				(1) 56	22		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	78		(3) = 1+2	
			YYZ - SGN Total Market Potential (2015 Base)				(4) 154	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that the YYZ-SGN route presents a market potential of 154 PDEW for direct service between the two cities.

This potential would grow to 178 by 2018, as displayed in the short-term forecast in the following table. This forecast uses 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Canada-Viet Nam	YYZ-SGN	154	162	170	178

4.3.3 Route #3 YVR-MEL

YVR-MEL 2015 total route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Calculations	
YVR	MEL	Australia	(A) 50	(B) 80%	(C) 56%	(D) 51%		
				(1) 40	23		(1) = Ax(B-D)	
				(2)			(2) = 1xC	
			Subtotal	(3)	62		(3) = 1+2	
			YVR - MEL Total Market Potential (2015 Base)				(4) 128	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that this route presents a market potential of 128 PDEW for direct service between the two cities.

This potential would grow to 148 by 2018, as displayed in the short-term forecast in the following table. This forecast uses 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Canada-Australia	YVR-MEL	128	135	142	148

4.3.4 Route #4 YYZ-CAN

YYZ-CAN 2015 total route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Calculations	
YYZ	CAN	China	(A) 60	(B) 80%	(C) 63%	(D) 40%		
				(1) 48	31		(1) = Ax(B-D)	
				(2)			(2) = 1xC	
			Subtotal	(3)	79		(3) = 1+2	
			YYZ - CAN Total Market Potential (2015 Base)				(4) 130	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that this route presents a market potential of 130 PDEW for direct service between the two cities.

This potential would grow to 151 by 2018, as displayed in the short-term forecast in the following table. This forecast uses 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Canada-China	YYZ-CAN	130	137	144	151

4.3.5 Route #5 YVR-BKK

YVR-BKK 2015 total route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Calculations	
YVR	BKK	Thailand	(A) 57	(B) 80%	(C) 49%	(D) 60%		
				(1) 45	23		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	68		(3) = 1+2	
			YVR - BKK Total Market Potential (2015 Base)				(4) 169	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that this route presents a market potential of 169 PDEW for direct service between the two cities.

This potential would grow to 195 by 2018, as displayed in the short-term forecast in the following table. This forecast uses 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Canada-Thailand	YVR-BKK	169	177	186	195

4.3.6 Route #6 YVR-BNE

YVR-BNE 2015 total route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deorect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Calculations	
YVR	BNE	Australia	(A) 52	(B) 80%	(C) 54%	(D) 51%		
				(1) 41	23		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	64		(3) = 1+2	
			YVR - BNE Total Market Potential (2015 Base)				(4) 131	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that this route presents a market potential of 131 PDEW for direct service between the two cities.

This potential would grow to 152 by 2018, as displayed in the short-term forecast in the following table. This forecast uses 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Canada-Australia	YVR-BNE	131	138	145	152

4.3.7 Route #7 YYZ-BKK

YYZ-BKK 2015 total route potential definition:

Origin Airport	Destination Airport	Destination Economy	2015 OD Non-direct Demand	1 OD Captured Though Deirect Service	2 OD Stimulation	4 Behind/Beyond Connecting Potential	Calculations	
YYZ	BKK	Thailand	(A) 51	(B) 80%	(C) 54%	(D) 51%		
				(1) 41	23		(1) = AxB	
				(2)			(2) = 1xC	
			Subtotal	(3)	64		(3) = 1+2	
			YVR - BKK Total Market Potential (2015 Base)				(4) 138	(4) = 3/(1-D)

Based on 2015 demand figures, IATA estimates that this route presents a market potential of 138 PDEW for direct service between the two cities.

This potential would grow to 160 by 2018, as displayed in the short-term forecast in the following table. This forecast uses 2015 estimated demand and applies to it the IATA inter- and intra-regional global traffic forecast published by our Economics Division.

Economy Pair	City Pair	2015 Base	2016	2017	2018
Canada-Thailand	YYZ-BKK	138	145	153	160

4.4 Proposed scheduled operations

This section considers the above route through three main operational/feasibility criteria:

- Air service agreements.
- Airline network strategies and fleets.
- Route economics.

