

# Kelowna International Airport Master Plan 2045 Volume 2: Appendices

*Second Draft*

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# Appendix A : Glossary of Terms

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# Glossary of Terms

**ACN - Aircraft Classification Number:**

Aircraft Classification Numbers (ACN) are numbers expressing, in ICAO terminology, the relative effect of an aircraft on a pavement. The use of ACN-PCN method of reporting pavement strength is described in ICAO Annex 14. The ACN should not exceed PCN for unrestricted operations.

**Active Runway:**

Any runway currently being used for takeoff or landing. When multiple runways are used, they are all considered active runways. When an aircraft is landing or taking off on an airport surface other than a runway, the direction of flight will determine the active runway.

**Aerodrome:**

Any area of land, water (including the frozen surface thereof) or the supporting surface used or designed, prepared, equipped or set apart for use either in whole or in part of the arrival and departure, movement or servicing of aircraft and includes any buildings, installations and equipment in connection therewith.

**Certified** – a certified aerodrome is subject to inspection and must be operated in accordance with an Airport Operations Manual. Certifications are available only to aerodromes that are located within the built-up area of any city, town or other settlement; or is used by a CAR part 701, 704 or 705 air carrier for a scheduled service for the transport of passengers; or in the public interest; or if the operator wants it to be certified (at the cost of the operator).

**Registered** – registered aerodromes provide the Minister with information respecting the location, markings, lighting, use and operations of the aerodrome, and publish its information in the *Canada Flight Supplement* or the *Water Aerodrome Supplement* as applicable.

**Non- Registered** – non-registered aerodromes are generally for private use and not open or maintained for public use.

**Airport Improvement Fee (AIF):**

A passenger charge levied on a departing passenger by the airport. In Canada these are normally collected by the airline at time of ticket sale

**Aeronautical Information Publication (AIP):**

A publication issued by or with the authority of a state and containing aeronautical information of a lasting character essential to air navigation.

**Air Carrier:**

An entity that undertakes directly, by lease, or by other arrangement, to engage in air transportation. More specifically the commercial system of air transportation comprising a range of operators, including but not limited to, large certificated air carriers, small certificated air carriers, commuter air carriers and on-demand air taxis.

**Aircraft Movement:**

A take-off, landing, or simulated approach by an aircraft:

**Itinerant Movement** – Movements proceeding to or arriving from another location; or leaves the aerodrome traffic circuit but will be returning to land. Includes all fixed wing runway movements and helicopter operations.

**Local Movement** Local aircraft are considered as aircraft which remain in the circuit or in the vicinity of the airport and will return to the airport without landing elsewhere.

**Airport:**

An aerodrome for which an airport certificate is in force.

**Air Taxi:**

An aircraft operator who conducts services for hire in an aircraft with 30 or fewer passenger seats and a payload capacity of 7,500 pounds or less. An air taxi company provides 'seats on demand'. For example, instead of chartering an aircraft, a customer purchases a seat on a private jet.

**ALR - Aircraft Load Rating:**

Aircraft Load Ratings (ALR) are numbers, using the Transportation Canada system, which express the relative effect of an aircraft loading on a pavement. ALR have been assigned to present day aircraft at their maximum and minimum operating weights and at specific tyre pressures. ALRs are expressed on a scale from 1 (least demanding aircraft) to 12 (most demanding aircraft). The ALR should not exceed the pavement load rating (PLR) for unrestricted aircraft operations.

**ANSP - Air Navigation Service Provider:**

A provider of air traffic control services, such as NAV CANADA, or NATS-UK. Can be government-owned, but increasingly are private entities

**Aircraft Planning Code (APC):**

Coding of aircraft according to wingspan or outer main gear wheel span) in accordance with TP312 4<sup>th</sup> Ed. and ICAO guidelines:

Code A: Wingspan up to but not including 15 m and outer main gear wheel span up to but not including 4.5 m. (includes small Piston Engine Aircraft such as PA-31 or Beech Baron).

Code B: Wingspan of 15 m up to but not including 24 m and outer main gear wheel span of 4.5 m up to but not including 6 m. Includes aircraft such as the E125, BE1900 or Metroliner.

Code B+: Wingspan of 15 m up to but not including 24 m and outer main gear wheel span of 4.5 m up to but not including 6 m. The B+ designation includes the RJ and Large Turboprop such as CRJ, CR7, E145 or Q400.

Code C: Wingspan of 24 m up to but not including 36 m and outer main gear wheel span of 6 m up to but not including 9 m. Includes jet engine aircraft such as 737, 320 or E190.

Code D: Wingspan of 36 m up to but not including 52 m and outer main gear wheel span of 9 m up to but not including 14 m. Includes large aircraft such as 757 or 767.

Code E: Wingspan of 52 m up to but not including 65 m and outer main gear wheel span of 9 m up to but not including 14 m. Includes larger aircraft such as 757 and 767.

Code F: Wingspan of 65 m up to but not including 80 m and outer main gear wheel span of 14 m up to but not including 16 m. Includes large aircraft such as A380.

**Approach Surface:**

An imaginary inclined plane that extends upward and outward from each end of a runway strip. The intention of this surface is to protect against obstacles that penetrate into the airspace along the final approach path and that could pose a threat to the safety of approaching aircraft.

**Apron:**

Part of an aerodrome, other than the manoeuvring area, intended to accommodate the loading and unloading of passengers and cargo, the refuelling, servicing, maintenance and parking of aircraft, and any movement of aircraft, vehicles and pedestrians necessary for such purposes.

**ATB - Air Terminal Building:**

An installation provided with the facilities for loading and unloading aircraft and the in-transit handling of traffic (passengers, cargo and mail) which is moved by aircraft.

**ATC - Air Traffic Control:**

A facility established on an airport to provide air traffic control services on and in the vicinity of that airport; a structure containing facilities for the control of airport traffic, including the movement of aircraft, vehicles and pedestrians in the manoeuvring areas, as well as aircraft in flight. This structure may be associated with an air terminal building or an operational building or it may be a freestanding structure.

**AWOS - Automated Weather Observing System:**

A system consisting of automated sensor suites which are designed to serve aviation and meteorological observing needs for safe and efficient aviation operations, weather forecasting and climatology.

**Blast Fence:**

A safety device that redirects the high energy exhaust from a jet engine to prevent damage and injury. The structure must be strong enough to withstand heat and high speed air streams as well as dust and debris carried by the turbulent air.

**Canadian Border Services Agency (CBSA):**

A federal institution that is responsible for ensuring the security and prosperity of Canada by managing the access of people and goods to and from Canada.

**Baggage Handling System (BHS):**

A system comprised of motorized conveyors designed to transport baggage from check-in desk locations to baggage make-up facilities and to transport baggage from drop-off locations to baggage claim devices.

**Bridge or Airbridge:**

A mechanical device that provides a connection between aircraft and terminal building within a controlled environment.

**Business Aviation:**

Non-airline civil aircraft operations, including fractional and corporate flying, but not including personal aviation.

**Canadian Aviation Regulations:**

A compilation of regulatory requirements designed to enhance safety and the competitiveness of the Canadian aviation industry. They correspond to the broad areas of aviation which Transport Canada, Civil Aviation is mandated to regulate (e.g., personnel, licensing, airworthiness, commercial air services etc).

**Canada Air Pilot (CAP):**

The Canada Air Pilot contains aeronautical information that is specifically pertinent to the arrival or departure portion of flight instrument approach procedures, standard instrument departure procedures and noise abatement procedures. It is published under the authority of the Minister.

**Canadian Aviation Regulations (CARS):**

A compilation of regulatory requirements designed to enhance safety and the competitiveness of the Canadian aviation industry. They correspond to the broad areas of aviation which Transport Canada, Civil Aviation is mandated to regulate (e.g., personnel, licensing, airworthiness, commercial air services etc.).

**Category 1 Minima:**

Minima for a Category I precision approach as set out in the Canada Air Pilot or the operations manual of an operator.

**Canada Flight Supplement (CFS):**

The Canada Flight Supplement is a joint civil/military publication. It contains information on Canadian and North Atlantic Aerodromes and is used as a reference for the planning and safe conduct of air operations. It is used to supplement enroute charts and the Canada Air Pilot.

**Charter Airline:**

The transportation of passengers and/or goods by aircraft where a person other than the air carrier operating the aircraft, or its agent, contracts for a block of seats or a portion of cargo capacity for that person's own use or for resale, in whole or in units, to members of the public. The entire capacity of the aircraft is disposed of in this manner.

**Charter Flight:**

When an entire aircraft, typically the entire aircraft, is hired for a trip.

**Civil Aviation:**

All non-military flights.

**Clearway:**

A defined rectangular area on the ground or water under the control of the appropriate authority selected or prepared as a suitable area over which an airplane may make a portion of its initial climb to a specified height.

**Combined Operations Building (COB):**

A term used locally to identify the building complex housing operations, equipment and personnel associated with airport maintenance and airport fire and rescue.

**Connecting Flight:**

A flight requiring passengers to change aircraft and/or airlines at an intermediate stop, wherein the previous flight segment had a different flight number.

**Corporate Aviation:**

A sector of the Canadian economy comprising scheduled and non-scheduled passenger and cargo airlines, aviation manufacturers, airport and aircraft service providers (including government services) and air cargo service providers.

**Declared distances:**

**Take-off run available (TORA):** The length of runway declared available and suitable for the ground run of an aeroplane taking off.

**Take-off distance available (TODA):** The length of the take-off run available plus the length of the clearway, if provided.

**Accelerate-stop distance available (ASDA):** The length of the take-off run available plus the length of the Stopway, if provided.

**Landing distance available (LDA):** The length of runway which is declared available and suitable for landing.

**Deregulation:**

The term commonly used in referring to the Airline Deregulation Act of 1978, this ended U.S. government regulation of passenger airline routes and rates. A similar pull back from over-regulation of aviation in Canada began in the 1980's.

**Economic Impact:**

With regard to a specific industry or sector, the sum of first-level, direct and indirect (i.e., sales, revenue, output), and induced (purchases required to produce the sales or output and household spending by the industry's employees) impacts. In the case of commercial aviation, primary impacts on the Canadian economy are related to: airlines and supporting services; aircraft, engines and parts manufacturing; and air visitor travel and other trip-related expenditures.

**Enplaned and Deplaned:**

E/D passengers leave or board an aircraft at an airport and include all O-D passengers plus those who connect to or from other flights.

**Enplanement:**

One (originating or connecting) passenger, boarding an aircraft, with a unique flight coupon.

**FBO - Fixed Base Operator:**

Private operator located on the airport, providing space (including hangars) and other services, primarily general and business aviation related.

**Fleet Mix:**

The various types of aircraft operating at an airport or in a region. Generally classified on the basis of weight and engine type.

**Flight Service Station (FSS):**

An aeronautical facility providing mobile and fixed communications, flight information, search and rescue alerting, and weather services to pilots and other users.

**Gate:**

Generally the passenger access point to/from the aircraft at the passenger Air Terminal Building. May be associated with an airbridge.

**General Aviation (GA):**

All aviation, other than military, and scheduled and charter air transport (airlines), including privately owned light single-engine aircraft for recreational flying (personal aviation), as well as business jets, rotorcraft and other types of equipment for such commercial activities (business aviation) as news-gathering, pipeline patrol, emergency medical flights, crop- dusting, agricultural application, flight training, shipping, surveying, air taxi, corporate flying, emergency transport, policing and firefighting.

**Groundside:**

That area of an aerodrome not intended to be used for activities related to aircraft operations and to which the public normally has unrestricted access. Also called “Landslide” interchangeably.

**Hold Baggage Screening (HBS):**

Part of the BHS where passengers checked bags are screened by EDS machines

**International Air Transport Association (IATA):**

Supports aviation with global standards for airline safety, security, efficiency and sustainability.

**International Civil Aviation Organization (ICAO):**

A specialized agency of the United Nations, having its headquarters in Montréal, the objective of which is to develop the principles and techniques of international air navigation and transportation and foster planning and development of international civil air transport.

**Instrument Approach Procedure (IAP):**

A procedure for an instrument approach to a runway or aerodrome determined by the pilot- in-command of an aircraft on the basis of the information specified in the Canada Air Pilot for an IFR approach to that runway or aerodrome.

**Instrument Flight Rules (IFR):**

A set of rules governing the conduct of flight under instrument meteorological conditions. Aircraft flying IFR depend on ATC to monitor air traffic activity in the surrounding airspace. ATC provides separation from other aircraft operating under IFR rules and from VFR aircraft in Class B airspace.

**Instrument Landing System (ILS):**

A radio navigation system which provides aircraft with horizontal and vertical guidance just before and during landing and, at certain fixed points, indicates the distance to the reference point of landing.

**ILS Category I** – An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800feet.

**ILS Category II** – An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200feet.

**ILS Category III** - (1) IIIA - An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet. (2) IIIB - An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet. (3) IIIC - An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

**Instrument Approach:**

A series of predetermined maneuvers by reference to flight instruments for the orderly transfer of an aircraft from the beginning of the initial approach to a landing, or to a point from which a landing may be made.

**Itinerant Aircraft Movements:**

All aircraft landings and take-offs other than local movements that have a destination or origin other than the reporting airport. Includes all fixed wing runway movements and helicopter operations. Excludes flights only passing through the control zone of the airport.

**Load Factor (LF):**

The number of passengers carried as a percentage of the number of seats available.

**Local Aircraft Movements:**

Local aircraft movements are considered as aircraft which remain in the circuit or in the vicinity of the airport and will return to the airport without landing elsewhere.

**LOS - Level of Service:**

Defined around passenger processing and determines issues such as comfort, queuing, wait times, etc. Levels A to F are defined as:

**Level of Service A:** An excellent level of service: conditions of free flow, no delays and excellent levels of comfort.

**Level of Service B:** A high level of service: conditions of stable flow, very few delays and high levels of comfort.

**Level of Service C:** A good level of service: conditions of stable flow, acceptable delays and good levels of comfort.

**Level of Service D:** An adequate level of service: conditions of unstable flow, acceptable delays for short periods of time and adequate levels of comfort.

**Level of Service E:** An inadequate level of service: conditions of unstable flow, unacceptable delays and inadequate levels of comfort.

**Level of Service F:** An unacceptable level of service: conditions of cross-flows, system breakdowns and unacceptable delays; an unacceptable level of comfort.

**Manoeuvring Area:**

That Part of an aerodrome intended to be used for taking off and landing of aircraft and the movement of aircraft associated with takeoff and landing, excluding aprons.

**Movement:**

One landing or one takeoff.

**NAV CANADA:**

The private, non-share capital corporation providing air navigation services in Canadian airspace, and ATS in international airspace for which Canada has assumed responsibility.

**Noise Exposure Forecast (NEF):**

Officially recognized metric measurement used for airport noise assessment in Canada. A NEP is based on a projection (not a forecast) of aircraft movements for up to 20 years into the future, and includes aircraft types and runway configurations that may materialize during this period.

**Non-Directional Beacon (NDB):**

A ground-based, low frequency radio transmitter used in support of an instrument approach for airports.

**Non-Precision Approach:**

An instrument approach that makes use of visual and non-visual aids providing at least directional guidance adequate for a straight-in approach.

**Non-Passenger Screening Vehicles (NPS-V):**

The security screening of non passenger vehicles accessing restricted airport areas.

**Non-Passenger Screening (Terminal):**

The security screening of non passengers accessing restricted airport areas.

**Origin and Destination (O/D):**

O/D passengers are those who either start or terminate their trips at an airport.

**OD Traffic:**

A measure of airline (passenger) traffic between the commencement point of an air passenger's journey and the end point, as distinguished from E/D traffic.

**Obstacle Limitation Surface (OLS):**

Defines the limits to which objects may project into the airspace around airports so as to permit the intended airplane operations at the airport to be conducted safely.

**Planning Peak Hour Passenger:**

Represents the passenger demand during a typical very busy period rather than the busiest hour of the year.

**Radio Frequency Identification (RFID):**

A device that uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically stored information. Passive tags collect energy from a nearby RFID reader's interrogating radio waves. Active tags have a local power source such as a battery and may operate at hundreds of meters from the RFID reader.

**Regional Jet (RJ):**

Through no formal definition exists, an RJ is typically thought of as a jet aircraft containing between 35 and 100 seats, operated principally by regional or commuter airlines in short- to medium-haul commercial passenger service.

**RNAV - Area Navigation:**

RNAV is a system that allows navigation on any desired flight path, rather than one defined by ground-based fixed airways. An RNAV system can determine position by referencing the position of ground-or space-based navigation aids, such as the Global Positioning System (GPS), using onboard flight management computers.

**Required Navigation Performance (RNP):**

An operating standard that must be met for an aircraft to operate in certain areas of the defined airspace. RNP requires an aircraft to stay within a specific envelope of airspace and continuously monitor its performance.

**Runway:**

A defined rectangular area at an aerodrome prepared for the landing and take-off of an aircraft.

**Non-Precision Runway** – A runway served by visual aids and non-visual navigation aids that provides at least lateral guidance adequate for approach down to a height above aerodrome (HAA)/height above touchdown (HAT) of 500 ft. but not lower than 250 ft.

**Precision Runway** – A runways served by visual aids and non-visual navigation aids that provide lateral and vertical guidance to the operating minima as specified in precision runway ILS CAT I, CAT II or CAT III.

**Non-instrument Runway:**

A runway intended for the operation of aircraft using visual approach procedures.

**Runway Visual Range (RVR):**

A measure of the horizontal visibility on the runway and used to define low visibility conditions and operating requirements.

**Scheduled Airline:**

Any air transport enterprise offering or operating a regular air service according to a published timetable (although many also operation-scheduled services).

**Scheduled Services:**

Flights listed in a published timetable (or that are regular and frequent as to constitute a recognizably systematic series) and performed for remuneration.

**Take Off Surface:**

An obstacle limitation surface required to protect take-offs on runways with a clearway or a displaced threshold, in which part of the take-off occurs within the displaced portion of the runway threshold.

**Taxiway:**

A defined path at an aerodrome selected or prepared for the movement of aircraft.

**Transport Canada (TC):**

The Federal Authority responsible for the regulation of civil aviation.

**Threshold:**

The beginning of that portion of the runway declared usable for landing by the aerodrome operator.

**Visual Flight Rules (VFR):**

The rules that govern the procedures for conducting flight under visual conditions. The abbreviation "VFR" is also used to indicate weather conditions that are equal to or greater than the minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

# Appendix B : Kelowna International Airport Master Plan 2045 Strategic Plan

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# **Kelowna International Airport Master Plan 2045 Strategic Development Plan**

**Kelowna International Airport**

**FINAL REPORT**  
**February 2016**





*Kelowna International Airport Master Plan 2045  
Strategic Development Plan*

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## INTRODUCTION

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Strategic planning is essential for an airport to remain viable and to promote growth. Thinking strategically is important to create sustainable success. This Strategic Plan reflects the examination of the macro-economic environment, key aviation industry trends that impact the Kelowna International Airport (YLW), a SWOT analysis of strengths, weaknesses, opportunities and threats, quality service assessment of current air services and a review of airport development opportunities. Based on the results of this assessment, along with input from stakeholders, provided through workshops and surveys, the key strategic direction for YLW has been identified. A number of key strategies have been developed to achieve the airport's vision and help guide the airport over the next five years. In addition, this plan is directly linked to the Master Plan 2045. The Strategic Plan also includes performance measures to track progress.

YLW is the economic engine of central British Columbia as it brings a significant amount of visitors to the region. The greatest strengths of YLW from which future opportunities may be developed include the long-term vision and planning through the Master Plan, customer experience focus, diverse air service, strong ground transportation options, competitive cost structure, substantial non-airline revenues, effective organization and work force, technology focus, community partnerships and most importantly the unique world class Okanagan Valley Experience.

### ***PURPOSE OF THE STRATEGIC DEVELOPMENT PLAN***

The purpose of this Plan is:

- to establish the strategic direction for the efficient and economic development of the airport over the next 5 years as well as to outline development priorities;
- to provide for the development of additional aviation and non-aviation uses of the airport;
- to communicate to the public the objectives for future uses of airport lands and growth of the airport; and
- to minimize potential conflicts between uses and users of the airport, and to ensure compatibility with the areas surrounding the airport.

### ***COLLABORATION WITH STAKEHOLDERS***

YLW recognizes that the planning process and implementation is significantly improved when its stakeholders and the public are included in the development of sustainable plans. To this end, the Airport Advisory Committee will facilitate the participation from local government, business and community interests within the airport catchment area on matters associated with the development of the Kelowna International Airport and providing leadership and guidance with respect to the implementation of this plan.



## **NEW APPROACH TO STRATEGIC AIRPORT DEVELOPMENT**

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Airports have traditionally been viewed as places where aircraft operate and passengers and cargo transit. This traditional understanding is giving way to a broader, more encompassing model which recognizes the fact that along with their core aeronautical infrastructure and services, most major airports have incorporated a wide variety of non-aeronautical facilities and services. **Retail** concepts have been merged into passenger terminals. Airport property beyond the terminal is being developed with hotel facilities, conference and exhibition complexes, shopping centers, office buildings, and logistics and free trade zones. Airports also frequently commercially serve residents in the local market area.

Airports are thus taking on features of metropolitan central business districts or commercial nodes, increasingly operating as points of multimodal surface transportation convergence with surrounding office, hotel and commercial facilities. Indeed, under the new airport city model, many airports are becoming significant employment, shopping, business meeting and entertainment destinations in their own right. Because of the critical importance of landside commercial development to revenue streams, numerous airports are turning to the airport city model as a key component of their Master Plan and development strategies, in addition to traditional aeronautical development.

Today, many airports of various sizes receive greater percentages of their revenues from non-aeronautical sources than from aeronautical sources. These non-aeronautical revenues have become pivotal to airports meeting their facility modernization and infrastructure expansion needs, along with their being cost-competitive in attracting and retaining airlines.

Numerous airports will be increasingly dependent on revenue derived from non-aeronautical sources in the future. With airports under pressure by airlines and passengers to keep aeronautical costs under control, increasing non-aeronautical revenues pose the primary means by which airports will be able to meet their financial and growth needs. In fact, most do not see expanding non-aeronautical revenues as an option, but as a necessity. In the future these non-aeronautical revenue generating activities, such as retail, will increasingly take place on airport land beyond the terminal. This is because terminals are basically planned and built according to aeronautical needs and security issues tend to pose limits such as limiting shopping locations of meeters and greeters. Other space constraints of terminals limit the amount of retail and other non-aeronautical economic activities, pushing these activities landside as the airport develops.