Additionally, proposed operational aspects of the route are presented, including an indicative start date based on market maturity, a proposed airline to serve the route, type of aircraft to be used, flight frequency and estimated load factors.

4.4.1 Route #1 YYZ-MNL

The YYZ-MNL route is currently served with one-stop service via Vancouver by Philippine Airlines. When Philippine Airlines takes delivery of its latest A350-900, the range of the new aircraft will allow direct service between YYZ and MNL. The market is projected to have sufficient demand to support a two-daily service on this route with a healthy 73% load factor on the flights.

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per Week	Number of Pax per Flight	Load Factor
YYZ-MNL	2018	Philippine Airlines	A350-900	315	14	229	73%

4.4.2 Route #2 YYZ-SGN

YYZ-SGN is a very long route and potentially can be operated by Air Canada's B787-9. The distance between the two cities is close to the maximum range of the aircraft, so the airlines may have certain operational constraints if the flying conditions are not ideal (e.g. strong head wind), which is not included in this analysis. On a pure market base point of view, this route can be operated by Air Canada's B787-9 aircraft with 5-weekly service starting in 2018:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per Week	Number of Pax per Flight	Load Factor
YYZ-SGN	2018	Air Canada	B787-9	298	5	250	84%

4.4.3 Route #3 YVR-MEL

The YVR-MEL route is a long-haul route that has relatively low demand, which is ideal for the new generation of long-haul aircraft such as Air Canada's B787-8 that is configured with only 251 seats on board. IATA estimates if the service starts in 2017 with a 5-weekly frequency, the load factor will be around 79%:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per Week	Number of Pax per Flight	Load Factor
YVR-MEL	2017	Air Canada	B787-8	251	5	198	79%

4.4.4 Route #4 YYZ-CAN

YYZ-CAN can be started by China Southern with CAN as its main international hub. By using a B777-300ER and 5-weekly service, the load factor should be around 68% when it starts in 2018:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per week	Number of Pax per Flight	Load Factor
YYZ-CAN	2018	China Southern	B777-300ER	309	5	211	68%

4.4.5 Route #5 YVR-BKK

YVR-BKK's range and demand are ideal for Thai Airway's B787-8, enabling plenty of Southeast Asian connections in BKK via Thai Airway's extensive Asia network. Should the route start operating in 2017 with six flights per week, load factor is estimated to be 82%:

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per Week	Number of Pax per Flight	Load Factor
YVR-BKK	2017	Thai Airways	B787-8	264	6	217	82%

4.4.6 Route #6 YVR-BNE

The YVR-BNE route was opened by Air Canada in June 2016 using B787-9 to provide daily service.

4.4.7 Route #7 YYZ-BKK

The YYZ-BKK is a very long-haul route and will require an aircraft with longer range, such as B777-300ER, to operate. If this service is operated by Thai Airways from 2018 with 4-weekly service, the load factor is estimated to be 76%.

Route (non-directional)	Minimum Opening Date	Airline	Aircraft	# of Seats	Frequency per Week	Number of Pax per Flight	Load Factor
YYZ-BKK	2018	Thai Airways	B777-300ER	368	4	280	76%

5 Conclusions and Opportunities

In addition to the development of new air service in the medium term, other opportunities for air service development such as connectivity improvements, route frequency increases and long-term developments are also presented.

5.1 Connectivity improvements

This section identifies poorly connected markets that could be better served by improved connecting times, thereby granting additional access to already existing yet less accessible connecting markets.

IATA examined flights departing to and from the two main gateways in Canada: YVR and YYZ and is pleased to report that the connecting banks of the major airlines are generally very well aligned.

Still, there is a small selection of connection improvements that can be suggested based on optimal connecting time-related considerations²:

5.1.1 YVR

- Air Canada flight 64 from Incheon currently arrives in YVR at 11:50. If the arrival time can be brought forward by 45 minutes to 11:05, it will allow 10 more domestic and US connections to YXS, YYJ, YKA, YPR, YYZ, YXT, YZP, YLW, YYC and LAX.