To this end, a new approach is being taken with respect to the Strategic Plan for the Kelowna International Airport that brings together traditional aviation cluster development and land uses with emerging commercial clusters, introducing new landside commercial land uses in a synergistic manner so that future airport development will be economically efficient, aesthetically pleasing, and socially and environmentally sustainable. The Strategic Plan has been



developed based on extensive research, consultation and evaluation of a number of development concepts using airport best practices for optimizing the highest and best use of land and facilities.

### ***NEW APPROACH TO OPERATING AS AN INTEGRATED SYSTEM OF AIRPORTS***

In addition to achieving YLW's development strategy, there is a need to take a new collaborative approach with respect to the operation and governance of the primary airports in the Okanagan Region including Kelowna, Penticton and Vernon. Today each has a unique role: Kelowna's role is the airport that supports international, U.S. transborder and long-haul domestic traffic.

Penticton is strictly serving short-haul traffic destined for the southern region of the valley. Vernon is primarily acting as a general aviation facility. A system of regional collaboration amongst airports is needed to allow these facilities to be operated as an integrated group rather than a collection of individual airports. This approach would see each airport in the region with a particular complimentary role so that aviation facilities and services are optimized to best meet the range of demands. This will also be more cost-effective in terms of administration, maintenance, ground transportation linkage and infrastructure improvements through the efficiencies achieved by operating as a coordinated system of airports serving the Okanagan region. Although not specifically examined as part of this Plan, a similar coordinated approach can also be taken with respect to Tourism promotion and having "One Voice" for tourism for the entire region. This approach would be complimentary to the airport integrated approach and more cost-effective in achieving tourism growth that will be beneficial to the entire Okanagan Valley.



## VISION

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The overall strategy is to develop the Kelowna International Airport as ‘best in class’ to meet their current vision of “being the best mid-size airport in North America” by responding to the needs of the local community, to serve the province’s evolving transportation and business development needs in the interior of British Columbia and to maximize the growth of a wide range of aeronautical and other non-aeronautical businesses at the airport. In addition, the Strategic Plan provides direction and focus towards the achievement of the current vision statement for YLW, namely:

“We are the best mid-size airport in North America”

This vision forms a target to which all other plans are defined against. The mission statement defines why the airport exists and brings clarity of purpose and how to achieve the vision. The new mission statement highlights the role of the airport as the hub in the interior of BC for the movement of goods and people.

“Provide safe, secure, customer-friendly economical services and facilities that promote the Okanagan Region”



## **CORE VALUES**

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The foundation of the mission and vision is built upon specific core values. YLW'S core values are intrinsic beliefs that all airport employees are expected to use, live by and demonstrate on a daily basis while executing their work responsibilities.

### **Excellence in Safety, Security and Environmental Performance**

We ensure that the safety and security of our customers, staff, facilities and environment is a primary concern in all aspects of doing business.

### **Economic Development and Fiscally Responsible Ownership**

We are committed to responsibly managing all of our assets in a fiscally responsible, commercially focused manner to advance the region's social well-being and economic prosperity.

### **Quality Customer Experience**

We are motivated by customer expectations in providing quality facilities and services in a customer-sensitive and service-driven manner.

### **Integrity**

We are accountable for all our actions, act honestly and respectfully in our business relations, usage of our resources, treatment of our customers and each other, and in the general conduct of our business.

### **Teamwork and People**

People are our most important resource; we work together to foster an open and cooperative environment that encourages teamwork, communication and mutual respect.

### **Innovation**

We champion innovation and entrepreneurship that drive efficiencies to create new value for our stakeholders.



## KEY SUCCESS DRIVERS

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Key success drivers (KSDs) are focus areas that help YLW organize goals and objectives to achieve the short-term and long-term strategic direction of the airport.

**KSD 1** – Operate and maintain safe and secure best in class facilities and services

**KSD 2** – Foster economic development for the region

**KSD 3** – Act in a financially responsible and sustainable manner

**KSD 4** – Exceed the customer service expectations of the travelling public in collaboration with airport partners and the community

YLW subscribes to a culture and operating philosophy where measurable results are applied against specific objectives that support the airport's mission and vision. YLW's success depends on this fundamental synergistic relationship. It is part of its corporate philosophy and the way it operates and conducts business.

The airport relies on a structured business planning framework to set the overall direction for the airport and to guide its operation. Fundamental elements for guiding the strategic development of the airport are the Vision and Mission Statements, Strategic Plan, Master Plan and the Annual Business Plan. This Strategic Plan delineates the commercial framework, presents strategies for improving customer service and the financial bottom line; and outlines objectives and related activities for achieving YLW's long term goals.

Key goals of the vision are to:

***GOAL 1: DEVELOP AN AIRPORT WORTHY OF THE SECOND BUSIEST INTERNATIONAL GATEWAY TO THE PROVINCE OF BRITISH COLUMBIA***— the development of 'best in class' aeronautical and commercial facilities appropriate for the City of Kelowna.

***GOAL 2: DEVELOP AN AEROSPACE BUSINESS PARK*** — to leverage the current aerospace industry cluster of businesses and the desirability of the location for employees.

***GOAL 3: CREATION OF BUSINESS OPPORTUNITIES*** — to make Kelowna International Airport and its environs the centre of a business, retail, and transport hub to respond to the needs of users, providing economic impetus for office parks and landside commercial developments.



***GOAL 4: TOURISM FOCUS*** —to make the Kelowna International Airport terminal an attractive facility for inbound tourists to the Okanagan Valley by providing unique terminal facilities, services and theming that caters to year-round tourism traffic with emphasis on the winter ski market and the summer leisure traveler.

***GOAL 5: MAXIMIZE AIRPORT BASED EMPLOYMENT OPPORTUNITIES*** — to maximize total on-Airport employment and business growth, without compromising aviation operations; and

***GOAL 6: RESPOND TO THE NEEDS OF USERS*** — grow aviation and non-aviation development at the Kelowna International Airport in response to the needs and market demands of airport tenants and operators, the regional business community and the general public.



## **DETAILED STRATEGIC DEVELOPMENT OBJECTIVES**

---

A number of key business objectives have been developed to achieve these goals. The objectives in terms of developing the airport are as follows:

***OBJECTIVE 1:*** *Develop Kelowna International Airport as the international gateway and multi-modal transport hub serving the Okanagan Region.*

The integration of a number of passenger modes of transportation into a single location at the Kelowna International Airport offers significant opportunities. The concentration of ground transportation shuttles and buses, bicycle trails and air services in one location offers a unique ability to seamlessly transfer between transport modes. The provision of complimentary terminal facilities and services with multi-modal linkages is a leading edge concept that will help strengthen YLW's regional hub strategy. The airport also needs to continue to increase domestic and international air services to maintain growth and increase revenues for the airport and the community. To this end, the airport should focus on:

- providing multi-modal terminal facilities to enhance connections to ground transportation services;
- attracting new ultra low cost carrier service;
- extending daily flights to Toronto year-round;
- encouraging new regional tier three service to northern BC communities;
- seeking U.S. transborder services to Los Angeles, Chicago and Minneapolis-St. Paul;
- attracting new seasonal charter service to a European destination;
- adding more leisure flights to sunspot destinations.

***OBJECTIVE 2:*** *Ensure that the design of the airport reflects its role as a gateway to the Thompson Okanagan Tourism Region.*

The type, form and image of all airport buildings should reflect:

- the creation of an exciting 'sense of arrival' experience for passengers in the terminal;
- the creation of a wide range of attractive, environmentally and user-friendly buildings, including but not limited to office and retail;
- an introduction to the unique aspects of the region; and
- high quality contemporary airport design.

***OBJECTIVE 3:*** *Maximize the economic growth of the Airport and the surrounding region.*

The development of the airport will seek to stimulate economic growth in the region through:



- maximization of aeronautical growth in number of businesses and related employment;
- proactively introduction of initiatives that take full advantage of the existing cluster of aerospace business; and
- maximization of non-aeronautical commercial development options on the airport site.

***OBJECTIVE 4:*** *Provide a business environment that allows YLW and its associated businesses to reach their potential.*

A vibrant, flexible and supportive commercial and physical environment will be created at the airport to create substantial development opportunities and to allow businesses to respond to changing market needs, maintain viability and achieve growth in both aeronautical and non-aeronautical activities.

***OBJECTIVE 5:*** *Develop non-aeronautical land to support future aeronautical infrastructure development.*

Increasingly, businesses are recognizing the role of airports as economic drivers for their region and are demanding a presence on or near major airports. Commercial development in response to this demand and the alternative revenue streams (i.e.: independent of airline revenues) enables the airport to fund major aviation infrastructure developments. Commercial land will be put to productive use where commercially possible, considering surrounding land uses and transport linkages, by incorporating a wide range of activities, including hospitality, office and retail.



## **INTEGRATION WITH LOCAL PLANNING STRATEGIES**

---

YLW plays a pivotal role in the current and future success of Kelowna and the Okanagan Region as a major social, tourism, business, government gateway. The City recognizes the importance of managing on-airport development in unison with the metropolitan and regional planning strategies of the City of Kelowna and Government of BC, and seeking, where possible, to have the airport recognized in these strategies as a critical transportation, economic and business gateway for the region.

There is a shortage of well-located and serviced industrial land within Kelowna. Therefore the airport lands proposed for development would greatly benefit and be complimentary to the municipal and regional development strategy. In addition, the City of Kelowna is focusing on core economic growth segments. This is an opportunity for the City and YLW to promote and manage the development of an Aerospace Business Park. Furthermore, the future development of landside commercial property is critical to enhance the operation and the viability of the airport.

### ***DEVELOPMENT CONCEPTS AND MASTER PLAN***

A wide range of uses of the airport site are detailed in the Airport Master Plan to achieve YLW's development vision. The importance of aviation and the airport's intent to promote the overall growth of aviation and services should not be underestimated. In addition to these aviation uses however, there is clearly a significant demand for additional uses on the airport site, evidenced by the growth of the aerospace business. It is critical in the future to ensure the airport is not reliant upon only one revenue source – especially not one subject to the instability of aviation. The planning vision therefore is to diversify airport land uses as outlined in the following five precincts or development clusters, namely: *aviation, logistics, aerospace, multi-modal and landside commercial*.



## **PERFORMANCE MEASUREMENT**

---

To measure the achievement of the vision statement, Airports Council International provides the only global benchmarking program that is targeted to monitor an airport's performance and provide a comparison to other peer airports. The key attributes that are measured include:

- Access to airport and vehicle parking;
- Check-in facilities and services;
- Security services;
- Way-finding in terminal;
- Courtesy and friendliness of staff;
- Terminal cleanliness and ambience;
- Food, beverage and retail concessions;
- Internet, business/executive lounge;
- Washroom availability and cleanliness;
- Comfort of waiting and gate areas;
- CBSA/Customs/Immigration services;
- Speed of baggage delivery service; and
- Overall satisfaction with airport.

Airports in Canada participating in the ACI Quality of Service Index (QSI) survey with passenger activity between 0.5 and 2.5 million enplaned and deplaned (E/D) passengers are recommended as comparable peer airports. Classified medium-sized airports in the U.S. with under 10 million E/D passengers for which ACI QSI surveys are conducted were also selected. The following is a list of the selected airports that are recommended to be used for benchmarking purposes. An annual 'report card' may be generated to track progress towards the achievement of the YLW Strategic Plan and the airport vision and mission.

### **Canadian Airports**

- Toronto/City
- Victoria
- St John's
- Québec
- Saskatoon
- Regina
- Fort McMurray
- Moncton

### **U.S. Airports**

- Dallas Love Field
- San Jose
- Sacramento
- San Antonio
- Pittsburgh
- Cleveland Hopkins
- Indianapolis
- Cincinnati
- Columbus
- Jacksonville
- El Paso
- Grand Rapids



In addition other metrics can be used to assess the specific goals and objectives. YLW's goal is to achieve a balance between a quality level of service at the lowest practical cost. The effectiveness of the governance and management of YLW is measured by conducting an independent 'Five Year Review'.

MEASUREMENT FACTOR	PERFORMANCE TARGET
<b>Passenger Satisfaction</b>	Achieve a 4.0 Rating or Better out of 5.0 (80%+) on the ACI Service Quality Survey Rating Scale
<b>Air Service</b>	Achieve Top Quartile Performance when comparing passenger and air carrier movements per capita to other peer Canadian airports
<b>Cost Containment</b>	Achieve Top Quartile Performance when comparing direct operating costs per passenger to other peer airports in Canada
<b>Aviation Fees</b>	Maintain Aviation Fees Lower than the average of other peer Canadian airports

## ***CONCLUSION***

The successful execution of this Strategic Development Plan requires teamwork and continual improvement. The goals, objectives and strategies identified in this plan will provide the airport, partner organizations a strong sense of common purpose and a sense of direction.

The Kelowna International Airport will play a positive and significant role in the continued growth of Kelowna and the Okanagan Valley. YLW is committed to working effectively with all of their stakeholders to improve airport and aviation services for Kelowna and all customers using the Kelowna International Airport. YLW will add significant value to the community and will seek to realize the potential of the locally operated airport and contribute to the fulfillment of their mandate.



## **APPENDIX A – SWOT ANALYSIS**

---

<b>Strengths</b>	<b>Weaknesses</b>
Level of Awareness to Safety and Security.	Disconnect with private aviation tenants.
Strong Management Team & Community Involvement.	Real estate has limited expansion possibilities.
Commitment by the City.	Residential build-up within airport proximity.
Service Quality to Customers.	Insufficient flights to popular destinations.
Convenient and Strategic Location.	Traffic congestion to/from City.
Long term vision	Restrictive international facilities.
Collaborative relationships	Slow economic and population growth.
The Okanagan Experience	Constrained capacity in terminal
<b>Opportunities</b>	<b>Threats</b>
Non-stop destination expansion.	Global and national economic situation.
Local Tourism growth.	Federal government regulations.
Embracing technology advancements that are taking place at larger airports.	Limited job opportunities in region.
Attracting more aviation industry to the airport.	US exchange rate differential increases.
Emerging air service markets.	Potential for increased security measures/cost.



## APPENDIX B – LIST OF STAKEHOLDERS

Thank you to the airport partners, stakeholders and the community for their contribution in shaping our Strategic Plan. Online survey participation was kept confidential. List of workshop and survey participants that may have took part:

First Name	Last Name	Company	Stakeholder Category
Zahorodny	Zane	Air Canada	Airline Consultative Committee
McDannold	Gay	Air Canada Express	Airline Consultative Committee
Leitch	Murray	Air North	Airline Consultative Committee
Moore	Allan	Air North	Airline Consultative Committee
Willis	Benjamin	Alaska Airlines	Airline Consultative Committee
Coleman	Aubrey	Alaska Airlines	Airline Consultative Committee
Fuller-Lyman	Amy	Alaska Airlines	Airline Consultative Committee
Marchuk	Dixie	Central Mountain Air	Airline Consultative Committee
Murray	Bob	Central Mountain Air	Airline Consultative Committee
Prosser	Michael	Central Mountain Air	Airline Consultative Committee
Fleetham	Mark	Jazz Air LP	Airline Consultative Committee
McGhee	Terry	Jazz Aviation LP	Airline Consultative Committee
Nadin-Young	Laura	Jazz Aviation LP	Airline Consultative Committee
Rankin	David	Jazz Aviation LP	Airline Consultative Committee
Leach	Jennifer	Jazz Aviation LP	Airline Consultative Committee
Champion	Jay	United Airlines	Airline Consultative Committee
Mesaros	Dan	WestJet	Airline Consultative Committee
Schwindt	Ryan	WestJet	Airline Consultative Committee
Grigg	Heidi	WestJet	Airline Consultative Committee
Basran	Colin	Mayor	Mayor, Council Members (Kelowna)
Seiben	Councillor Brad	City of Kelowna	Mayor, Council Members (Kelowna)
Given	Councillor Gail	City of Kelowna	Mayor, Council Members (Kelowna)
Gray	Councillor Tracy	City of Kelowna	Mayor, Council Members (Kelowna)
Hodge	Councillor Charlie	City of Kelowna	Mayor, Council Members (Kelowna)
Donn	Councillor Ryan	City of Kelowna	Mayor, Council Members (Kelowna)
Singh	Councillor Mohini	City of Kelowna	Mayor, Council Members (Kelowna)
Stack	Councillor Luke	City of Kelowna	Mayor, Council Members (Kelowna)
DeHart	Councillor Maxine	City of Kelowna	Mayor, Council Members (Kelowna)
Linda	Daigle	Air Canada	Airport Operators Committee
Jennifer	Leach-Trask	Air Canada Express	Airport Operators Committee
Cliff	Kerr	Air Canada Express	Airport Operators Committee
Carina	Pourier	Air North	Airport Operators Committee
Trish	Pettitt	Air North	Airport Operators Committee
Roderick	Ramage	Air Transat	Airport Operators Committee



## Kelowna International Airport Master Plan 2045 Strategic Development Plan

Benjamin	Willis	Alaska Airlines	Airport Operators Committee
James	Hahn	All Rush Express Ltd.	Airport Operators Committee
Ken	Dewerson	Ambassador	Airport Operators Committee
Resham	Bhatti	Apple Cabs	Airport Operators Committee
Sandhika Lata	Singh	Avis	Airport Operators Committee
Tracy	Layng	Big White Ski Resort	Airport Operators Committee
		Bouygues Energies & Services	Airport Operators Committee
Doug	Nott	Budget Rent-A-Car	Airport Operators Committee
Dave	Bianchini	Callahan Property Group Ltd.	Airport Operators Committee
Bob	Callahan	Callahan Property Group Ltd.	Airport Operators Committee
Steve	Harris	Canada Border Services Agency	Airport Operators Committee
Lisa	Cheswick	Canada Border Services Agency	Airport Operators Committee
Paul	Carter	Canadian North Airlines	Airport Operators Committee
Dave	Morris	Carson Air Ltd./600897 B.C. Ltd.	Airport Operators Committee
Kevin	Carson	Carson Air Ltd./600897 B.C. Ltd.	Airport Operators Committee
Kevin	Hillier	Central Mountain Air	Airport Operators Committee
Dixie	Marchuk	Central Mountain Air	Airport Operators Committee
Lucy	Cormier	Checkmate Cabs Ltd.	Airport Operators Committee
Amy	Wiltshire	Coast Capri Hotel	Airport Operators Committee
Dale	Sivucha	Coast Capri Hotel	Airport Operators Committee
Gavin	Parry	Commissionaires BC	Airport Operators Committee
Mark	Moger	Enterprise Rent-A-Car	Airport Operators Committee
Jordan	Lloyd	Enterprise Rent-A-Car	Airport Operators Committee
Victor	Patricio	Flair Airlines Ltd.	Airport Operators Committee
Bill	Hardy	Four Points by Sheraton	Airport Operators Committee
Vincent	Pouget	Great Slave Helicopters Ltd.	Airport Operators Committee
Mark	McGowan	Ironman Holdings Ltd. dba Kelowna Ramp Services	Airport Operators Committee
Mark	Halston	Kelowna Cabs	Airport Operators Committee
Tarsem	Sidhu	Kelowna Flightcraft Ltd.	Airport Operators Committee
Steve	Schnepf	Kelowna Flying Club	Airport Operators Committee
Pamela	Nelson	Kelowna T-Hangars Inc.	Airport Operators Committee
Blair	Jones	Let's Go Transportation	Airport Operators Committee
Fabio and Birgit	Santana	National Car Rental	Airport Operators Committee
Eilleen	Hill	NAV CANADA - YLW Tower	Airport Operators Committee
Paul	England		



## Kelowna International Airport Master Plan 2045 Strategic Development Plan

Shawn	Liddicoat	NAV CANADA - YLW Tower, Tech Operations Northwestern Air Lease Ltd.	Airport Operators Committee
Brian	Harrold		Airport Operators Committee
Laura	Major	Okanagan Limousine Inc.	Airport Operators Committee
Claudette	St. Thomas	RCMP	Airport Operators Committee
John	Leonard	Revelstoke Connection Royal Star Enterprises Inc.	Airport Operators Committee
Philip	Patara		Airport Operators Committee
Del	Kohnke	Shell Aerocentre	Airport Operators Committee
Gordie	Carr	Skyline Helicopters Ltd.	Airport Operators Committee
Ed	Wong	Skyway Group Strategic Aviation Services	Airport Operators Committee
Steve	Haynes	Sun Valley Limousine Ltd.	Airport Operators Committee
Michael	Hiebert	Suncor Energy	Airport Operators Committee
Jody	Schuler	Sunwing Airlines	Airport Operators Committee
Gord	Kenny	Tourism Kelowna	Airport Operators Committee
Chris	Lewis	Transport Canada, Pacific Region	Airport Operators Committee
Michael	Fu	United Airlines	Airport Operators Committee
Luis	Ramos	WestJet	Airport Operators Committee
Schwindt	Ryan	WestJet	Airport Operators Committee
Pritti	Pendharker	WestJet	Airport Operators Committee
Wayne	Stinn	WestJet	Airport Operators Committee



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# Appendix C : Master Plan 2045 Consultation Summary Report

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# Master Plan 2045 Consultation Summary Report

September 2016

DRAFT (to be finalized October 2016)



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FAX 250 317-0213  
airport@kelowna.ca

[ylw.kelowna.ca](http://ylw.kelowna.ca)

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## 1. EXECUTIVE SUMMARY

In March 2015, the Kelowna International Airport (YLW) engaged SNC-Lavalin's Airports & Aviation group and its consultant team to update the existing Master Plan 2025. Updating the existing Master Plan 2025 will guide future airport development and support the cost effective delivery to meet aviation demand while considering potential environmental and socio-economic impacts.

In partnership with YLW and the City of Kelowna (the City), the team developed **Master Plan 2045** in support of **YLW's vision to become the best mid-sized airport in North America**. The team has applied previous YLW and City data, including the Stakeholder and public issues and outcomes from Master Plan 2025, along with current analysis and engagement to guide Master Plan 2045.

Of particular importance to the success of Master Plan 2045 is strategic communication and engagement with Stakeholders and the public not only in Kelowna but in the Central Okanagan Regional District (RD). One key deliverable of YLW's Master Plan 2045 was to **'encompass input from the communities and stakeholders served by YLW and ensure it is reflected in development.'**

To meet this objective, our team developed a *Master Plan 2045 Communication and Engagement Plan* as a three-phased framework to strategically inform and engage Stakeholders and the public about the long-term growth and development of YLW, and more acutely understand the current and future interests and priorities of those served by YLW in the region. The Plan was developed in accordance with the City's *Engage Policy* in collaboration from City and YLW communications staff.