² Subject to slot availability

- Air Canada flight 7 for Hong Kong, China currently leaves YVR at 13:20, missing connections from seven domestic markets – namely YYJ, YSJ, YXC, YYZ, YWG, YKA and YEG. These connections can be enabled if the departure time moves back 45 minutes to 14:05.
- WestJet flight 1865 from Honolulu currently arrives in YVR at 07:10; if the arrival time can be brought earlier by 40 minutes, it will enable six more onward connections to YYC, YQR, YYZ, YXT, YSJ and YUL.

5.1.2 YYZ

- Air Canada flight 16 from HKG currently arrives in YYZ at 18:10, missing seven domestic and U.S. connections by 20 minutes. If the arrival time can be brought forward to 17:50, it will allow connections to JFK, EWR, YZR, YYB, YSB, IAD, DEN and YUL.
- Air Canada flight 87 departing for PVG currently leaves YYZ at 13:00. If this flight were brought back to 13:40, it would allow 11 more connections from Canada and the U.S., namely DTW, YOW, LGA, YTS, PHL, BOS, ROC, STL, YUL, YXU and DEN.
- Air Canada flight 31 departing for PEK leaves YYZ at 14:55 and misses connections from 12 Canadian and U.S. cities. If the departure were retimed to 15:25, it will allow connections from YQB, MSY, Newark, YXU, BOS, YOW, LGA, YWG, DCA, YTS, YQM and YUL.
- WestJet flight 1237 from MCO arrives in YYZ at 14:28 and misses six domestic onward connections in a 30-minute timeframe. If it were retimed to arrive at 13:58, it could potentially allow connections to YUL, YVR, YHZ, YEG, YYC and YFC.

5.2 Long-term new route opportunities

As the growing economy continues to drive air traffic growth, some routes identified in section 4 are expected to become viable in the longer term:

Origin Airport	Origin Economy	Destination Airport	Destination Economy	2015 OD Demand	2015 Estimated Market Potential	Distance viable for non-stop flight with current technology	Market size adequate for non-stop service in the long term	Potential Route in the long term
YYC	Canada	KIX	Japan	66	112	✓	✓	Yes
YUL	Canada	PVG	China	63	90	✓	✓	Yes
YYC	Canada	HKG	Hong Kong, China	48	113	✓	✓	Yes
YUL	Canada	HKG	Hong Kong, China	48	113	✓	✓	Yes
YYZ	Canada	SIN	Singapore	38	106	✓	✓	Yes
YVR	Canada	SGN	Viet Nam	38	133	✓	✓	Yes
YVR	Canada	SIN	Singapore	37	131	✓	✓	Yes
YUL	Canada	BKK	Thailand	35	111	✓	✓	Yes
YYZ	Canada	MEL	Australia	31	105	✓	✓	Yes

Table 9: Long-term route opportunities

5.3 Development of aircraft technology

The latest aircraft available on the market, Airbus’ A350-900 and Boeing’s B787-9, are capable of flying ultra-long-haul routes. The technical capabilities of these aircraft will allow new direct routes to be operated between APEC economies across the Pacific. The following maps illustrate the range limit² of the A350-900 and B787-9.



Figure 6: Range limit for the latest generation of aircraft from Vancouver (Source: GCMaP)

² For illustration only. Based on published range for the base model of each aircraft type. Specific operating conditions may affect the range of the aircraft.