This framework identified emerging issues, opportunities and key recommendations that extend beyond Master Plan 2045, and that will support the overarching 5-year Strategic Plan, City's Official Community Plan Kelowna 2030 OCP updates and other Capital, Planning and Infrastructure initiatives in Kelowna and the RD. Stakeholder outreach included input from Government agencies, Regional Districts and Neighbouring Municipalities, business and community partners, Chambers of Commerce, the University of British Columbia Okanagan (UBCO) and other key organizations where the overlap of capital, community and master planning exists. Our Outreach Schedule that outlines the Stakeholder groups who were engaged is located in the Appendix of this document.

In summary, from March 2015 through October 2016, our Master Plan 2045 communication and engagement program included:

- Over 25 Stakeholder meetings, presentations and workshops were held and two open houses were hosted
- Print and electronic advertising and materials were used, including newspaper and social media ads/posts, display boards, surveys, postcard and presentations
- Over 300 feedback forms were submitted (Over 100 were submitted online)
- Advertising and posts on YLW's Website, Facebook, Twitter and Instagram were completed

Over  
**25** Workshops and  
Presentations  
Completed

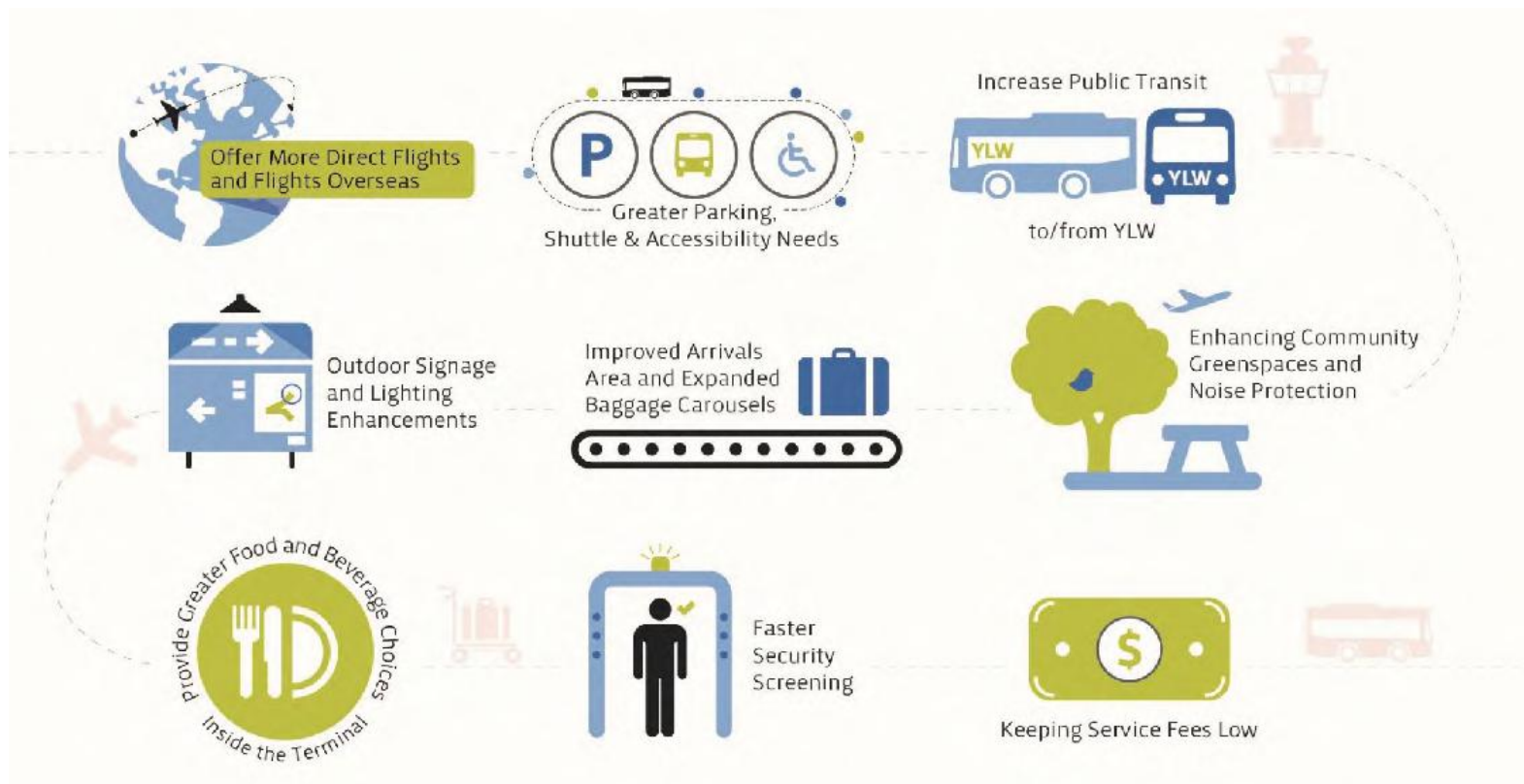


Over  
**300** Feedback Forms Received



### Executive Summary of Public Feedback: The Top Priorities

Below is a summary of the top priorities the public recorded on their surveys at meetings and open houses (print survey responses), and online (electronic survey responses).



Along with their recommendations about what's important to sustain and/or improve, the public expressed their satisfaction with the services that YLW offers.

Services out of the control of YLW, such as security screening (CATSA) and flight offerings (Airlines), will be discussed and tracked with each agency so YLW can provide updates about improvements to tenant services.

More detail about Stakeholder and public feedback  
is located in Section 8 of this report.

## 2. MASTER PLAN 2045 FINDINGS

Our overall **Master Plan Findings** summary below is based on technical reports and analysis, changing and static regulations and so on. It is important for Stakeholders and the public to understand the technical components and outcomes of Master Plan 2045 as we consider and incorporate their priorities for the future.

These key findings form the basis for recommendations, planning and implementation of future growth and development opportunities at YLW.



Technical analysis, aviation and government relations and key Stakeholder input guides the findings and assists in determining next steps.

Public feedback is also critically important, and typically focusses on less technical aspects such as keeping end-user service fees low and standards high, increased accessibility, faster security screening, additional flights and direct flights to/from Europe and other international destinations and so on.

For more information about the Master Plan 2045 Findings, please review the Master Plan 2045 document.

**The team considers the key findings, interests and priorities of Stakeholders and public to determine next steps and potential phased implementation through 2045.**

### 3. STAKEHOLDER AND PUBLIC CONSULTATION: PROCESS AND TIMELINE

The Master Plan 2045 process was segmented into three distinct phases (**Preliminary, Detailed and Final Master Plan**), all with communication and outreach activities aligned as Master Plan 2045 developed. This allowed our team to conduct technical analysis with input from key Stakeholders at specific junctions, then adding input from the public, and concluding the process with final Stakeholder consultations prior to reporting out the results.

The consultation program was in effect from **March 2015 through October 2016**, at which time the team froze the technical analysis and input to finalize Master Plan 2045 and make key recommendations.



All three phases allowed for the identification of emerging issues, opportunities and key recommendations that will extend beyond Master Plan 2045, and that will support the overarching 5-year Strategic Plan, City's Official Community Plan Kelowna 2030 OCP and other Capital, Planning and Infrastructure initiatives in Kelowna and the RD in 2017 and beyond.

Based on our technical analysis, consideration should be given to airport-specific elements in the next Kelowna 2030 OCP revision. Continued Stakeholder and public consultation as part of the City's regulatory and non-regulatory consultations in 2017 is recommended.

### 4. INFORMATION AND CONSULTATION TOOLS AND METHODS

#### Print, Electronic and Face-to-Face

A variety of information and consultation tools were combined throughout all three phases of the Master Plan 2045:

Tools	Methods
Information Postcard	Website Advertising/Engagement
Text and Images: Digital Presence	Social Media Advertising/Engagement
E-invites and News Releases	Telephone and In-person Discussions
Display Boards	Newspaper Advertising
Print and Electronic Surveys	Meetings and Workshops
YLW Connection Magazine	Presentations
YLW Handouts and Give-aways	Open Houses

Samples of print and electronic materials are located in the Appendix.

## 5. STAKEHOLDER MEETINGS AND WORKSHOPS

A series of Stakeholder meetings and workshops were held to inform and engage key groups who help to guide the long-term sustainable growth and development of YLW. Meetings and workshops were held both at YLW and at off-site locations to accommodate our Stakeholders.

Resources included presentations and discussions led by the Airport Director with support from YLW staff and the consultant team. Display boards, handout and online material were also used where appropriate.

General meetings provided Stakeholders with an opportunity to learn about Master Plan 2045 through verbal presentations followed by questions/answers. Participants were also provided with a postcard to submit their feedback online using the electronic survey.

Workshops and e-communications were also used to specifically obtain technical input that required greater analysis and planning in each section of the Master Plan 2045 document. This 'roll up your sleeves' process at the end of the second Master Plan 2045 phase allowed for staff, committees, consultants and others to provide specific technical feedback on a page-by-page basis of the draft Master Plan 2045.

Stakeholders were also encouraged to attend the two public open houses in addition to their group participation. More specifically, the second open house (held August 2016) reported out some of the top priorities that survey participants have provided to date. This interim reporting allows Stakeholders to understand the key interests and priorities that YLW has heard from other Stakeholders and the public to date, and to provide their additional comments for thoughtful consideration.

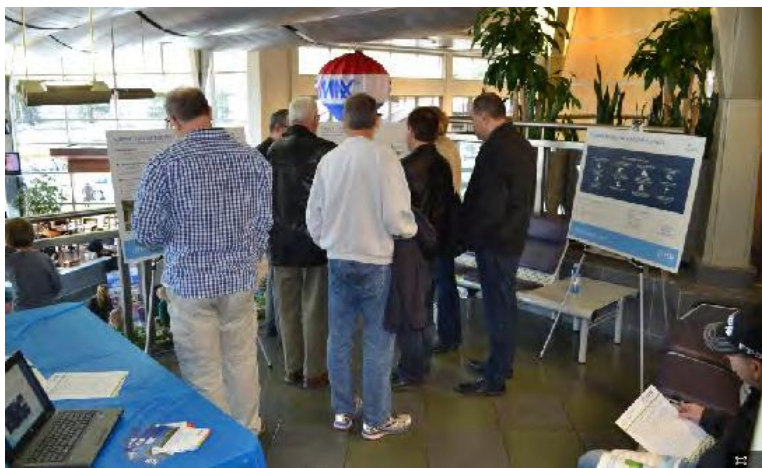
A summary of the top priorities is located in Section 8 of this document.

## 6. PUBLIC CONSULTATION FORUMS

Two public open houses were held to inform and engage the broad public in the second and third phase of the Master Plan 2045 process. Overall, the public expressed how pleased they are with YLW and made several notable recommendations that are further described in Section 8 of this document.

### February 27, 2016 YLW Spring Travel Expo (11am - 3pm)

- Approximately **2,000 people attended** the Spring Travel Expo held at YLW with many guests dropping by the Master Plan 2045 display.
- At the open house, **162 people completed the full print survey (10 questions) and five online surveys were subsequently received.** The print and online survey included questions that correlated to the display boards.
- Display boards, handouts, a continuous loop presentation and printed surveys were used by the team in their discussions with the public.
- Overall, the feedback from the public was positive about YLW moving in the right direction with sustainable growth. There are several notable recommendations from the public described in Section 8.



August 20, 2016 Orchard Park Mall (10am to 2pm)

- Approximately 250 people dropped by the mall display with 43 people completing the condensed print survey (only five questions) and 27 full electronic surveys (with 10 questions) were subsequently received.
- A number of guests preferred not to complete a survey citing they don't use YLW, they didn't have an opinion or questions, and some said 'they wouldn't be around in 2045!'
- Overall, the feedback from guests was very positive about YLW with a couple notable areas for improvement outlined in Section 8.
- Display boards, handouts and printed surveys were used by the team in their discussions with the public.



7. DIGITAL PRESENCE

YLW uses various online and social media platforms to inform and engage Stakeholders and the public about becoming involved in the Master Plan 2045 process:

YLW Master Plan Webpage: <http://www.kelowna.ca/CM/Page4797.aspx>

Master Plan Webpage	Total Page Views	Average Time on Page
Life Time	10,182	00:02:16
Jan – Aug 2016	9,096	00:02:28
May – Dec 2015	1,086	00:01:34

The dedicated Master Plan 2045 webpage received over 10,000 hits

The YLW website provides the public with ongoing information and presentations, invitations to participate, a link to the online survey and an e-subscription service



SurveyMonkey: <https://www.surveymonkey.com/r/MASTERPLAN2045YLW-1>

33.4% of surveys were submitted online  
(as of August 31, 2016)

308 Total  
Surveys Received



205 Print 103 Online

2016 Kelowna International Airport - Master Plan 2045 - Consultation Feedback Survey

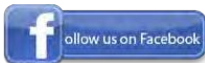
As Kelowna International Airport (YLW) plans for the future, your comments are important to include as part of the final Master Plan 2045.

Please provide your comments on the key topics noted below. Background Information is available on the display boards and handouts, and available online at [ylw.kelowna.ca](http://ylw.kelowna.ca).

1. YLW's Vision and Strategic/Economic Development

What are your interests and priorities for YLW to consider as part of its long-term planning?

2. Please tell us your opinion about how YLW can maintain and/or improve its Key Success Drivers (refer to Board three for descriptions).



YLW Facebook Page

<https://www.facebook.com/ylw.kelownaairport/>



YLW Twitter Handle

<https://twitter.com/ylwkelowna>

**YLW Kelowna International Airport - YLW**  
August 19 at 3:50pm · 🌐

#YLW wants your feedback on the new Airport Master Plan! Join us at the Public Open House this Saturday from 10am-2pm at Orchard Park Shopping Centre! We'll be in the Apple Courtyard!  
<http://www.kelowna.ca/CM/Page4797.aspx>



**Airport Master Plan 2045**  
The Kelowna International Airport (YLW) is the largest municipally owned and operated airport in Canada. With over 1.6 million passengers annually, a 6.6 per cent increase since 2013, the airport now generates benefits not only for the City of...

KELOWNA, CA

Like Comment Share

**YLW Kelowna Airport** @ylwkelowna · Feb 27  
The YLW Master Plan presentation is happening now at the Travel Event. Make sure you stop by to give you feedback!



YLW followers were able to receive updates, posts and invitations to join the public open houses via Facebook, Twitter and Instagram.

Facebook and Twitter were used to push notifications to followers about event advertising, progress updates and encourage participation throughout Master Plan 2045.

Several Orchard Park Mall open house guests indicated that they dropped by the mall specifically because they had received the social media invitations that YLW issued before and during the event.



Instagram: <https://www.instagram.com/ylwkelowna/>

Instagram is also a social media method used by YLW to post pictures about engagement events and encourage participation.

## 8. Stakeholder and Public Feedback: Comment Summary

Stakeholder feedback expressing their top priorities focused on more **technical and operational** aspects of Master Plan 2045, and includes analysis and recommendations for elements such as:

- highway intersection improvements
- expansion of vehicle parking to accommodate all the different parking and ground side services
- expansion of the air terminal building to the south to accommodate current and future growth
- increased separation from the runway to taxiway due to regulations and larger aircraft wingspans
- runway end safety area (RESA) requiring more land to accommodate the safety zones
- sustainable practices enabling greater and greener ground transportation options

Stakeholder feedback has been analyzed by the technical team and is being considered into the final Master Plan 2045.

Please refer to the next page for a breakdown of public feedback.

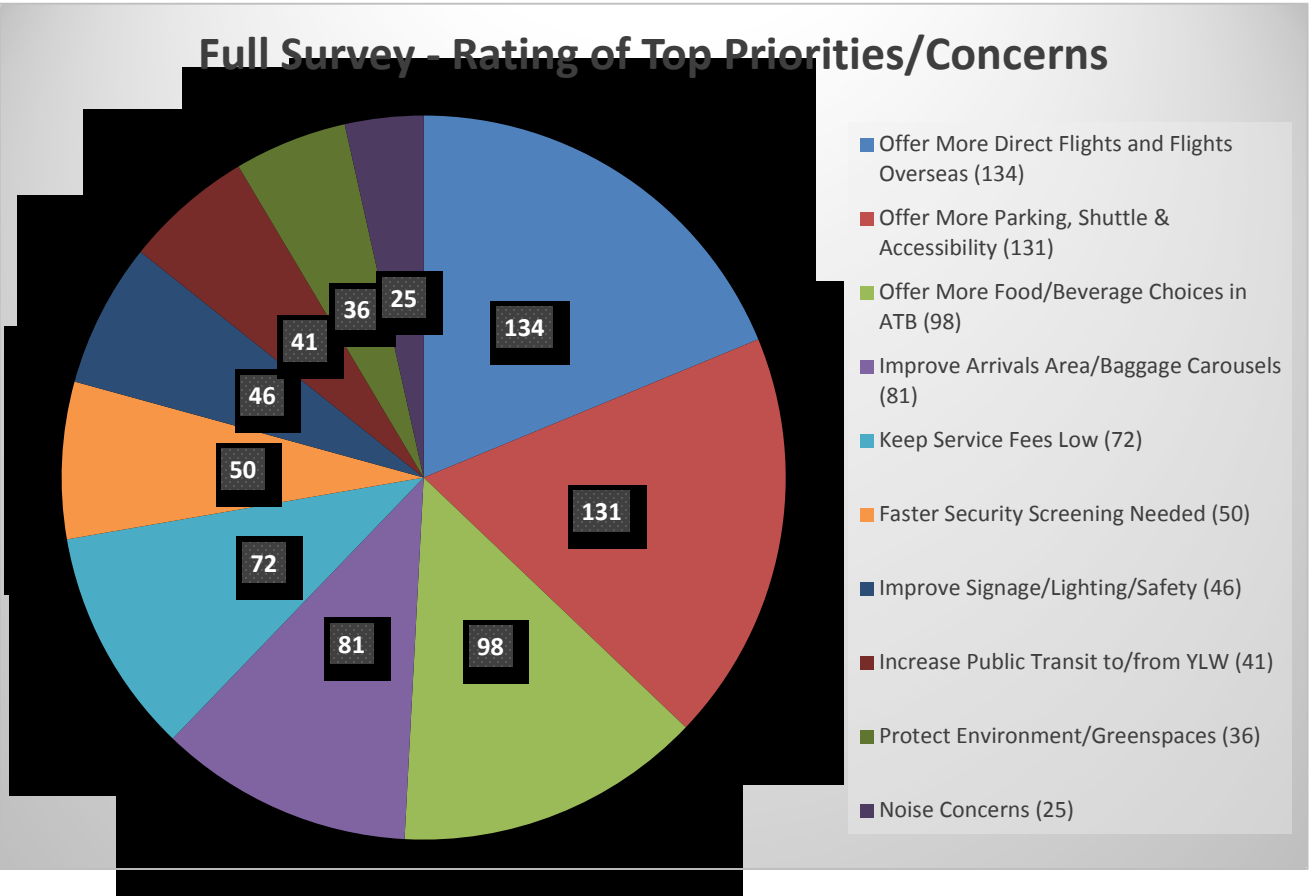
Public feedback is highlighted in the Executive Summary (Page 4 of this document) and broken out below.

- The full survey (10 questions) was used in print at the February 2016 Travel Expo and online.
- A condensed survey (5 questions) was used at the August 2016 Orchard Park Mall display.

Below is a summary of the full survey responses from the Travel Expo and the online responses (as of August 31, 2016 - to be updated at final).

This chart highlights the number of requests and/or concerns expressed by the public (not the number of people, as one person may have had multiple requests/concerns).

265 Full Surveys Received (162 print, 103 online)



The tables to follow outline the frequency of the top priorities/concerns mentioned by respondents in their survey answers. Note that respondent may have referenced one key priority multiple times throughout his/her survey, which has been captured in the tables to follow.

It is important for the Master Plan 2045 team to understand how many times concerns are raised to appreciate the breadth and depth of priorities and concerns.

## Q1. YLW's Vision and Strategic/Economic Development

What are your interests and priorities for YLW to consider as part of its long-term planning?

Offer Direct Flights and/or Flights Overseas	74
Greater Parking, Shuttle and Accessibility	52
Increase Public Transit to/from YLW	12
Outdoor Signage and Lighting Enhancements	15
Improve Arrivals Area & Expanded Baggage Carousels	16
Environment/Enhancing Community Greenspace	3
Noise Concerns	9
Greater Food and Beverage Choices Inside the Terminal	12
Faster Security Screening	15
Keeping Service Fees Low	12



The public cited that increased direct flights within Canada and to U.S., flights overseas to Europe and to warm destinations are a priority. Increased and easily accessible parking, increased shuttle services within YLW and to/from downtown, and increased accessibility within the Air Terminal Building (ATB) are also important.

## Q2. Please tell us your opinion about how YLW can maintain and/or improve its Key Success Drivers (Board 3)

Offer Direct Flights and/or Flights Overseas	10
Greater Parking, Shuttle and Accessibility	10
Increase Public Transit to/from YLW	4
Outdoor Signage and Lighting Enhancements	4
Improve Arrivals Area & Expanded Baggage Carousels	3
Environment/Enhancing Community Greenspace	5
Noise Concerns	0
Greater Food and Beverage Choices Inside the Terminal	2
Faster Security Screening	10
Keeping Service Fees Low	12



Keeping Service Fees Low



Faster Security Screening



Offer More Direct Flights and Flights Overseas



Greater Parking, Shuttle & Accessibility Needs

The public cited that keeping service fees low, especially for short and long-term parking, for all services inside the ATB and for small aircraft operators is important. Faster security screening is a priority in this category, along with increased direct/overseas flights, greater parking/shuttle services and accessibility both outside and inside YLW.

Q3. What questions or comments do you have about the future of air traffic growth?

Offer Direct Flights and/or Flights Overseas	40
Greater Parking, Shuttle and Accessibility	1
Increase Public Transit to/from YLW	1
Outdoor Signage and Lighting Enhancements	4
Improve Arrivals Area & Expanded Baggage Carousels	0
Environment/Enhancing Community Greenspace	8
Noise Concerns	13
Greater Food and Beverage Choices Inside the Terminal	1
Faster Security Screening	2
Keeping Service Fees Low	2



Similarly to the answers for Q1, the public cited that accommodating larger aircraft to enable more direct local-to-international destinations, and airlines offering an increased choice of destinations, is a priority. Increased aircraft frequency and increased noise concerns were also expressed. Noise complaints were isolated and counted separately within the Environment category to understand exactly how many noise complaints were mentioned.

Q4. What are your thoughts about the runway, apron and aircraft parking?

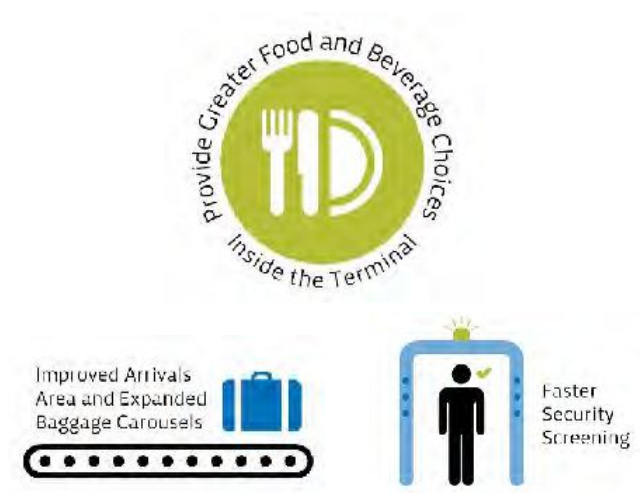
Offer Direct Flights and/or Flights Overseas	3
Greater Parking, Shuttle and Accessibility	17
Increase Public Transit to/from YLW	4
Outdoor Signage and Lighting Enhancements	1
Improve Arrivals Area & Expanded Baggage Carousels	2
Environment/Enhancing Community Greenspace	0
Noise Concerns	0
Greater Food and Beverage Choices Inside the Terminal	0
Faster Security Screening	0
Keeping Service Fees Low	1



The public predominantly requested to increase easily accessible vehicle parking, increase the safe parking of private aircraft and increase overall accessibility with an aging local population. Further, the public cited that increased public transit services to/from YLW to downtown and to other locations in Kelowna is important.

Q5. What would you like to see maintained and/or improved inside the ATB?

Offer Direct Flights and/or Flights Overseas	0
Greater Parking, Shuttle and Accessibility	5
Increase Public Transit to/from YLW	0
Outdoor Signage and Lighting Enhancements	6
Improve Arrivals Area & Expanded Baggage Carousels	56
Environment/Enhancing Community Greenspace	1
Noise Concerns	0
Greater Food and Beverage Choices Inside the Terminal	82
Faster Security Screening	21
Keeping Service Fees Low	0



The public has significant requests for greater food and beverage choice inside the ATB before and after the security area. Requests for Starbucks and a pub were specifically mentioned. Also, improving/expanding the arrivals area and expanding baggage carousels to provide greater access, more seating and less crowding is important. Complaints about very slow security screening are also cited as considerably important (this top priority was reiterated by the Orchard Park mall survey respondents).

Q6. Please tell us what is important to you about maintaining and/or improving car parking and roads in the long-term?

Offer Direct Flights and/or Flights Overseas	0
Greater Parking, Shuttle and Accessibility	35
Increase Public Transit to/from YLW	12
Outdoor Signage and Lighting Enhancements	11
Improve Arrivals Area & Expanded Baggage Carousels	0
Environment/Enhancing Community Greenspace	2
Noise Concerns	0
Greater Food and Beverage Choices Inside the Terminal	0
Faster Security Screening	0
Keeping Service Fees Low	40



The public cited the importance to keep service fees low, specifically for short and long-term parking. Further, some respondents requested YLW to provide more parking, with several asking specifically for a parkade. Respondents requested improved access on/off Hwy 97 and within the YLW property (e.g. parking lots begin close to the ATB). Some respondents noted the importance of having to increase facilities and services yet want to ensure that fees remain low (e.g. in favour of sustainable growth but keep end-user costs low).

Q7. What questions or comments do you have about current and/or future land development both on and off YLW property?

Offer Direct Flights and/or Flights Overseas	0
Greater Parking, Shuttle and Accessibility	6
Increase Public Transit to/from YLW	1
Outdoor Signage and Lighting Enhancements	1
Improve Arrivals Area & Expanded Baggage Carousels	2
Environment/Enhancing Community Greenspace	14
Noise Concerns	1
Greater Food and Beverage Choices Inside the Terminal	1
Faster Security Screening	0
Keeping Service Fees Low	0



The public cited that continued air quality monitoring and compliance, protecting community spaces (such as trails/parks) and continued operation of the Shadow Ridge Golf Course are important. There are no moderate comments in opposition of YLW's future development, but fiscally responsible and fully accessible growth (by all modes of traffic, especially by car and with pedestrian traffic) are priorities.

Q8. Based on the preliminary 2045 MP findings (Board 6) please tell us any other questions or comments for consideration in the final MP 2045.

Offer Direct Flights and/or Flights Overseas	6
Greater Parking, Shuttle and Accessibility	5
Increase Public Transit to/from YLW	4
Outdoor Signage and Lighting Enhancements	0
Improve Arrivals Area & Expanded Baggage Carousels	2
Environment/Enhancing Community Greenspace	2
Noise Concerns	0
Greater Food and Beverage Choices Inside the Terminal	0
Faster Security Screening	1
Keeping Service Fees Low	4



The public reiterated two top priorities for YLW's sustainable growth: offer more and direct flights within Canada, the U.S. and other destinations internationally (especially to Europe and warm climates); and to offer greater parking close to the ATB, additional shuttles and increased accessibility outside and inside the ATB.

Q9. If you attended our open house in-person, please tell us what you thought about the open house, the materials and the help of our team (February 2016 open house only).

107 comments rated YLW's outreach as informative, good, very good and excellent, and the public expressed its appreciation for continued community outreach
11 indicated the area was too crowded and the boards were difficult to access at times, and very few negative comments were provided overall

Q10. Please outline any other comments you may have about Master Plan 2045 or YLW in general.

Offer Direct Flights and/or Flights Overseas	1
Greater Parking, Shuttle and Accessibility	0
Increase Public Transit to/from YLW	3
Outdoor Signage and Lighting Enhancements	4
Improve Arrivals Area & Expanded Baggage Carousels	0
Environment/Enhancing Community Greenspace	1
Noise Concerns	2
Greater Food and Beverage Choices Inside the Terminal	0
Faster Security Screening	1
Keeping Service Fees Low	1



38 additional comments of support for continued sustainable development and growth were provided, along with positive comments about YLW's progress to date
Other general comments were captured in each question heading and/or noted in the Other comments summary.

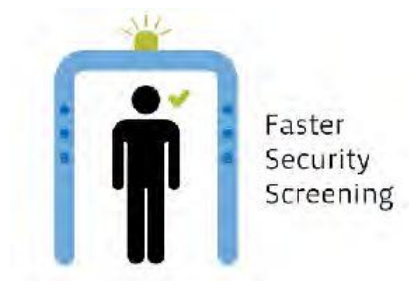
#### Examples of Other Comments:

- Upgrade, expand and/or maintain higher standards in washroom facilities
- Family area for small children inside the ATB requested
- Improve outdoor lighting to/from all parking lots to provide more security requested
- Better viewing area/observation platforms inside the ATB to watch aircraft take-off and landing requested
- Easier access and larger area for passenger pick-up and drop-off requested
- Parking machines could work better, especially in inclement weather conditions
- A parkade was requested
- More hanger space, ability to accept larger private aircraft and increased safe areas to park private aircraft requested
- More commercial development opportunities requested
- Extend the runway and/or create a second parallel runway

Below is a description of the condensed survey responses from the Orchard Park Mall open house (August 2016). At least 250 people dropped by the Master Plan 2045 Mall Display.

#### 43 Short Surveys Received (print): Top Priorities

<b>Faster Security Screening</b>	<b>21</b>
Greater Parking, Shuttle and Accessibility/Plan for Capacity	10
Keep Parking and Other Fees Low	4
Improve Parking, Passenger Pick-up/Drop-Off and Transit to/from YLW	
More Direct/International Flights	4
Improve Arrivals Area & Expanded Baggage Carousels	3
Signage/Safety	2



Public feedback recorded on print surveys and through verbal discussions indicated that faster security screening is imperative to correct by the Canadian Air Transport Security Authority (CATSA). This was the top priority of mall patrons who spoke with the Master Plan 2045 team.

A summary of other priorities based on the condensed 5-question mall survey are noted below.

#### 1) What can be improved with YLW's long-term planning?

- **Oversee/improve security screening, too slow, unfriendly staff, very long line-ups**
- Improve baggage area, make it easier to get our baggage
- Improve access to/from arrival and departure gates
- Helicopter parking needed in future
- Greater accessibility/parking for all
- Better transit to/from YLW
- Happy with the plans, thumbs up

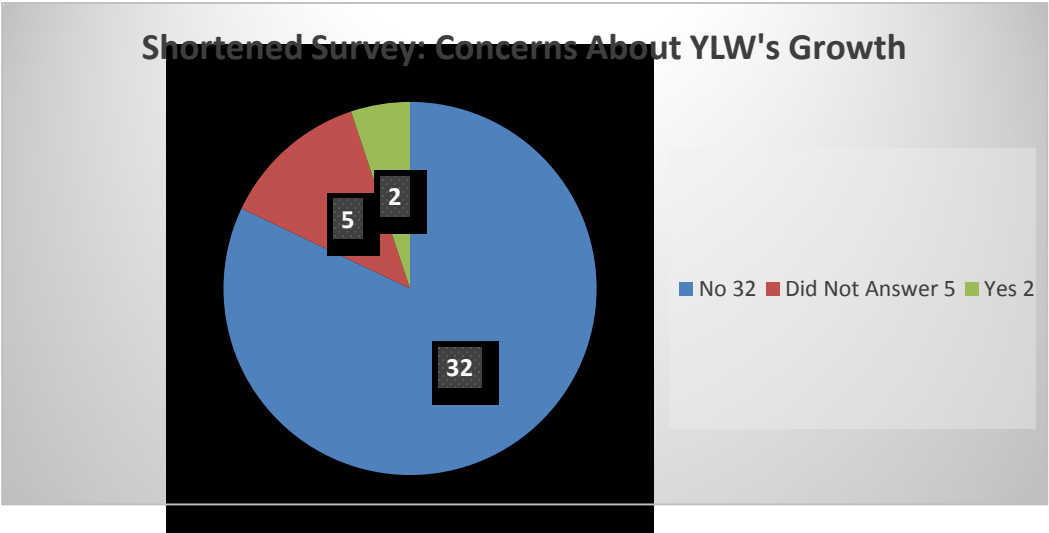
#### 2) What long-term planning is YLW doing well?

- **Anticipating growth and traffic**
- Nice changes in departure lounge
- Facilities inside the ATB are good
- Parking, easy pick up and drop off, keeping costs down
- Flights on-time and good baggage handling
- Doing great with growth, happy about Tim Hortons and other new choices, please keep adding more choice
- Small but great, good retail, keep growing

#### 3) What's your most important priority for YLW's future growth?

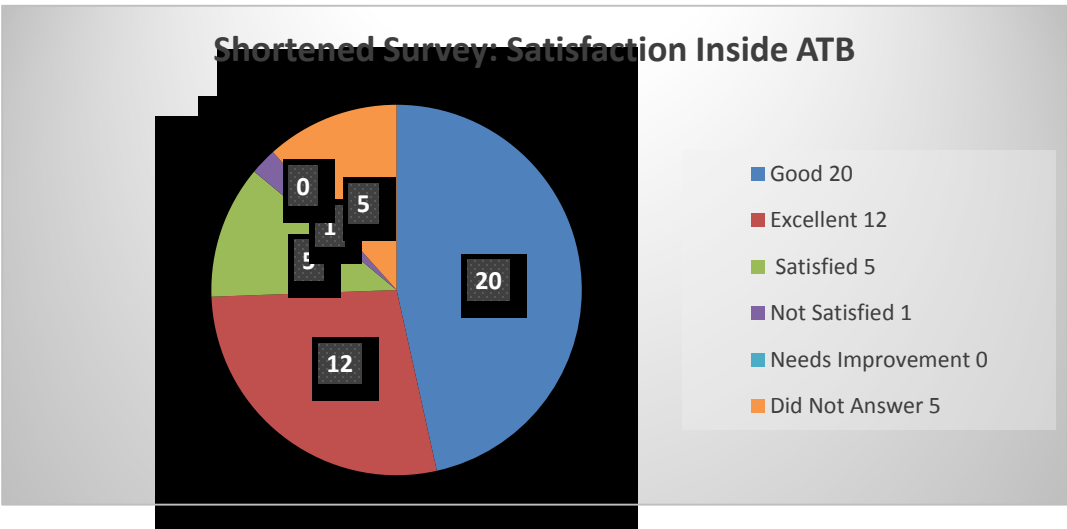
- **Improve security, speed up customs, line ups are too long**
- Public safety
- Slow baggage check-in, increase customer/friendly service
- More direct/overseas flights, terminal capacity
- Parking capacity and ease of accessibility to/from Terminal, ease of picking up people
- Less delays with incoming flights in fog/dense weather
- Airport is well laid out, easily navigated, keep up smart growth

4) Do you have any concerns about YLW's development and growth? (Yes/No and comment)



- 2 answered YES citing concerns over slow security, asking to keep costs/parking costs low, be mindful of the residential development in airport vicinity, and accommodate people with disabilities and increased access needs.

5) How would rate your overall experience inside the Air Terminal Building (ATB)?



- 1 answered NOT SATISFIED citing that 'airport security is the single item that ruins the impression the airport makes on locals and visitors.'

Notwithstanding the summaries noted above, all comments from all Stakeholders and the public have been compiled and are considered as part of the final Master Plan 2045.

**9. INFORMING YLW'S 5-YEAR STRATEGIC PLAN, CAPITAL PLANNING AND THE KELOWNA 2030 OCP**

Master Plan 2045 Stakeholder and public consultation results will be considered in the implementation of YLW's 5-year Strategic Plan and its annual Capital planning. This means that the recommendations made by the public are carefully considered both in the short and long-term at YLW for services, operations and financial planning.

YLW will also continue to work in partnership with the City regarding potential Kelowna 2030 OCP amendments and/or the City's future OCP consultations affected by the Master Plan 2045.

As part of YLW's continued commitment to Stakeholder and public engagement, notifications about future consultations would be issued as each initiative is planned and implemented.

**10. NEXT STEPS AND TIMING**

As YLW concludes the final Master Plan 2045, it will seek City Council approval (November 2016) prior to considering phased planning and implementation in 2017 and beyond.

Planning and implementation includes prioritizing key elements of Master Plan 2045, aligning resource and budget considerations, and staged implementation as appropriate.

## 11. APPENDIX

The following documents are listed in the order noted below.

- 11.1.1 Outreach Schedule (Spring 2015 - October 2016)
- 11.1.2 Sample Print and Electronic Advertising/Invitations (2015/2016)
- 11.1.3 Sample Social Media Posts (2015/2016)
- 11.1.4 Open House Travel Expo Display Boards (6) - February 2016
- 11.1.5 Open House Full Print Travel Expo Survey/Online - February 2016
- 11.1.6 Stakeholder Presentation - Summer 2016
- 11.1.7 Open House Mall Display Boards (8) - August 2016
- 11.1.8 Open House Condensed Mall Display Print Survey - August 2016

## Master Plan 2045 - Outreach Schedule


	Organization	Date	Location	SNC Lavalin	Notes
<b>City of Kelowna</b>					
✓	Kelowna City Council Workshop		City Hall	✓	COMPLETE
	Kelowna City Council Update	Sept 19, 2016	City Hall	✓	Workshop #2
	General City Staff (Lunch & Learn)	Sept 15, 2016	City Hall		
✓	Internal Airport Staff		YLW	✓	COMPLETE
✓	Planning & Real Estate	June 30, 2016	City Hall		COMPLETE
	Infrastructure		City Hall		Organizing with Alan
✓	Senior Leadership Team	Aug 24, 2016	City Hall		COMPLETE – Well received, full support. No questions or feedback.
	Agricultural Advisory Committee	Sept 8, 2016	City Hall		
✓	Airport Advisory Committee				COMPLETE
	Airport Advisory Committee Update				
✓	Airport Consultative Committee				COMPLETE
	Airport Consultative Committee Update				
<b>Business Partners</b>					
✓	Airport Operators Committee	May 17, 2016	YLW		COMPLETE
✓	Planning Integration Meeting	June 20, 2016	YLW	✓	COMPLETE- Includes contractors working on YLW projects
✓	Central Okanagan Economic Development Commission	June 23, 2016	Kelowna		COMPLETE- Didn't want MP info, wanted info on service development
	Thompson Okanagan Tourism Association	Sept 1, 2016	Kelowna		Exact time TBC
	Tourism Kelowna	Sept. 28, 2016	Kelowna		Board meeting- 9am start
	Destination British Columbia	Oct 3, 2016	Vancouver		
	BC Aviation Council		(letter/memo)		
✓	Kelowna Senior Secondary	Feb 22, 2016			COMPLETE
	Okanagan College & School District 23		TBC		Followed-up with Joanna
✓	University of British Columbia Okanagan- Planning Department	June 29, 2016	Kelowna		COMPLETE- 5 people in attendance

	Interior Health	Aug 16, 2016	Kelowna		
✓	Kelowna Flying Club	April 5, 2016	Kelowna		COMPLETE
	Kelowna Hotel Motel Association	Sept 8, 2016	Kelowna		
	KF Aerospace				
	Fortis BC	Sept 9, 2016	Kelowna		
✓	Shell Canada & Carson Air		Kelowna		COMPLETE
<b>Local Chambers</b>					
✓	Kelowna Chamber of Commerce	June 28, 2016	Kelowna		COMPLETE
✓	Greater Vernon Chamber of Commerce	April 28, 2016	Vernon		COMPLETE- 10 people in attendance
✓	Greater Westside Board of Trade	June 23, 2016	YLW		COMPLETE
✓	Lake Country Chamber of Commerce	June 15, 2016	Lake Country		COMPLETE
✓	South Okanagan Chamber of Commerce	Jan 11, 2016			COMPLETE- 10 people in attendance
	Penticton & Wine Country Chamber of Commerce	Sept 22, 2016	Penticton		
	Kelowna Jaycees	Sept 13, 2016	YLW		
	Okanagan Young Professionals	Sept 9, 2016	Kelowna		
<b>Government Partners</b>					
	B.C. Ministry of Transportation and Infrastructure & local MLAs		(letter/memo)		
	Transport Canada & local MPs		(letter/memo)		
	Provincial Agricultural Land Commission	Sept 20, 2016	YLW	✓	
<b>Regional Municipalities</b>					
<b>Regional District of Central Okanagan</b>					
✓	• Peachland	Sept 6, 2016	Peachland		
	• Lake Country	Sept 13, 2016	Lake Country		
✓	• West Kelowna	July 26, 2016	West Kelowna		
<b>Regional District of North Okanagan</b>					
	• Armstrong		(letter/memo)		
	• Coldstream		(letter/memo)		
	• Enderby		(letter/memo)		
	• Lumby	Sept 6, 2016			
	• Spallumcheen		(letter/memo)		
	• Vernon	Sept 12, 2016			

Regional District of Okanagan-Similkameen					
	• Penticton	Sept 20, 2016	Penticton		
	• Summerland		(letter/memo)		
	• Osoyoos	Sept 19, 2016	Osoyoos		TBC
	• Oliver	Sept 12, 2016	Oliver		Ed will present.
	• Princeton		(letter/memo)		
	• Keremeos		(letter/memo)		
Columbia Shuswap Regional District					
	• Sicamous		(letter/memo)		
	• Revelstoke		(letter/memo)		
	• Golden		(letter/memo)		
	• City of Salmon Arm	August 8, 2016	Salmon Arm		Requested by the City
Aboriginal and First Nations Partners					
	Okanagan Indian Band	Oct 4, 2016	Vernon		
	Upper Nicola Band		(letter/memo)		
	Westbank First Nation	Sept 26, 2016	Kelowna		
	Penticton Indian Band	Sept-TBC	Penticton		Called-Message with Charlene
	Osoyoos Indian Band		(letter/memo)		
	Lower and Upper Similkameen Indian Bands		(letter/memo)		
	Colville Confederated Tribes		(letter/memo)		
General Public Consultation					
✓	General Public Consultation • YLW Spring Travel Event	Feb 27, 2016	YLW	✓	COMPLETE
✓	General Public Consultation • Orchard Park Mall	August 20, 2016	Orchard Park Mall	✓	Booked
	Rutland Community				
	Quail Ridge Community				
	Ellison Community				
✓	Lake Country Newcomers Society	Jan 14, 2016	Lake Country		COMPLETE
✓	Probus Club of Westside	April 27, 2016			COMPLETE- 80 people in attendance

## Castanet Creative for City of Kelowna - Airport

Medium Rec Show/Hide All




YLW wants your feedback on the new Airport Master Plan!

**YLW SPRING TRAVEL EVENT**

DATE: Saturday, February 27, 2016  
TIME: 11 am - 3 pm  
TO: Kelowna International Airport

Parking is free in the long term lot.

Small Rec



**YLW** *where you!*

SATURDAY, FEB 27, 2016  
11AM-3PM  
KELOWNA INTERNATIONAL AIRPORT

FREE PARKING IN LONG TERM LOT

Display Page


<http://www.castanet.net/clients/CityOfKelowna/16-01/page/YLW-AirportMasterPlan.htm>

## Sample Connections Magazine Editorial Spring 2016

# YLW'S MASTER PLAN 2045

From the desk of Airport Director Sam Samadpour

## MILESTONES AND MASTERPLANS



As we dive into 2016, I would like to take a moment to reflect on the milestones achieved at YLW in 2015, and highlight our 2045 Master Plan, a comprehensive "roadmap" that will successfully guide us over the coming years, picking up where our 2025 Master Plan left off.

In December 2015, YLW welcomed 1.6 million passengers for a second consecutive year. As well, YLW received the British Columbia Aviation Council's 2015 William Day Templeton Award for outstanding initiative and achievement in the successful development of a community airport and we received a Canadian Forces Liaison Council Employer Support Award for our support of Canadian Forces Operations. We added additional routes to our fly map and our ties with the Government of Canada for the management, operation and development of YLW was extended through 2054. A full list of accomplishments can be found in the YLW News section of this edition, on page 29.