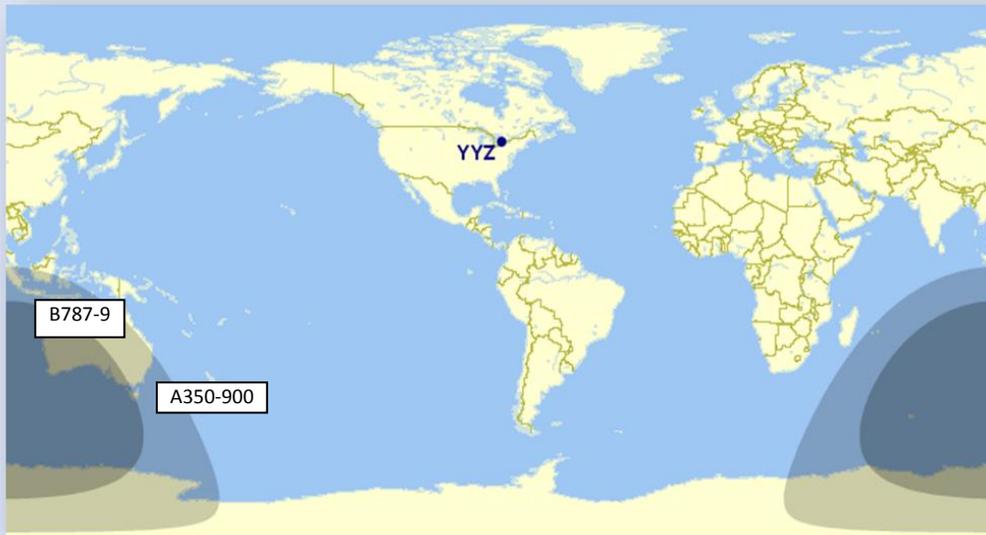


Figure 7: Range limit for the latest generation of aircraft from Toronto (Source: GCMaP)

6 Recommendations to improve air connectivity

The various recommendations to support the improvement in air connectivity both generically and specifically for each APEC member economy are presented in this section.

6.1 Generic recommendations

This chapter provides recommendations applicable to all economies, such as greater liberalization of air routes by allowing more access and the elimination of curfews and operational restrictions.

- Continue to liberalize the air services market to other APEC economies, allowing the fullest access to Canadian airports.
- Encourage airlines, in particular Air Canada, to explore opportunities in the ultra-long-haul market when they take delivery of new generation of long-haul aircraft.

6.2 Specific recommendations

- Ensure that adequate planning is in place for the international airports to support long-term traffic growth – especially for YOW, YUL and YYZ, where terminal capacities are projected to be full by 2020.
- Closely work with the airline industry to enhance sustainability and profitability of the industry.

6.3 How the APEC economy's regulator can help

- Work closely with different stakeholders – for example, Innovation, Science and Economic Development Canada, the Chamber of Commerce, etc. – to gain a deeper understanding of the development of aviation demand.
- Ensure that major international airports have an adequate investment and improvement program to support future traffic demand.
- Explore the possibility of relaxing visa requirements for tourists.
- Reduce Passenger Movement Charge on international air passengers.

7. Appendix

7.1 Overview of IATA and IATA Consulting

7.1.1 IATA

IATA – The International Air Transport Association was founded in 1945 as the prime vehicle for inter-airline cooperation in promoting safe, reliable, secure and economical air services for the benefit of the world’s consumers. IATA provides fundamental support and leadership for the commercial aviation industry. IATA is fully committed to supporting the commercial aviation industry’s stakeholders and governments in their efforts to achieve profitability and long-term viability.

IATA’s mission:

To represent, lead and serve the airline industry.

IATA’s vision:

To be the force for value creation and innovation, driving a safe, secure and profitable air transport industry that sustainably connects and enriches our world.

IATA in numbers:

- 250+ member airlines
- 83% of total air traffic
- \$387B processed by IATA financial systems
- 1,400+ employees
- 54 offices in 53 countries

7.1.2 IATA Consulting

IATA Consulting overview

IATA Consulting has comprehensive experience in the full array of business challenges facing the aviation sector. Serving the airline industry for 70 years, IATA has developed unrivalled practical experience, which we bring forth to provide the best solutions to our clients.

With our depth and breadth of aviation industry experience, we assist clients to maximize the value of their operating model, realize growth ambitions and gain insights that translate into sustainable competitive advantages.

IATA Consulting has expertise in the following areas:



SAFETY & FLIGHT OPERATIONS

Solutions for aviation organizations and airlines to improve safety, efficiency and air transport management.



ENVIRONMENT & ECONOMICS

Solutions for fulfilling the vision of a safer, more competitive and sustainable aviation industry.