Looking ahead, we are investing a significant amount of time and resources to complete our 2045 Master Plan by the end of this year. It is prudent to look at our infrastructure, including key elements such as land-use development and maintaining our technological landscape, so that we can continue to service the needs of our growing community.

We have been encouraging public input and have made presentations to the community at events like our Spring Travel Show held in Jan. February at YLW. The airport belongs to everybody and we want the public to be able to voice their support and their concerns as we move forward together. Our goal is to become the best mid-sized airport in North America and the 2045 Master Plan, in conjunction with community input, helps us reach this goal. An article on the highlights of the plan can be found on the next page.

It is an exciting time for YLW and I would like to thank everyone who contributes to its success, from our employees and commercial vendors to our tourists and business partners and to the passengers who make it all worthwhile.

### MISSION

"Provide safe, secure, customer-friendly affordable services and facilities that promote the Okanagan"

### VISION

"To become the best mid-sized airport in North America"

## 2045

**K**elowna International Airport (YLW) is preparing its Master Plan, designed to ensure successful strategic development for the facility through 2045 and supports YLW's vision to be the best mid-sized airport in North America. It picks up where the 2025 Master Plan left off, including ongoing initiatives such as the Drive to 1.6 Million Passengers and the Flight to 2020 programs.

This new long-range plan will review and update traffic forecasts and economic data; analyze all aspects of YLW's infrastructure; define future growth and development priorities; guide future capital planning and phased implementation; and provide stakeholders and the public opportunities to be engaged and provide feedback into the process.

"The Master Plan 2045 allows us to establish the long-term strategic direction for the efficient and economic development of the airport over the next 30 years and to outline development priorities," says Airport Director, Sam Samadpour. "We are able to communicate to the public the objectives for future uses of airport lands and growth of the airport and this helps us to minimize potential conflicts between uses and users of the airport and ensure compatibility with the areas surrounding the airport."

Currently, YLW generates over 2,730 jobs and \$610 million in total provincial economic output. Passenger traffic is forecast to increase from 1.6 million to 3.6 million by 2045. Aircraft movements, most of which will come from air carrier traffic, is forecast to increase by 50 per cent. Every additional daily year-round scheduled flight generates up to 38 full-time jobs.

The plan identifies needs such as additional commercial land acquisition and the expansion of current roadways and parking facilities. By 2035 five new remote aircraft parking stands will be needed and a new terminal gate stand will be required by 2045.

The key success drivers for YLW include operating and maintaining a safe and secure, turn-of-key facility and to foster economic development for the region. Exceeding customer service expectations in collaboration with airport partners and the community are also imperative to the airport's overall success. The 2045 Master Plan is committed to core values such as excellence in safety, security and environmental performance, fiscal responsibility, community, integrity, teamwork and innovation.

"YLW is the economic engine of central British Columbia," says Samadpour. "It brings a significant amount of visitors to the region every year. The greatest strengths of YLW, from which future opportunities may be developed, include: the long-term vision and planning through the Master Plan, customer experience focus, diverse air service, strong ground transportation options, competitive cost structure, substantial non-airline revenues, effective organization and work force, technology focus, community partnerships, and most importantly, the unique, world-class Okanagan Valley experience."

Detailed Master Plan development and key stakeholder and public consultations began in July 2015 and will conclude in July of this year. The public is encouraged to participate and provide feedback via an online survey that can be found online at: [www.connectionsmagazine.ca/connections/2016/01/ylw-master-plan-2045](http://www.connectionsmagazine.ca/connections/2016/01/ylw-master-plan-2045).

The final Master Plan is scheduled to be completed by the end of 2016.

**MAPLE REINDERS IS DEDICATED TO BUILDING GREAT THINGS. SOLID TEAMS. AMAZING PROJECTS. AND LASTING RELATIONSHIPS.**

Maple Reinders began building the new Memorial Park in Sept. 2015 on property south of the Memorial Arena in Kelowna. Completion is expected for Fall 2016.

The additional parking is being constructed to accommodate Interior Health's new Community Health and Services Centre at the corner of Doyle Avenue and Ellis Street.

This advisory Parkade will include City office space in addition to 566 stalls of which 139 will be for public parking.

Maple Reinders is an award-winning full-service engineering, planning and construction firm. We are a member of the International Brotherhood of Engineers and Environmental Engineers. Maple Reinders has LEED Accredited staff and strives for technical, ethical, professional, quality, workmanship and innovation.

Contact us if you are looking for creative and innovative construction solutions and approach our leading edge of safety, teamwork and hard work.

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4 | YLW CONNECTION

SPRING 2016 | 5

Sample Ads: Kelowna Daily Courier, Kelowna Now and Capital News

## YLW Master Plan 2045 Open House

Saturday, Feb. 27 11am to 3pm

Kelowna International Airport - Terminal Building

Citizens will have the opportunity to review key aspects of the draft plan and provide valuable feedback that will be considered in the development of the final Airport Master Plan 2045.

INFO: 250-807-4300 [ylw.kelowna.ca](http://ylw.kelowna.ca)



Kelowna International Airport (YLW) is the largest municipally owned and operated airport in Canada with more than 1.6 million passengers in 2014, a 6.5 per cent increase since 2013.

With such a high growth rate, YLW needs to plan for the future.

A poster for the YLW Master Plan 2045. The top section is blue with the title 'MASTER PLAN 2045' in white. Below the title are three icons: a gear for 'AIRPORT DEVELOPMENT', a leaf for 'ENVIRONMENTAL & SOCIO-ECONOMIC IMPACTS', and a dollar sign for 'COST EFFECTIVE OPTIONS'. The middle section is white with a blue banner that reads 'HAVE YOUR SAY! YLW SPRING TRAVEL EVENT'. Below the banner is a table with the event details: DATE: Saturday, February 27, 2016; TIME: 11 am - 3 pm; TO: Kelowna International Airport. At the bottom right, there is a call to action: 'For the latest information on Master Plan 2045, visit [ylw.kelowna.ca](http://ylw.kelowna.ca)'. The YLW logo is at the bottom right, with the tagline 'Your Link to the World'.

# YLW

*Wants you!*



## YLW wants your feedback on the new Airport Master Plan!

Kelowna International Airport (YLW) is the largest municipally owned and operated airport in Canada, with more than 1.6 million passengers in 2015, a 6.5 per cent increase since 2013. With such a high growth rate, we need to plan for the future.

### MASTER PLAN 2045



AIRPORT  
DEVELOPMENT



ENVIRONMENTAL  
& SOCIO-ECONOMIC  
IMPACTS



COST EFFECTIVE  
OPTIONS

# YLW

*Wants you!*



**Your feedback is important and will be considered in the development of the YLW Master Plan 2045.**

**Please complete the survey at:**

[www.surveymonkey.com/r/MASTERPLAN2045YLW-1](http://www.surveymonkey.com/r/MASTERPLAN2045YLW-1)



# YLW

Kelowna International Airport

*Your Link to the World*

# News Release

FOR IMMEDIATE RELEASE

February 15, 2016



## YLW wants your feedback!

Kelowna International Airport (YLW) will be hosting an Open House for the new Airport Master Plan 2045 on Saturday, February 27<sup>th</sup>, from 11 a.m. to 3 p.m. Citizens will have the opportunity to review key aspects of the draft plan and provide valuable feedback that will be considered in the development of the final Master Plan.

"We know that decision-making processes are significantly improved on a local, regional and provincial scale when the public is included in solutions," said Sam Samaddar, Airport Director. "We're looking for citizens to participate in discussions, identify issues and provide critical input on the plan."

As the largest municipally owned and operated airport in Canada, YLW serves 1.6 million passengers annually, a 6.5 per cent increase since 2013. The airport generates benefits not only for the City of Kelowna, but also beyond its boundaries to the entire Thompson Okanagan area.

With such a high growth rate comes the need to plan for future requirements for the aviation needs of the community. The new Master Plan will guide the development of YLW out to 2045 and will be instrumental in its drive to become the best mid-sized airport in North America.

"As we're unable to move the airport, we need to secure long-term sustainability to support the growth of YLW for future generations," said Samaddar. "This Master Plan will guide our decisions over the next 30 years, so we need to ensure we get the community's input on key aspects of the plan."

The Master Plan Open House will take place at YLW's Spring Travel Event, a free event where guests meet with air carriers, travel agents, hotels and resorts to get helpful travel tips and information on popular vacation destinations. The Open House will be located on the airport's second floor mezzanine. Free parking will be provided in the long-term lot, with validation.

For more information on [Master Plan 2045](#) or the Spring Travel Event, visit [ylw.kelowna.ca](http://ylw.kelowna.ca).

- 30 -

As one of the top 11 busiest airports in Canada, YLW's total economic impact is 2,730 jobs and \$610 million in total economic output to the province of British Columbia. Serving 1.6 million passengers in 2015, YLW offers more than 60 daily non-stop commercial flights with six airline partners. For more information, visit [ylw.kelowna.ca](http://ylw.kelowna.ca).

For more information, contact:

Jasmine Patrick  
Communications Advisor  
Kelowna International Airport  
250-317-1608

Kelowna International Airport  
TEL 250-807-4300  
[ylw.kelowna.ca](http://ylw.kelowna.ca)  
 @ylwkelowna  
 [ylw.kelownaairport](https://www.facebook.com/ylw.kelownaairport)

## News Release

FOR IMMEDIATE RELEASE  
February 22, 2016

### Win big at YLOW's Spring Travel Event!

Kelowna International Airport (YLOW)'s annual Spring Travel Event will take place on Saturday, Feb. 27, from 11 a.m. to 3 p.m. Guests will be able to meet with air carriers, travel agents, hotels and resorts to get helpful travel tips and information on popular vacation destinations.

"This is a great opportunity for local residents to learn about exciting new travel options from YLOW," said Sam Samaddar, Airport Director. "We also have a fantastic line up of prizes for the draw, with all money raised going to [Metro Community!](#)"

This year, YLOW and its partners are giving away five prize packages, including:

- Tickets for two to Dublin, Ireland, courtesy of Air Canada;
- A flight for two to Prince George, Smithers or Terrace on Central Mountain Air;
- A vacation package for two to Whitehorse with Air North, Yukon's Airline;
- A vacation package for two to Victoria on Pacific Coastal Airlines; and,
- One \$250 Travel voucher with Air Canada Vacations.

At the event, YLOW will also host an Open House for the new airport Master Plan 2045. Citizens will have the opportunity to review key aspects of the draft plan, including future airport development, cost-effective options and environmental impacts, and provide valuable feedback that will be considered in the development of the final Master Plan.

Free parking will be provided in the long-term lot during event hours, 11:00 a.m. to 3:00 p.m. Attendees are required to bring in their parking voucher to be validated. For more information on the Spring Travel Event, visit [ylw.kelowna.ca](http://ylw.kelowna.ca).

- 30 -

As one of the top 11 busiest airports in Canada, YLOW's total economic impact is 2,730 jobs and \$610 million in total economic output to the province of British Columbia. Serving 1.6 million passengers in 2015, YLOW offers more than 60 daily non-stop commercial flights with six airline partners. For more information, visit [ylw.kelowna.ca](http://ylw.kelowna.ca).

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Kelowna International Airport  
TEL 250-807-4300  
[ylw.kelowna.ca](http://ylw.kelowna.ca)  
@ylwkelowna  
[ylw.kelownairport](#)

## Sample of Social Media Posts:

 **Kelowna International Airport** @ylwkelowna  
Aug 20 · Orchard Park Shopping Centre

We're still at Orchard Park Shopping Centre today for the Airport Master Plan Open House! We'll be here until 2pm! We want to hear your feedback!



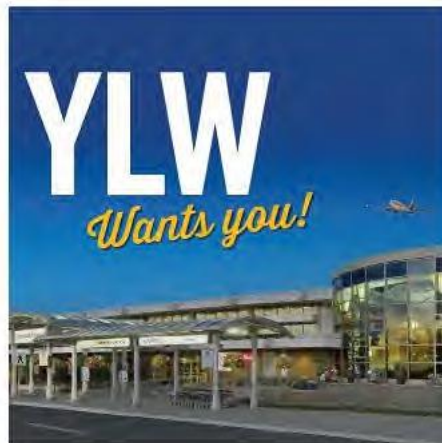
20

1

 **Kelowna International Airport** @ylwkelowna  
Aug 16 · Orchard Park Shopping Centre


#YLW wants your feedback on the new #Airport Master Plan! ➔ Join us at our last Master Plan Public Open House this Saturday, August 20th from...

[Read More](#)



24

1

 **Kelowna International Airport** @ylwkelowna  
Mar 30

Have you completed our Master Plan 2045 survey yet? We want YOUR feedback! Learn more at [www.kelowna.ca/CM/Page4797.aspx](http://www.kelowna.ca/CM/Page4797.aspx)



Your feedback is important and will be considered in the development of the YLW Master Plan 2045.

Please complete the survey at:  
[www.surveymonkey.com/r/MASTERPLAN2045YLW-1](http://www.surveymonkey.com/r/MASTERPLAN2045YLW-1)

15

1

 **Kelowna International Airport** @ylwkelowna  
Feb 27 · Kelowna International Airport - YLW

The Airport Master Plan presentation is happening right now at the #YLW Spring Travel Event! Make sure you stop by before 3pm to give us your input on the plan! For more information visit [ylw.kelowna.ca](http://ylw.kelowna.ca)

[Read Less](#)

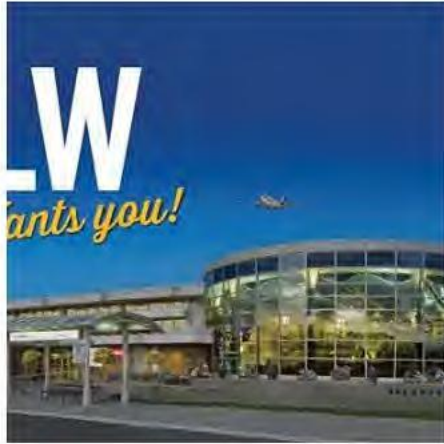


31

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**Kelowna International Airport** @ylwkelowna  
Feb 15 · Kelowna International Airport - YLW

#YLW wants your feedback on the new Airport Master Plan! Join us at the Master Plan Open House on Saturday, February 27th from 11am-3pm!



28

**Kelowna International Airport** @ylwkelowna  
Jul 17, 2015

Did you know that #YLW is updating the #Airport Master Plan? The updated plan will guide future airport #development and cost effectively meet #aviation demand, while considering potential #environmental and socio-economic impacts. Learn more about it at [www.kelowna.ca/CM/Page4797.aspx](http://www.kelowna.ca/CM/Page4797.aspx)

[Read Less](#)



20

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**Kelowna International Airport - YLW**  
Aug 20



2

**Kelowna International Airport - YLW**

Write a comment...

**Kelowna International Airport - YLW**  
Aug 18

#YLW wants your feedback on the new Airport Master Plan! Join us at the Public Open House this Saturday from 10am-2pm at [Orchard Park Shopping Centre](#)! We'll be in the Apple Courtyard! <http://www.kelowna.ca/CM/Page4797.aspx>

[Read Less](#)



Airport Master Plan 2045

[www.kelowna.ca](http://www.kelowna.ca)

10

2

**YVLW Kelowna International Airport - YLW**  
Aug 16

#YLW wants your feedback on the new Airport Master Plan! Join us at our last Master Plan Public Open House this Saturday, August 20th from 10am-2pm at the Orchard Park Shopping Centre! You can find us in the Apple Courtyard!

[Read Less](#)



47 5

**YVLW** Write a comment...

**YVLW Kelowna Airport @ylwkelowna**  
Aug 18

#YLW wants your feedback on the Master Plan! Join us at the Public Open House this Saturday from 10am-2pm at @ShopOrchardPark!

1 2

**YVLW Kelowna International Airport - YLW**  
Mar 30

The new YLW Connection Magazine is now available! Read about YLW's new Master Plan 2045 and complete the survey! Read it here: <http://viewer.zmags.com/publication/560ae12c#/560ae12c/>

[Read Less](#)



4 3


**YVLW** Write a comment...

 **YLW Kelowna Airport** @ylwkelowna  
Aug 16

#YLW wants your feedback! Join us at our Master Plan Open House this Saturday from 10am-2pm at @ShopOrchardPark!



  3  4  

 **YLW Kelowna Airport** @ylwkelowna  
Feb 27

The YLW Master Plan presentation is happening now at the Travel Event. Make sure you stop by to give you feedback!



   1  

 **YLW Kelowna Airport** @ylwkelowna  
Mar 30

The new #YLW Connection Magazine is now available! Read about YLW's new Master Plan 2045 and complete the survey!  
[viewer.zmags.com/publication/56...](http://viewer.zmags.com/publication/56...)

  1   

 **YLW Kelowna Airport** @ylwkelowna  
Feb 26

The YLW Master Plan Open House is tomorrow at the Spring Travel Event! We want YOUR feedback! Learn more: [kelowna.ca/CM/Page4797.as...](http://kelowna.ca/CM/Page4797.as...)

  1  1  

# KELOWNA INTERNATIONAL AIRPORT

## Your Link To The World

### Master Plan 2045



#### YLW's Vision and Mission

The **Vision** of Kelowna International Airport (YLW) is to become the best mid-sized airport in North America.

The **Mission** of YLW is to provide safe, secure, customer-friendly economical services and facilities that promote the Okanagan.

Your participation in the planning and implementation of our Vision, Mission and strategic development contributes to our success.

#### How We Get There

- ▶ Master Planning (2045)
- ▶ Strategic Plan (5-year)
- ▶ Capital Planning and Implementation
- ▶ Drive to 1.6 Million Passengers Program
- ▶ Flight to 2020 Projects
- ▶ Supporting the City's Official Community Planning
- ▶ Ongoing Public and Stakeholder Engagement
- ▶ Reporting to Committees and City Council

#### The Master Plan 2045

Picking up where the Master Plan 2025 left off, the Master Plan 2045 is an important short and long-term plan, slated to be completed in late 2016, that further supports YLW achieving its Vision.

The Master Plan process analyzes how best to align our infrastructure and services to changing market conditions and growth, while identifying a balanced approach to management capital and operating expenses.

#### Why Your Participation Matters

YLW continues to experience a high growth rate and our continued commitment is to plan and implement the future of YLW in sustainable ways.

Public and stakeholder engagement provides a continued forum to understand, explore and evaluate the future of YLW as the technical planning proceeds.



#### YLW Fast Facts

Kelowna International Airport (YLW) is the largest municipally owned and operated airport in Canada – and we're growing!

Our goal to welcome  
**1.6 million passengers**  
was achieved in 2014



By 2020 we anticipate serving  
**2 million passengers**  
annually



We are the  
**11th busiest airport**  
in Canada

More than  
**15,400 passengers**  
every week choose our airport  
as their starting destination



Our economic impact in 2010 was  
**2,730 jobs**, representing  
**\$140 million in wages** and  
**\$610 million** in total  
economic output in BC



From 2010 to 2015,  
our full-time employment  
increased by **9%**,  
wages increased by **19%**  
and our GDP increased by **27%**



Between 2010 and 2020,  
we will have  
invested over  
**\$92 million**  
in facility upgrades



# YLW Master Plan 2045



# THE IMPORTANCE OF THE MASTER PLAN 2045



YLW's aviation service needs and future demands require continued assessment, planning, consultation and implementation of sustainable solutions.

The Master Plan process, which includes a 5-Year Strategic Plan, is a critical tool used to guide YLW in sustainable and fiscally responsible short and long-term planning.

Updating the Master Plan links with many of the City of Kelowna's governing initiatives, particularly with the Official Community Plan (OCP) and potential future amendments. YLW's master planning also informs local and regional planning and development, such as with airline operators, travel organizations and more.

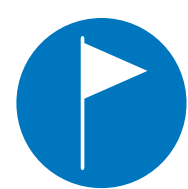
The Master Plan 2045 is one of YLW's strategic organizational components that identifies airport and aviation development and growth impacts including:

 **Socio-economic demand and effects**

 **Environmental considerations**

 **Air traffic and passenger growth**

 **Traffic and transportation demands**

 **Land use (both on and off YLW lands)**

 **Infrastructure and facility services**

## Master Plan 2045 Goals

**Review and analyze**  
all aspects of  
airport infrastructure

**Update**  
traffic forecasts and  
economic data

**Define**  
future growth and  
development priorities

**Guide**  
future capital planning and  
phased implementation

**Provide**  
stakeholders and the public with  
engagement opportunities

**Apply**  
the final 2045 Master Plan  
as the way forward

## Master Plan Timeline: 3 Phases



## Stakeholder and Public Consultation

The purpose of Master Plan 2045 stakeholder and public consultations is to inform, engage and seek feedback about issues and opportunities associated with YLW's future growth and development. Topic-specific feedback is important to inform the final Master Plan 2045 as part of our overall analysis.

YLW and the SNC-Lavalin Airports + Aviation consultant team will review and analyze stakeholder and public comments from workshops, presentations, meetings, surveys and the open house that contributes to the final Master Plan 2045. A Master Plan 2045 Consultation Summary Report will also be issued to keep stakeholders and the public informed of our progress.

The implementation of the final Master Plan 2045 will be completed in phases and will depend on factors such as the speed of growth and development, capital costs to maintain and develop airport infrastructure, environmental considerations, community support and more.

## Let's Move Forward Together

From our strategic planning to expanding airport infrastructure to our preliminary Master Plan 2045 findings outlined on the next series of display boards, we would like to hear your feedback.

# YLW Master Plan 2045



# MASTER PLAN 2045 COMPONENTS



These are the key topic areas that the project team is studying.  
We would like to know what your interests and priorities are in these categories.

Air Traffic Analysis and Forecasting: Air Traffic and Passenger Growth

Apron and Aircraft Parking (Infrastructure)

Airside System: Runways and Taxiways

Air Terminal Building

Airport Economic Impacts

Public Roads, Access and Vehicle Parking

New Regulatory Requirements

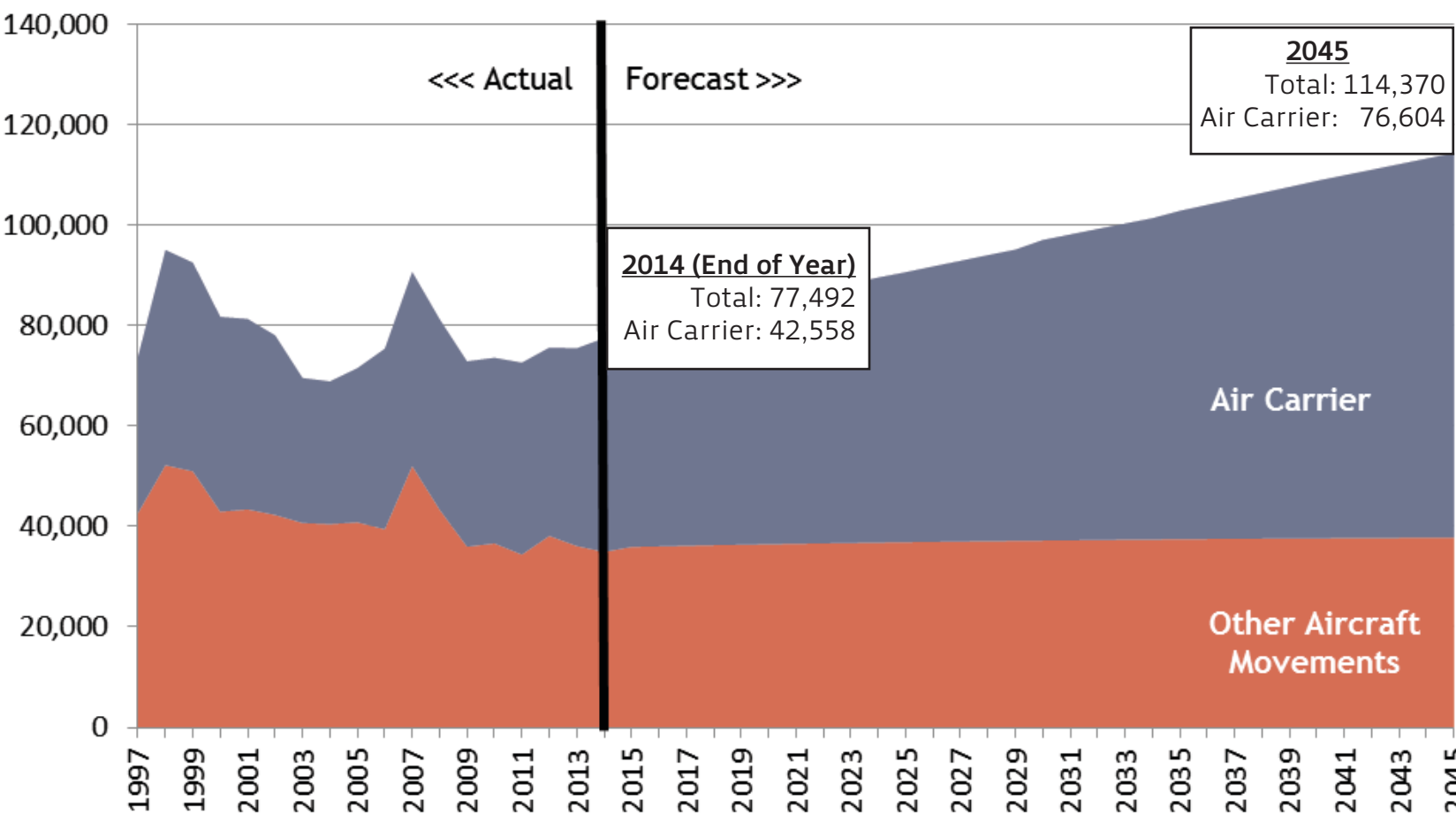
Commercial Land Development: Airside and Groundside

Potential Land Acquisition Areas

Noise Contours and Other Environmental Considerations

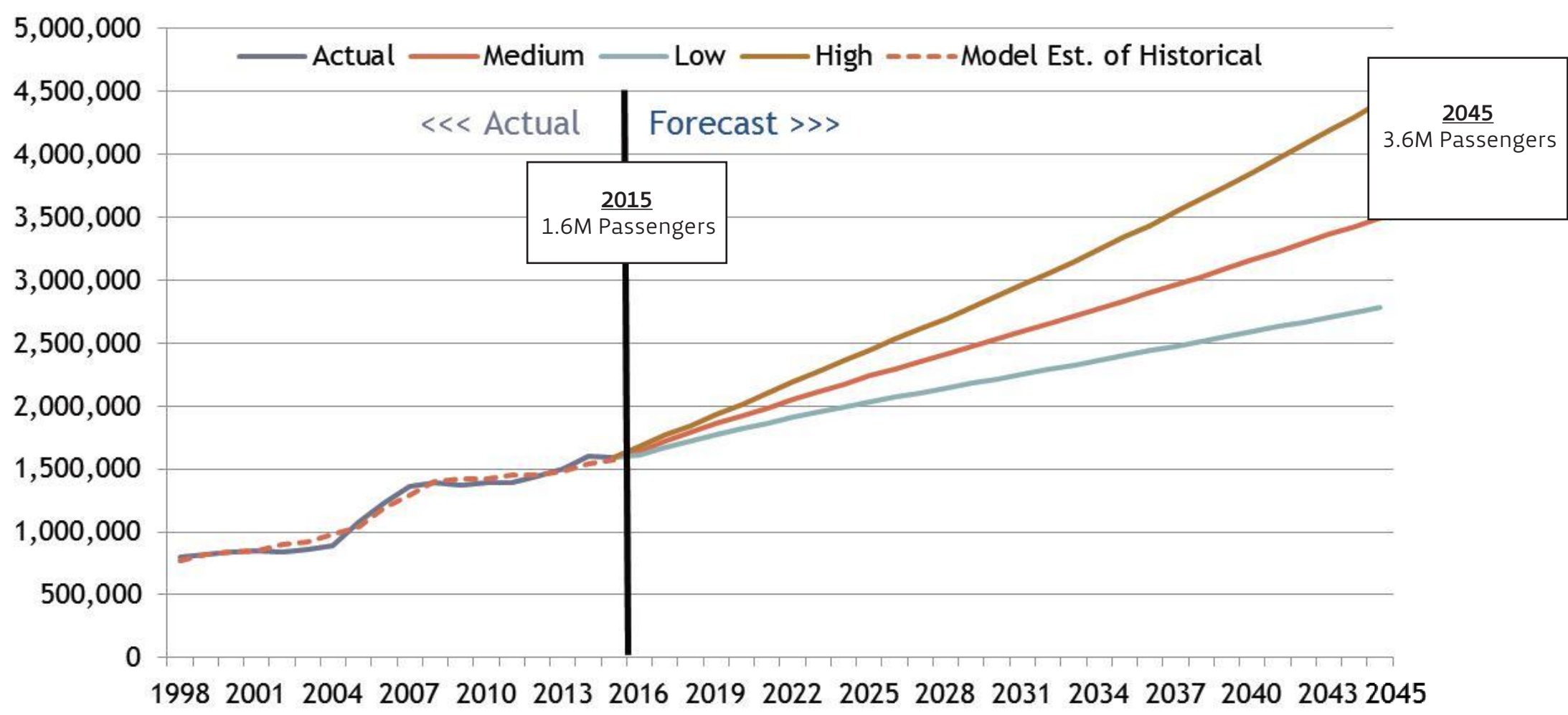
## Air Traffic and Passenger Growth

### Aircraft Takeoffs and Landings



Growth at 2% per year  
(majority attributable to air carrier services)

### Air Traffic Growth: Passengers



Passenger growth to continue at  
**3% annually** (medium forecast)

## Strategic Development Plan Key Success Drivers

**Operate and maintain**  
safe and secure  
best-in-class  
facilities and services

**Foster**  
economic development  
for the region

**Act**  
in a financially responsible and  
sustainable manner

**Exceed**  
customer service expectations  
of the travelling public in collaboration with  
airport partners and the community

Please Tell Us How We're Doing!

# AIRPORT INFRASTRUCTURE

## Noise Exposure, Runways/Apron and Aircraft Parking, and Land Considerations



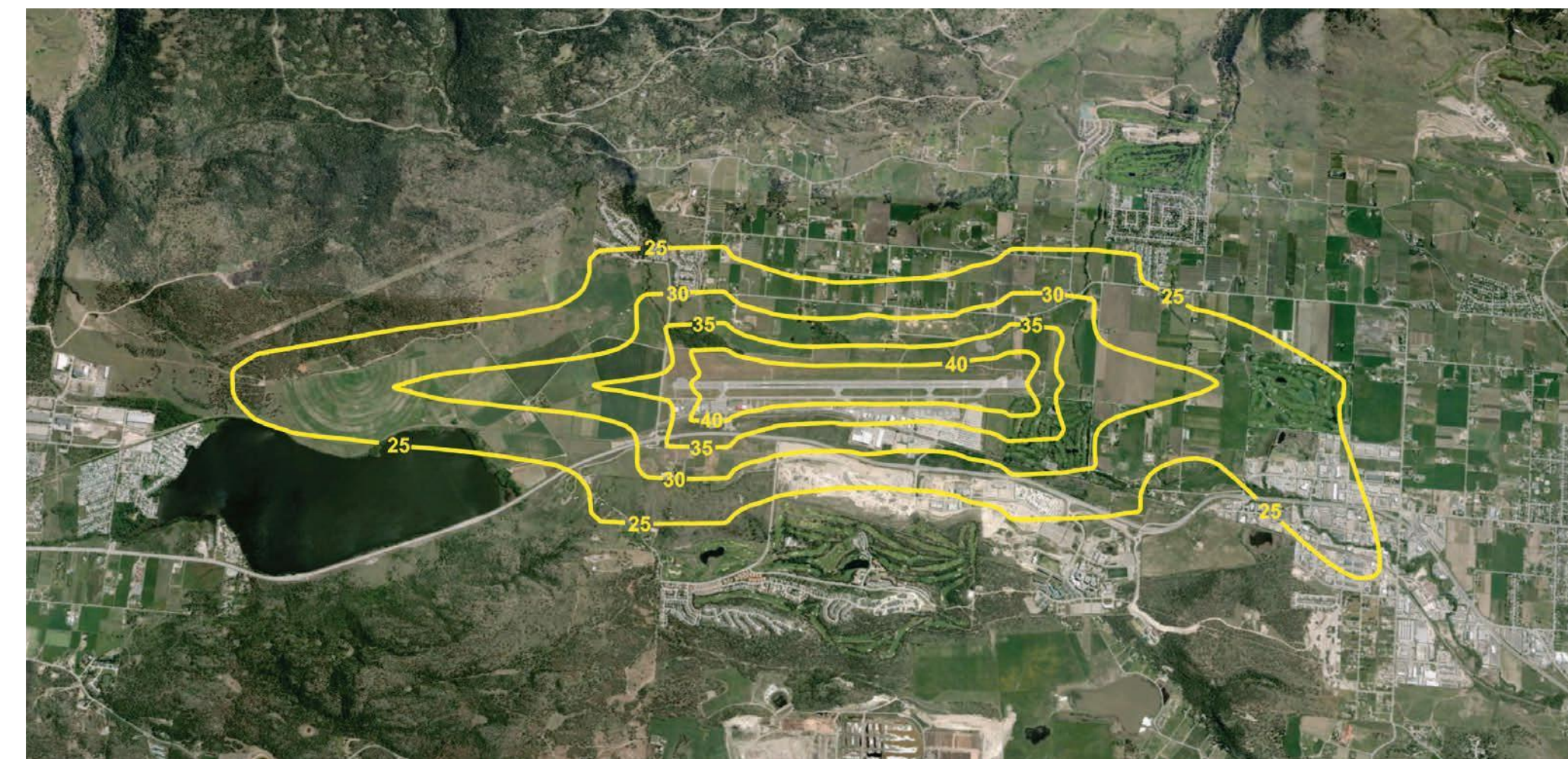
SNC • LAVALIN

### ❓ )) Noise Exposure

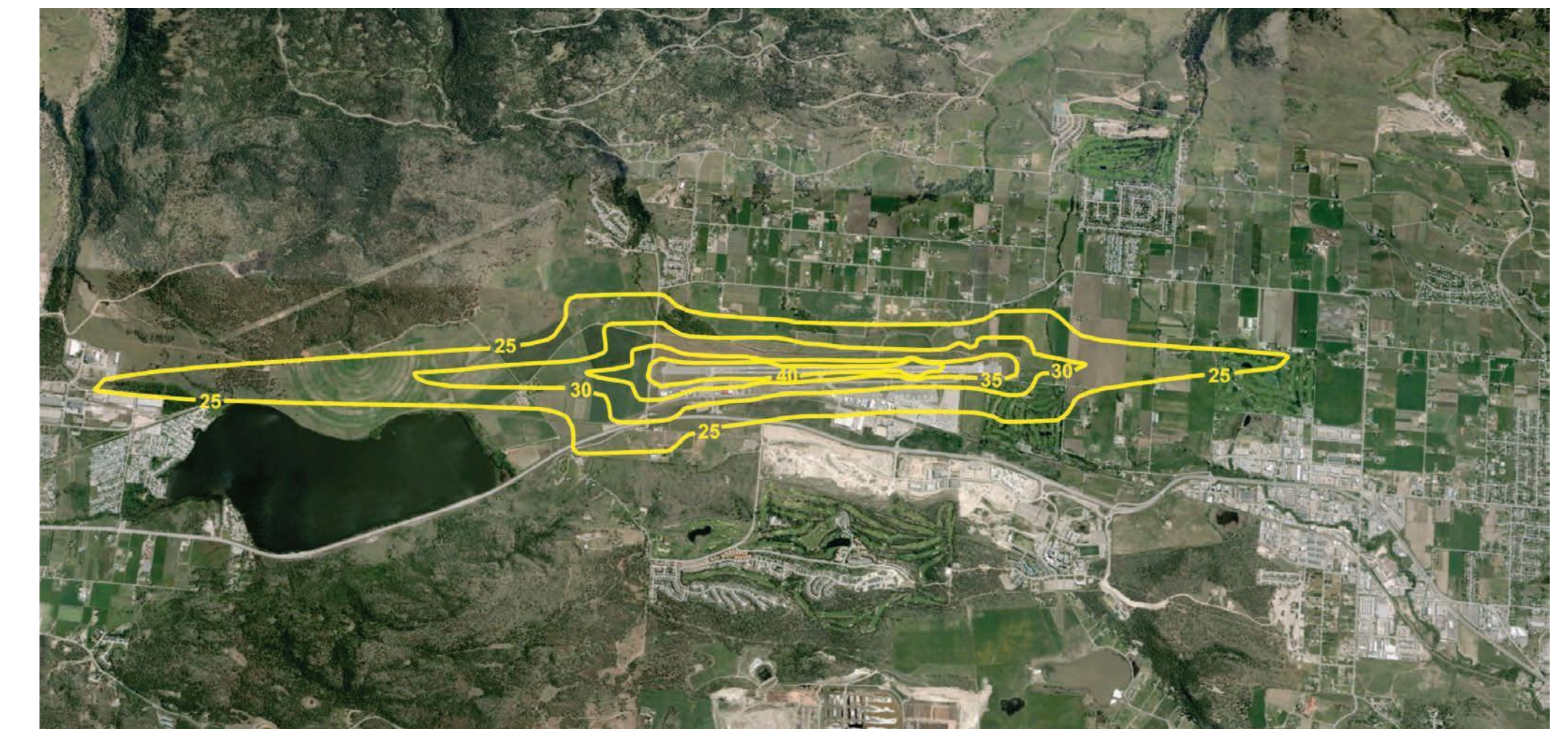
- ▶ No changes are recommended off-airport land zoning based on the preliminary Master Plan findings.
- ▶ Noise contours depict areas of noise exposure based on frequency of aircraft movements, and are not directly related to measured noise.

### ✈ Runway Capacity and Length

- ▶ The existing single runway meets the needs to 2045. New standards will require the addition of Runway End Safety Areas (RESA).
- ▶ Recommendation for future runway expansion on land immediately to the south of the current runway to accommodate larger aircraft as demand increases.



2025 Noise Exposure Forecast



2045 Noise Exposure Forecast

### ✈ Apron and Aircraft Parking

- ▶ No new terminal gates are required until beyond 2035. One new terminal gate stand is recommended between 2035 and 2045. Five new remote aircraft parking stands are recommended by 2045. Two apron options are also under review (refer to presentation slides for graphics).
- ▶ Aircraft movements are forecast to increase by 50% (2045), which will increase future demand on groundside and airside facilities.

### 📍 Land Considerations

#### On YLW Lands

Additional development of commercial land is required on airport property. Continued capital development also recommended.



- Existing Groundside Commercial
- Future Groundside Commercial
- Airport Boundary
- Existing Airside Commercial
- Future Airside Commercial

#### Off YLW Lands

Shadow Ridge Golf Course acquired to meet future demand. Also, the parcel of land immediately to the south of the existing runway recommended for future acquisition as demand increases.



- Potential Land Acquisition Areas
- Recently Acquired Land (Golf Course Still in Operation)
- Airport Boundary

# YLW Master Plan 2045



# AIRPORT INFRASTRUCTURE

## Airport Terminal Building, Car Parking and Roads

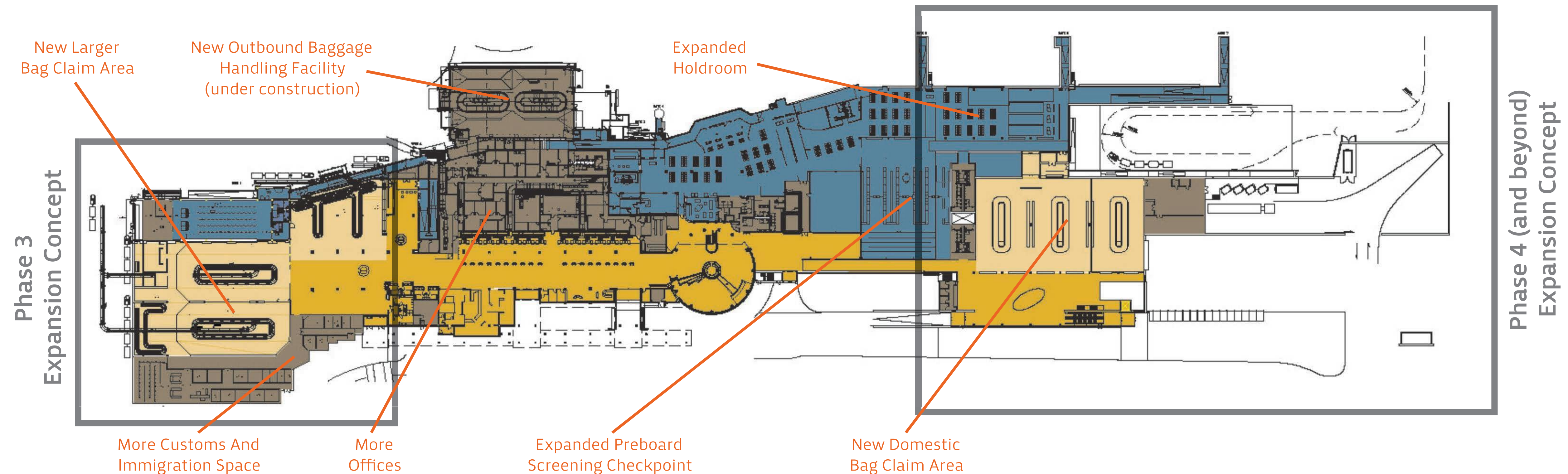
### Airport Terminal Building

Current and Future (Recommended) Expansion Program

► Existing facilities require reconfiguration and expansion. Recommendation for Phase 3 and 4 (and beyond) expansion areas (see illustration below)

Source: Dialog and SNC-Lavalin

\*Details of future layouts are at the discretion of YLW



### Car Parking and Roads

**Existing roadways and parking facilities**  
require reconfiguration and expansion

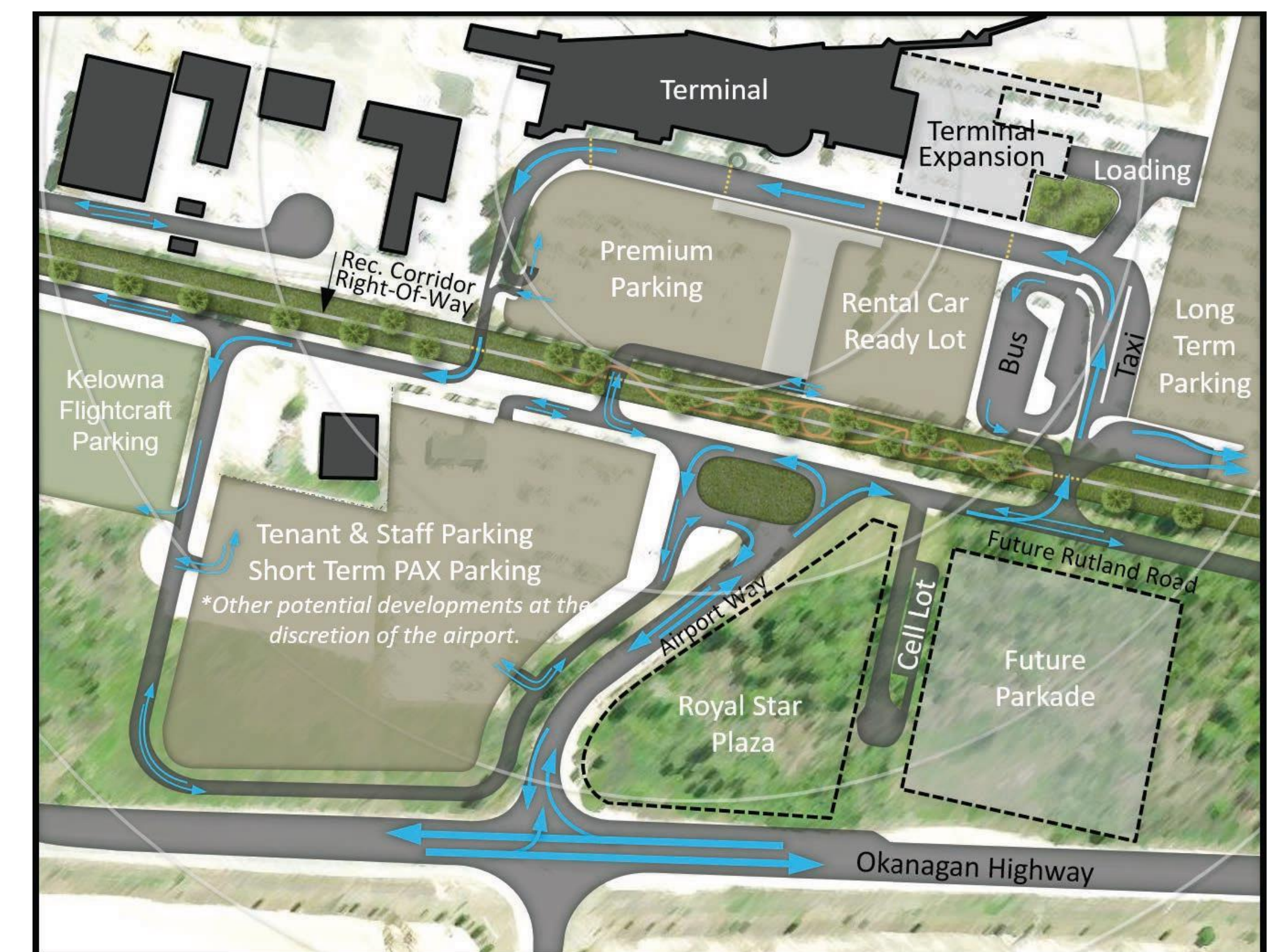
**Current forecasts indicate**  
parking facilities will not meet demand in 5 – 10 years

**Recommended to increase parking stalls**  
by 1,800 by 2045

**A portion of the existing long-term lot**  
is needed for future apron expansion -- option of relocating the lot to the south is under review

**Industry trends**  
such as share ride services will have impacts

**Connectivity to/from YLW**  
to be considered as part of overall transportation network



Source: Airbiz 2015

\*Preliminary Groundside Development Proposal

# YLW Master Plan 2045

# PRELIMINARY MASTER PLAN 2045 FINDINGS



## Next Phase: Final Master Plan Development

The project team is continuing their research, analysis and recommendations through 2016 that will inform the final Master Plan 2045 development.