AIRLINES

Solutions to achieve real and lasting results in every aspect of airline commercial and operational management.



AIRPORTS, PASSENGERS & SECURITY

Solutions to plan your airport efficiently to avoid costly mistakes and profit from untapped opportunities.



GROUND HANDLING & CARGO

Solutions to optimize your operations and improve your safety and security while reducing costs.

Our Clients

IATA Consulting has successfully demonstrated its capabilities by providing airlines, airports, tourism offices and other organizations with accurate, unbiased and reliable high quality information and analysis to help them define and understand their markets, while ensuring their long-term facility development and financial success.

IATA is trusted by multiple clients all over the world including airlines, airports, governments and aviation institutions.



Why IATA Consulting was chosen for this project

IATA has, over time, recruited and retained some of the most highly experienced and capable aviation consulting resources within the aviation industry. Due to its position at the heart of the industry, IATA has access to exceptionally skilled and informed subject matter experts and specialists. IATA Consulting’s objective is to make a positive difference in its clients’ performance, while delivering quality services to all industry stakeholders.

IATA Consulting provides its customers with vast knowledge and expertise in all sectors of the industry worldwide. Our approach has been finely tuned to leverage IATA’s global presence and industry thought leadership position in the development of tailored solutions that fit with local cultural considerations and embody international best practices. Our consultants rely on international state-of-the-art standards, unmatched access to data, and products and expert resources to provide cost-efficient and highly informed solutions.

IATA is backed by a robust set of decision support tools, Airport IS and Pax IS have been essential to undertake this project.



Airport IS and **Pax IS** are the most comprehensive aviation databases available in the marketplace, capturing 100% of traffic around the world and bringing together total market supply and demand under a single platform. The data provided is accurate and reliable, as it is captured through IATA’s Billing and Settlement Plan (BSP).

Bibliography

- Airport Intelligence Services. (2016). *Airport IS reports*. Retrieved from <https://airport-is.com/ais/siteMenu.jsp>
- Belobaba, P. (2015). *The Global Airline Industry*. Wiley Publishing.
- Boeing. (2015). Current Market Outlook. Retrieved from http://www.boeing.com/resources/boeingdotcom/commercial/about-our-market/assets/downloads/Boeing_Current_Market_Outlook_2015.pdf
- Central Intelligence Agency . (2015). The World Factbook: Canada. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/ca.html>
- Conference Board of Canada. (2013). Growing Canada’s Economy – A New National Transportation Policy. Retrieved from http://www.cacairports.ca/sites/default/files/Docs_2013/GrowingCanadasEconomy-A New National Air TransportationPolicy.pdf
- ICF International. (2014). *Successful Air Service Development*.
- International Monetary Fund. (2016). *List of per capita nominal GDP for countries and dependencies*. Retrieved from <http://www.imf.org/external/index.htm>
- OECD. (2016). *Economics forest Summary, Canada*. Retrieved from <http://www.oecd.org/economy/canada-economic-forecast-summary.htm>
- Statistics Canada. (2016). Retrieved from <http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=510005>
- Swan, W. (2008). *Forecasting Air Travel with Open Skies*. Retrieved from Seabury Airline Planning Group: www.sauder.ubc.ca/.../Forecasting%20Asia%20Open%20Skies.ashx
- Transport Canada. Retrieved from <https://www.tc.gc.ca/eng/menu.htm>
- United Nation. World Population Prospects. Retrieved from <https://esa.un.org/unpd/wpp/DataQuery/>
- World Travel and Tourism Council. (2016). *Travel and Tourism Economic Impact*. Retrieved from <http://www.wttc.org//media/files/reports/economic%20impact%20research/countries%202016/canada2016.pdf>
- Transport Canada. (2015). *Transportation in Canada, Statistical Addendum*. Retrieved from <https://sfta-tfsa.tc.gc.ca>
- World Tourism Organization. (2015). *Tourism Highlights*. Retrieved from <http://www.e-unwto.org/doi/pdf/10.18111/978928441689>

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