### Have Your Say!

Your feedback into the Master Plan 2045 process is important! Please review all the material and complete the printed survey or visit us online at <https://www.surveymonkey.com/r/MASTERPLAN2045YLW-1>

## Keeping You Connected

[ylw.kelowna.ca](http://ylw.kelowna.ca)  
250.807.4300  
[airport@kelowna.ca](mailto:airport@kelowna.ca)  
250.765.0213 (fax)  
Airport Administration  
1 – 5533 Airport Way  
Kelowna BC V1V 1S1

**Thank you  
for your  
participation!**

# Master Plan 2045 Survey

## Have Your Say!



As Kelowna International Airport (YLW) plans for the future, your comments are important to include as part of the final Master Plan 2045.

Please provide your comments on the key topics noted below. Background information is available on the display boards and handouts, and available online at [ylw.kelowna.ca](http://ylw.kelowna.ca).

1) YLW’s Vision and Strategic/Economic Development

What are your interests and priorities for YLW to consider as part of its long-term planning?

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2) Please tell us your opinion about how YLW can maintain and/or improve its Key Success Drivers (refer to Board three for descriptions).

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3) What questions or comments do you have about the future of air traffic growth?

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4) What are your thoughts about the runway, apron and aircraft parking?

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5) What would you like to see maintained and/or improved inside the air terminal building?

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(Survey continued on next page)

6) Please tell us what is important to you about maintaining and/or improving car parking and roads in the long-term?

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7) What questions or comments do you have about current and/or future land development both on and off YLW property?

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8) Based on the preliminary 2045 Master Plan findings (refer to Board six), please tell us any other questions or comments for consideration in the final 2045 Master Plan.

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9) If you attended our open house in-person, please tell us what you thought about the open house, the materials and the help of our team (held February 27, 2016).

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10) Please outline any other comments you may have about the Master Plan or YLW in general, including if you would like a member of our team to contact you.

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(Please include your name and phone number above if applicable)

**Thank you for your participation!**

The deadline to provide feedback is June 30, 2016.


Our electronic survey is online at:


<https://www.surveymonkey.com/r/MASTERPLAN2045YLW-1>

You can submit a printed survey via email, in-person, online or by mail.


Your comments will be considered as the project team continues the analysis and recommendations that informs the final Master Plan 2045.

### Keeping You Connected

 **Visit Us Online:** [ylw.kelowna.ca](http://ylw.kelowna.ca)

 250.807.4300

 [airport@kelowna.ca](mailto:airport@kelowna.ca)

 250.765.0213

 **Airport Administration**

1 – 5533 Airport Way

Kelowna BC V1V 1S1



Kelowna International Airport

# **Master Plan 2045**

**Preliminary Draft Summary**

**Summer 2016**



**SNC • LAVALIN**

# YLW Master Plan

## About

- Supports YLW's vision to become the best mid-sized airport in North America
- Supports the Drive to 1.6 Million Passengers Program and the Flight to 2020 Projects (Ongoing)
- Picks up where the 2025 Master Plan left off to guide airport planning and development
- Informs the City's Official Community Plan (OCP)
- Includes a Five Year Strategic Plan



# YLW Master Plan 2045 Goals

## Review and Analyze

all aspects of airport  
infrastructure

## Update

traffic forecasts and  
economic data

## Define

future growth and  
development priorities

## Guide

future capital planning  
and phased implementation

## Provide

stakeholders and the public  
with engagement  
opportunities

## Apply

the final 2045 Master Plan as  
the way forward

# YLW Master Plan 2045

## Timeline: Three-phase Approach



# YLW Master Plan 2045

## Master Plan Study Components: At-a-Glance



Air Traffic Analysis and  
Forecasting: Air Traffic and  
Passenger Growth



Apron and Aircraft  
Parking (Infrastructure)



Airside System:  
Runways and Taxiways



Air Terminal Building



Airport Economic  
Impacts



Public Roads, Access  
and Vehicle Parking



New Regulatory Requirements



Commercial Land Development:  
Airside and Groundside



Potential Land Acquisition  
Areas



Noise Contours and Other  
Environmental Considerations

# Strategic Development Plan

## Vision and Mission

**The Vision** of Kelowna International Airport (YLW) is to become the best mid-sized airport in North America.

**The Mission** of YLW is to provide safe, secure, customer-friendly economical services and facilities that promote the Okanagan.



# Strategic Development Plan

## Core Values

- Innovation
- Excellence in Safety, Security and Environmental Performance
- Teamwork and People
- Integrity
- Economic Development and Fiscally Responsible Ownership
- Quality Customer Experience



# Strategic Development Plan

## Key Success Drivers

- Operate and maintain safe and secure best-in-class facilities and services
- Foster economic development for the region
- Act in a financially responsible and sustainable manner
- Exceed customer service expectations of the travelling public in collaboration with airport partners and the community



# Economic Impact of YLW Activities

## YLW Fast Facts

Kelowna International Airport (YLW) is the largest municipally owned and operated airport in Canada – and we're growing!

**Our goal to welcome  
1.6 million passengers**  
was achieved in 2014



**By 2020** we anticipate serving  
**2 million passengers**  
annually



We are the  
**11th busiest airport**  
in Canada

More than  
**15,400 passengers**  
every week choose our airport  
as their starting destination



Our economic impact in 2010 was  
**2,730 jobs**, representing  
**\$140 million in wages** and  
**\$610 million** in total  
economic output in BC



From 2010 to 2015,  
our full-time employment  
increased by **9%**,  
wages increased by **19%**  
and our GDP increased by **27%**



Between 2010 and 2020,  
we will have  
invested over  
**\$92 million**  
in facility upgrades



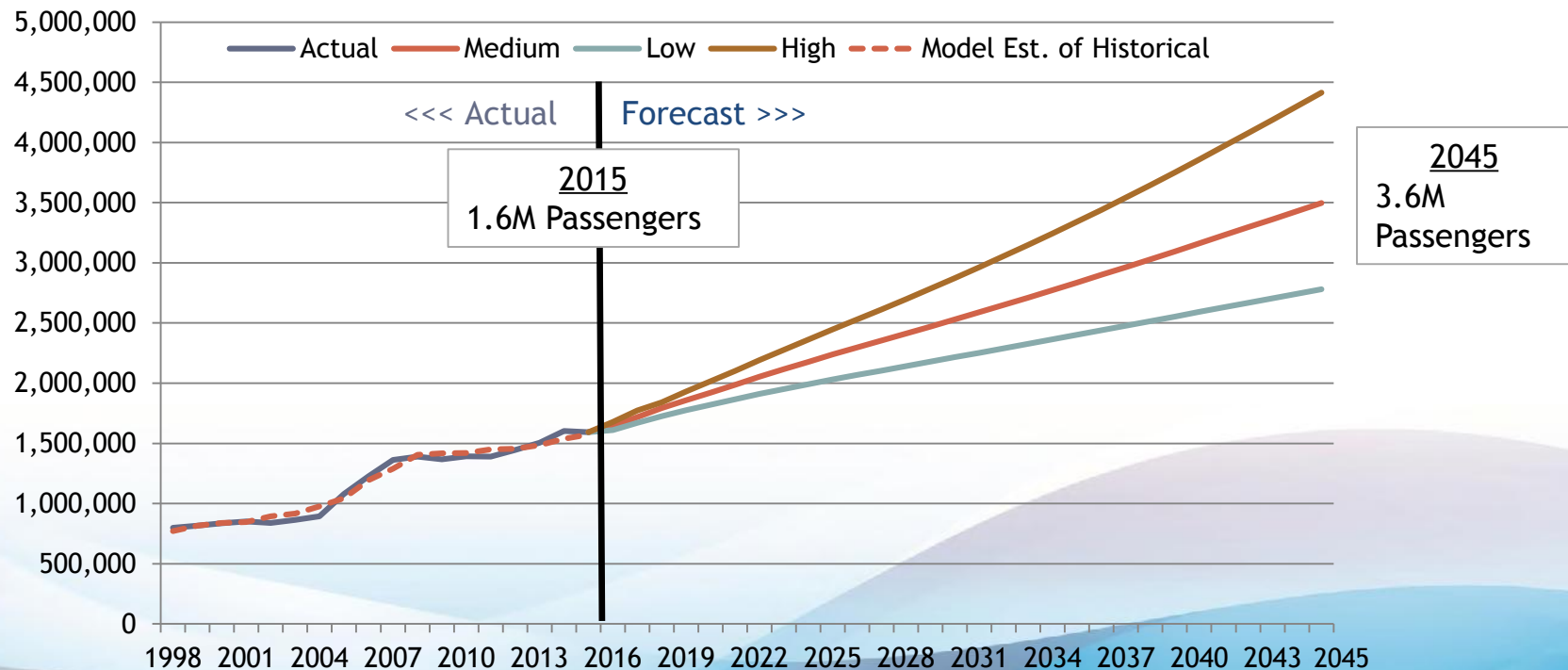
Every additional daily, year-round scheduled B737 flight also  
generates up to 38 full-time jobs at YLW

# Air Traffic Growth



## Passengers

Passenger growth to continue at **3% annually** (medium forecast)

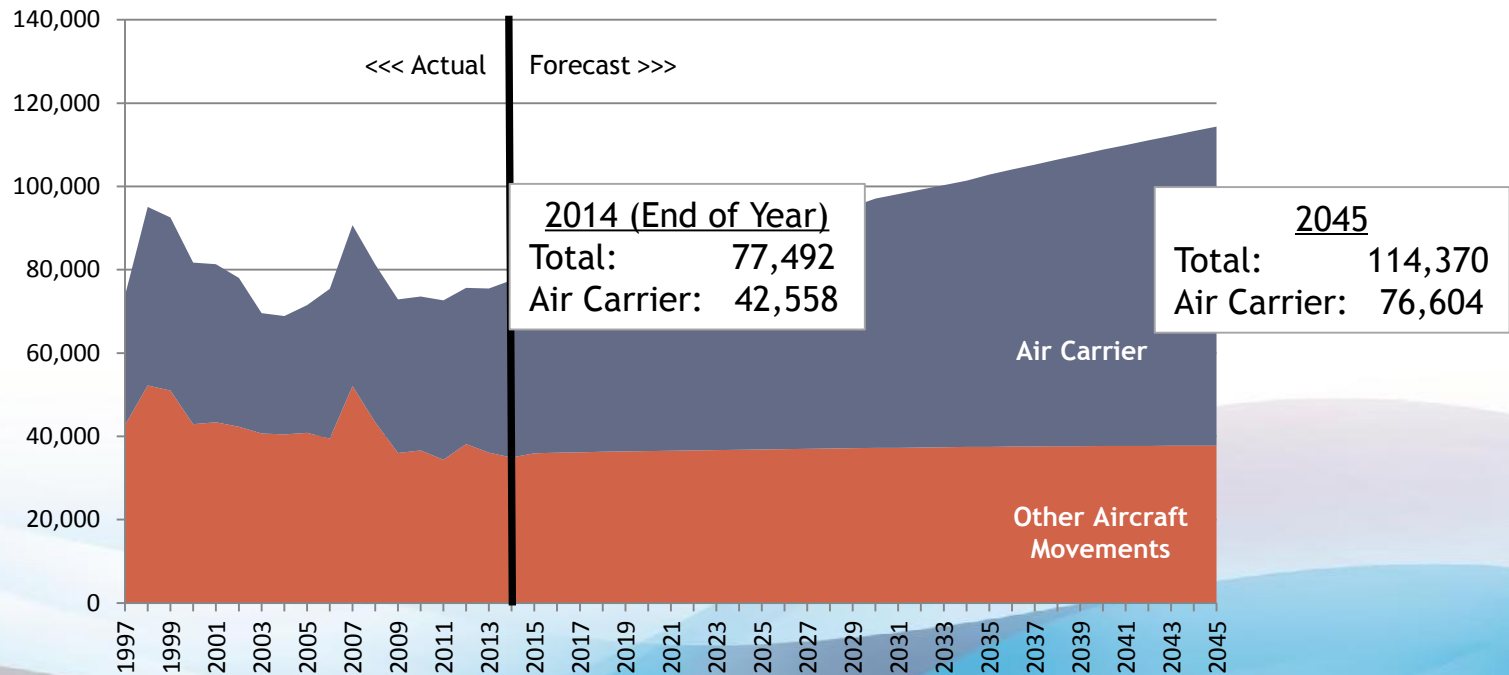


# Air Traffic Growth



## Aircraft Takeoffs and Landings

**Growth at 2% per year** (majority attributable to air carrier services)



# Air Traffic Growth

## Noise Exposure – Preliminary Master Plan 2045

2025 Noise Exposure Forecast



2045 Noise Exposure Forecast (Current zoning to be preserved)

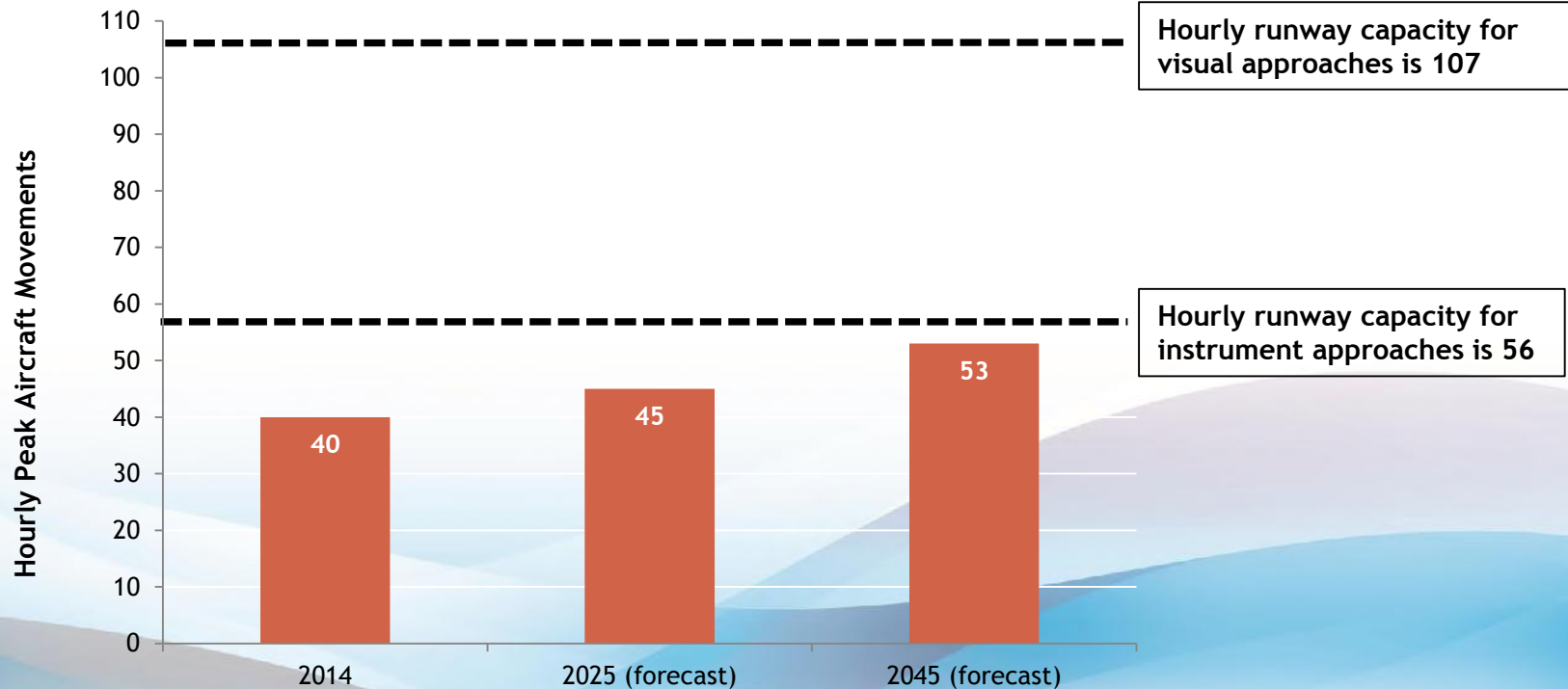


# Airport Infrastructure



## Airside Capacity (e.g. Runways)

YLW's existing runway capacity accommodates future demand



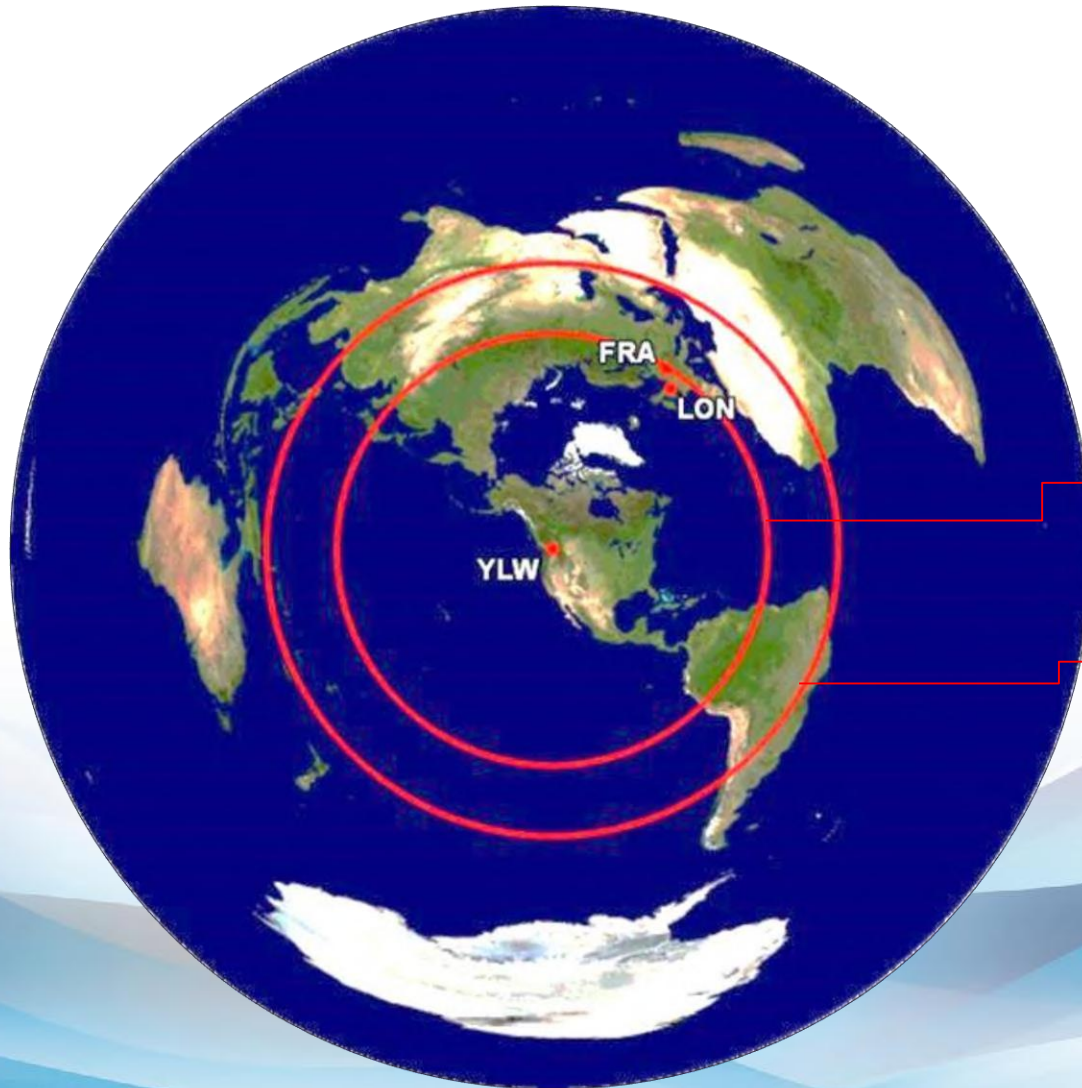
# Airport Infrastructure



## Runway Length



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- Current runway length is sufficient for B767-300ER aircraft to fly non-stop to London and Frankfurt with full passenger load

B767-300ER

4300 nm

B787-8HI

5700 nm



## New Aerodrome Regulation Changes

- TP 312 5<sup>th</sup> Edition came into effect September 2015
- New regs impact zoning for clearances under and around approach surfaces
- Runway End Safety Areas (RESA) will be required

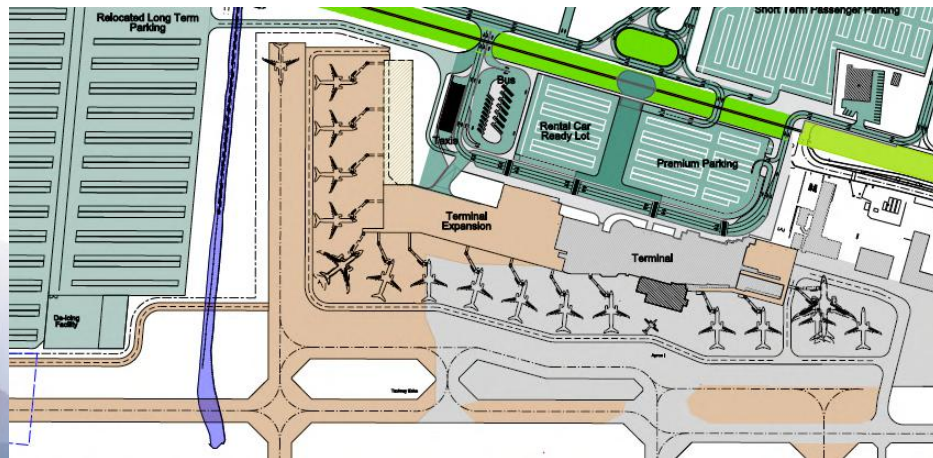


# Airport Infrastructure

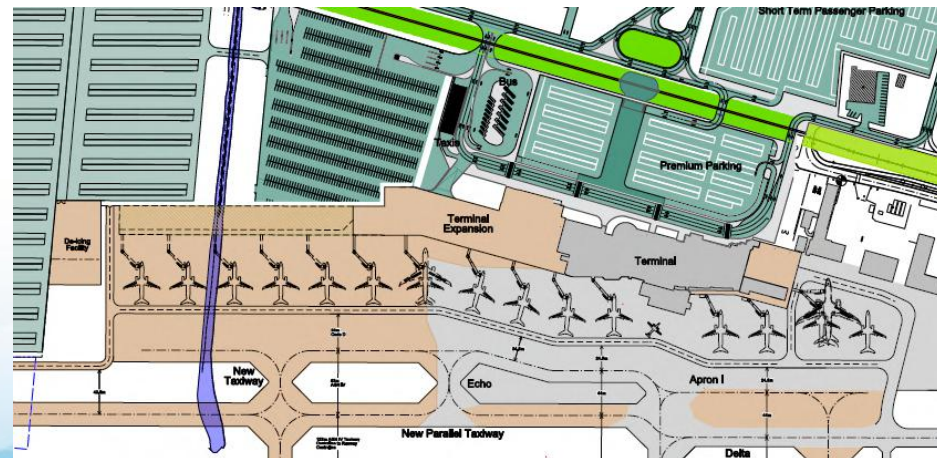


## Apron and Aircraft Parking

- One to two terminal gates required by 2035
- Five new remote parking stands required by 2045
- Apron expansion options under review



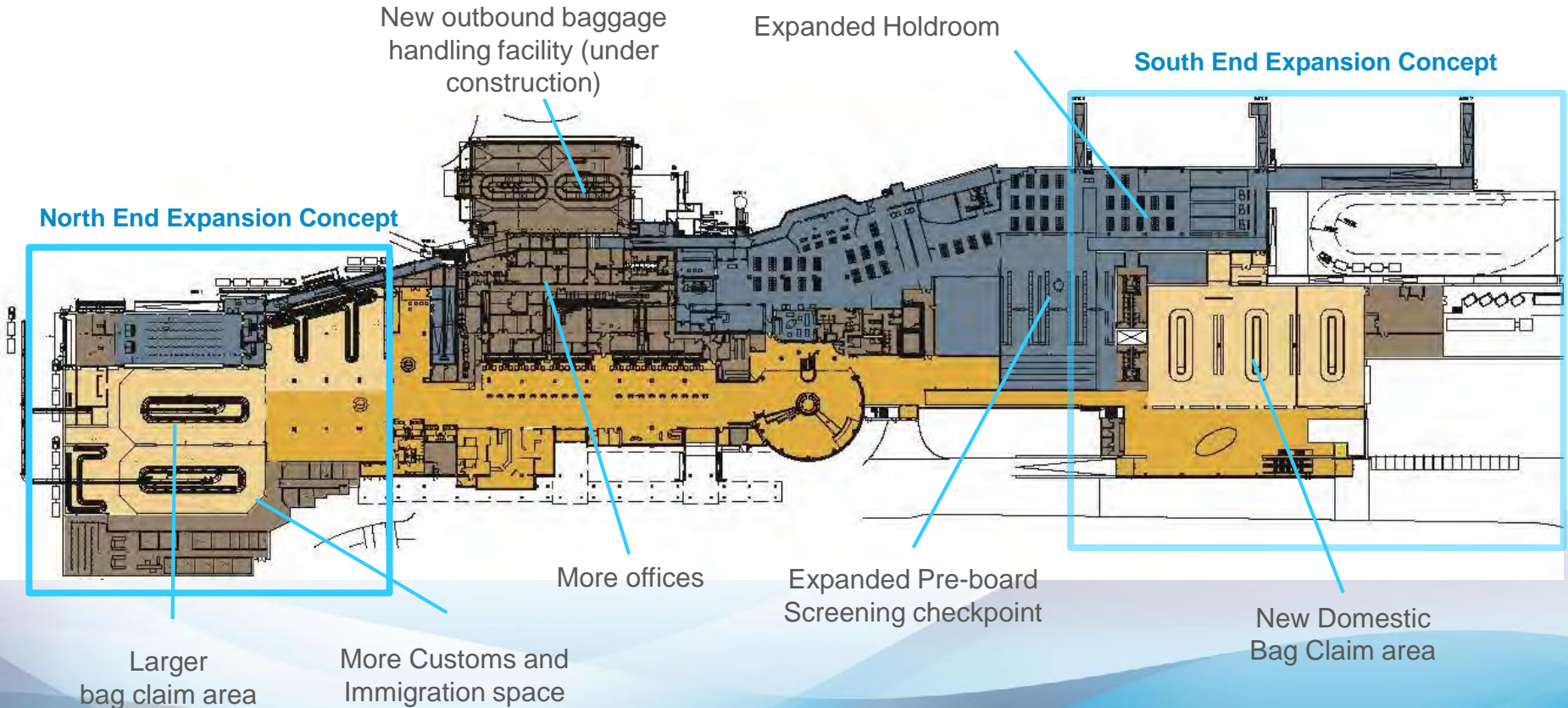
Scenario 1



Scenario 2

# Airport Infrastructure

## Air Terminal Building – Long-Term Expansion Program



Source: Dialog and SNC-Lavalin

\* Details of future layouts are at the discretion of the airport



## Air Terminal Building – Demand/Capacity

Proposed North Terminal Expansion Areas vs. Updated Functional Program Requirements (2015)

	Note	Existing, Incl. New Bag Make Up /HBS (m2)	Updated ATB Functional Program Requirements (m2)					
			2016	2020	2025	2030	2035	2045
Enplaning								
Departures Concourse Area (incl. check-in queue)		1,447	756	854	968	1,031	1,151	1,321
Check-in Counters (excl. queuing)		175	124	138	152	166	179	195
Preboard Screening Checkpoint		457	429	429	572	572	572	715
Holdroom Space (Usable)	1	793	969	1,105	1,274	1,375	1,544	1,770
Holdroom Space (Underutilized)	1	396						
Concessions, including storage		1,104	1,113	1,358	1,601	1,824	2,041	2,451
Bag Make-up/HBS		1,042	448	511	589	636	714	819
ATO Support/Airline Offices		648	612	712	819	928	1,346	1,553
Deplaning								
Domestic Bag Claim	2	595	691	1,012	1,012	1,012	1,012	1,012
International/Transborder Bag Claim	2	248	321	321	642	642	1,012	1,012
CBSA PIL, Secondary and Support		488	371	455	594	688	745	876
All								
Arrivals Lobby Landside		294	236	276	299	305	313	348
Car Rentals/Tour Operators		44	263	320	363	388	401	453
Total All Spaces		7,731	6,333	7,491	8,885	9,567	11,030	12,525

Demand less than 95% of Capacity

Demand within 95% and 110% of Capacity

Demand > 110% of Capacity

### Notes

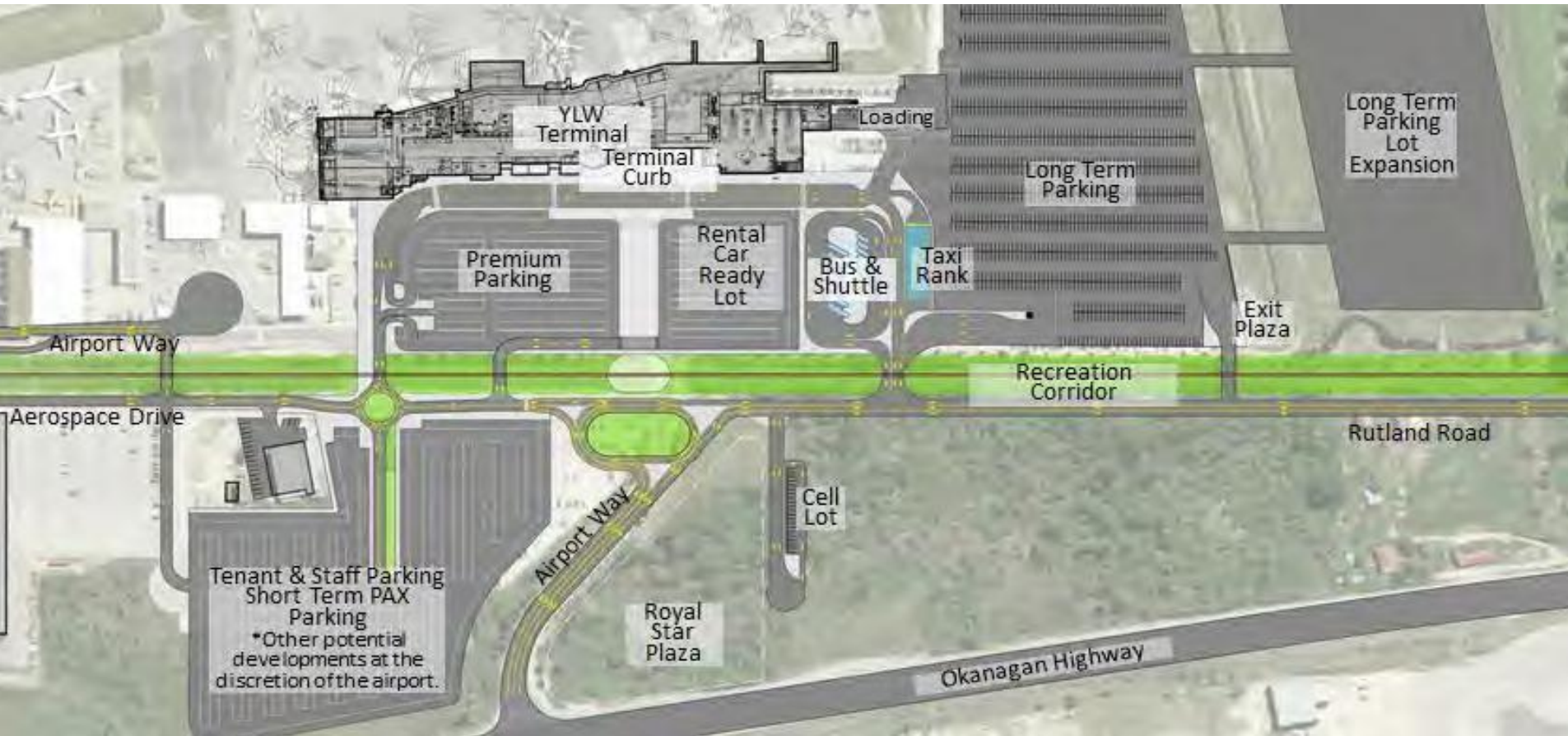
- Existing Sterile Holdroom area measures 1,189 m2, of which 396 m2 at the southern end is underutilized due to layout issues (and no access to boarding gates). This area is not included in the existing useable area.
- Assumes inbound bag ops area located outside (not included in terminal space requirements).

# Airport Infrastructure



## Car Parking and Roads

### Preferred Groundside and Access Parking Development Option



Source: Airbiz, 2015

# Airport Infrastructure



## Car Parking and Roads

### Industry trends

such as share ride services  
will have impacts

Recommended to  
increase parking stalls  
by 1,800 by 2045

A portion of the  
existing long-term lot  
is needed for future apron  
expansion – option of relocating the  
lot to the south  
is under review

Current forecasts indicate  
parking facilities will not meet  
demand in 5 – 10 years

Existing roadways and  
parking facilities  
require reconfiguration and  
expansion

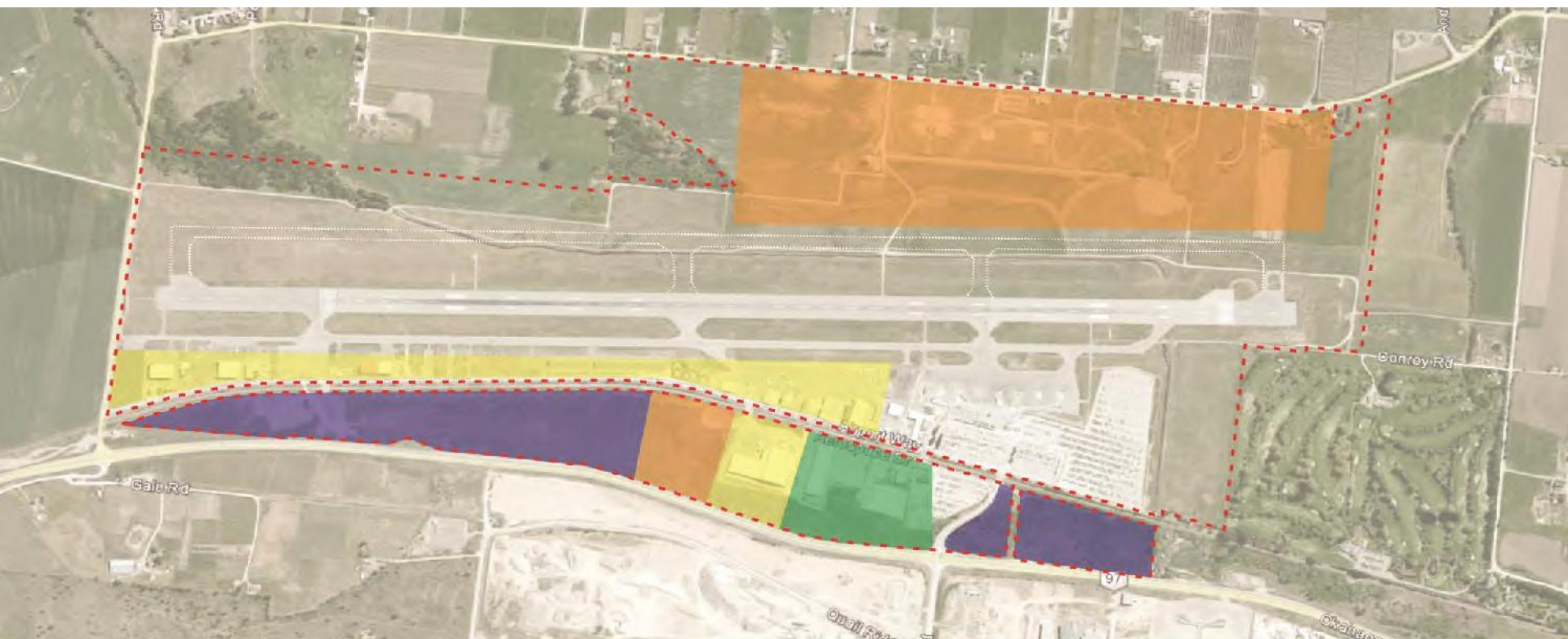
Connectivity to/from YLW  
to be considered as part of overall  
transportation network




# Land Considerations

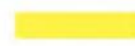



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## Commercial Land Development – On YLW Property



-  Existing Groundside Commercial
-  Future Groundside Commercial
-  Airport Boundary

-  Existing Airside Commercial
-  Future Airside Commercial

# Land Considerations

## Potential Land Acquisition – Off YLW Property



-  Potential Land Acquisition Areas
-  Recently Acquired Land (Golf Course Still in Operation)
-  Airport Boundary

# Preliminary Master Plan 2045

## Key Findings (Summer 2016)

### Preliminary Master Plan Findings

YLW's current development strategy remains valid



YLW generates significant direct economic impacts over **1,400 jobs** and a GDP of **\$152 million**



Passenger traffic is forecast to increase from **1.6 to 3.6 million** passengers by 2045

Aircraft movements are forecast to **increase by approximately 50%** - most will come from air carriers



Current Official Community Plan (OCP) zoning should be preserved - **a future OCP amendment may be required**



**New aerodrome regulations** will impact planning

Current **runway capacity and length** are sufficient to meet future demand



Apron will require **five new remote aircraft parking stands** and **one new terminal gate stand** by 2045



Air terminal building will require an **expanded departure lounge** and **baggage claim** areas

Current roadways and parking facilities require **reconfiguration and expansion**



**More commercial land** (on YLW land) is required



**Additional land (off YLW property)** is required in addition to the golf course acquisition

# HAVE YOUR SAY!

Your feedback is important!  
Please complete the survey or visit us online at:

<https://www.surveymonkey.com/r/MASTERPLAN2045YLW-1>

Thank you for your participation



# KELOWNA INTERNATIONAL AIRPORT

## Your Link To The World

### Master Plan 2045



#### YLW's Vision and Mission

The **Vision** of Kelowna International Airport (YLW) is to become the best mid-sized airport in North America.

The **Mission** of YLW is to provide safe, secure, customer-friendly economical services and facilities that promote the Okanagan.

Your participation in the planning and implementation of our Vision, Mission and strategic development contributes to our success.

#### How We Get There

- ▶ Master Planning (2045)
- ▶ Strategic Plan (5-year)
- ▶ Capital Planning and Implementation
- ▶ Drive to 1.6 Million Passengers Program
- ▶ Flight to 2020 Projects
- ▶ Supporting the City's Official Community Planning
- ▶ Ongoing Public and Stakeholder Engagement
- ▶ Reporting to Committees and City Council

#### The Master Plan 2045

Picking up where the Master Plan 2025 left off, the Master Plan 2045 is an important short and long-term plan, slated to be completed in late 2016, that further supports YLW achieving its Vision.

The Master Plan process analyzes how best to align our infrastructure and services to changing market conditions and growth, while identifying a balanced approach to management capital and operating expenses.

#### Why Your Participation Matters

YLW continues to experience a high growth rate and our continued commitment is to plan and implement the future of YLW in sustainable ways.

Public and stakeholder engagement provides a continued forum to understand, explore and evaluate the future of YLW as the technical planning proceeds.



#### YLW Fast Facts

Kelowna International Airport (YLW) is the largest municipally owned and operated airport in Canada – and we're growing!

Our goal to welcome  
**1.6 million passengers**  
was achieved in 2014



By 2020 we anticipate serving  
**2 million passengers**  
annually



We are the  
**11th busiest airport**  
in Canada

More than  
**15,400 passengers**  
every week choose our airport  
as their starting destination



Our economic impact in 2010 was  
**2,730 jobs**, representing  
**\$140 million in wages** and  
**\$610 million** in total  
economic output in BC



From 2010 to 2015,  
our full-time employment  
increased by **9%**,  
wages increased by **19%**  
and our GDP increased by **27%**



Between 2010 and 2020,  
we will have  
invested over  
**\$92 million**  
in facility upgrades



# YLW Master Plan 2045



# THE IMPORTANCE OF THE MASTER PLAN 2045



Y<sub>L</sub>W's aviation service needs and future demands require continued assessment, planning, consultation and implementation of sustainable solutions.

The Master Plan process, which includes a 5-Year Strategic Plan, is a critical tool used to guide Y<sub>L</sub>W in sustainable and fiscally responsible short and long-term planning.

Updating the Master Plan links with many of the City of Kelowna's governing initiatives, particularly with the Official Community Plan (OCP) and potential future amendments. Y<sub>L</sub>W's master planning also informs local and regional planning and development, such as with airline operators, travel organizations and more.

The Master Plan 2045 is one of Y<sub>L</sub>W's strategic organizational components that identifies airport and aviation development and growth impacts including:



Socio-economic demand and effects



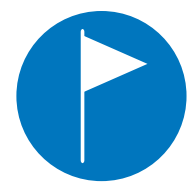
Environmental considerations



Air traffic and passenger growth



Traffic and transportation demands



Land use (both on and off Y<sub>L</sub>W lands)



Infrastructure and facility services

## Master Plan 2045 Goals

**Review and analyze**  
all aspects of  
airport infrastructure

**Update**  
traffic forecasts and  
economic data

**Define**  
future growth and  
development priorities

**Guide**  
future capital planning and  
phased implementation

**Provide**  
stakeholders and the public with  
engagement opportunities

**Apply**  
the final 2045 Master Plan  
as the way forward

## Master Plan Timeline: 3 Phases



## Stakeholder and Public Consultation

The purpose of Master Plan 2045 stakeholder and public consultations is to inform, engage and seek feedback about issues and opportunities associated with Y<sub>L</sub>W's future growth and development. Topic-specific feedback is important to inform the final Master Plan 2045 as part of our overall analysis.

Y<sub>L</sub>W and the SNC-Lavalin Airports + Aviation consultant team will review and analyze stakeholder and public comments from workshops, presentations, meetings, surveys and the open house that contributes to the final Master Plan 2045. A Master Plan 2045 Consultation Summary Report will also be issued to keep stakeholders and the public informed of our progress.

The implementation of the final Master Plan 2045 will be completed in phases and will depend on factors such as the speed of growth and development, capital costs to maintain and develop airport infrastructure, environmental considerations, community support and more.

Let's Move Forward Together

From our strategic planning to expanding airport infrastructure to our preliminary Master Plan 2045 findings outlined on the next series of display boards, we would like to hear your feedback.

# Y<sub>L</sub>W Master Plan 2045



# MASTER PLAN 2045 COMPONENTS



These are the key topic areas that the project team is studying.  
We would like to know what your interests and priorities are in these categories.

Air Traffic Analysis and Forecasting: Air Traffic and Passenger Growth

Apron and Aircraft Parking (Infrastructure)

Airside System: Runways and Taxiways

Air Terminal Building

Airport Economic Impacts

Public Roads, Access and Vehicle Parking

New Regulatory Requirements

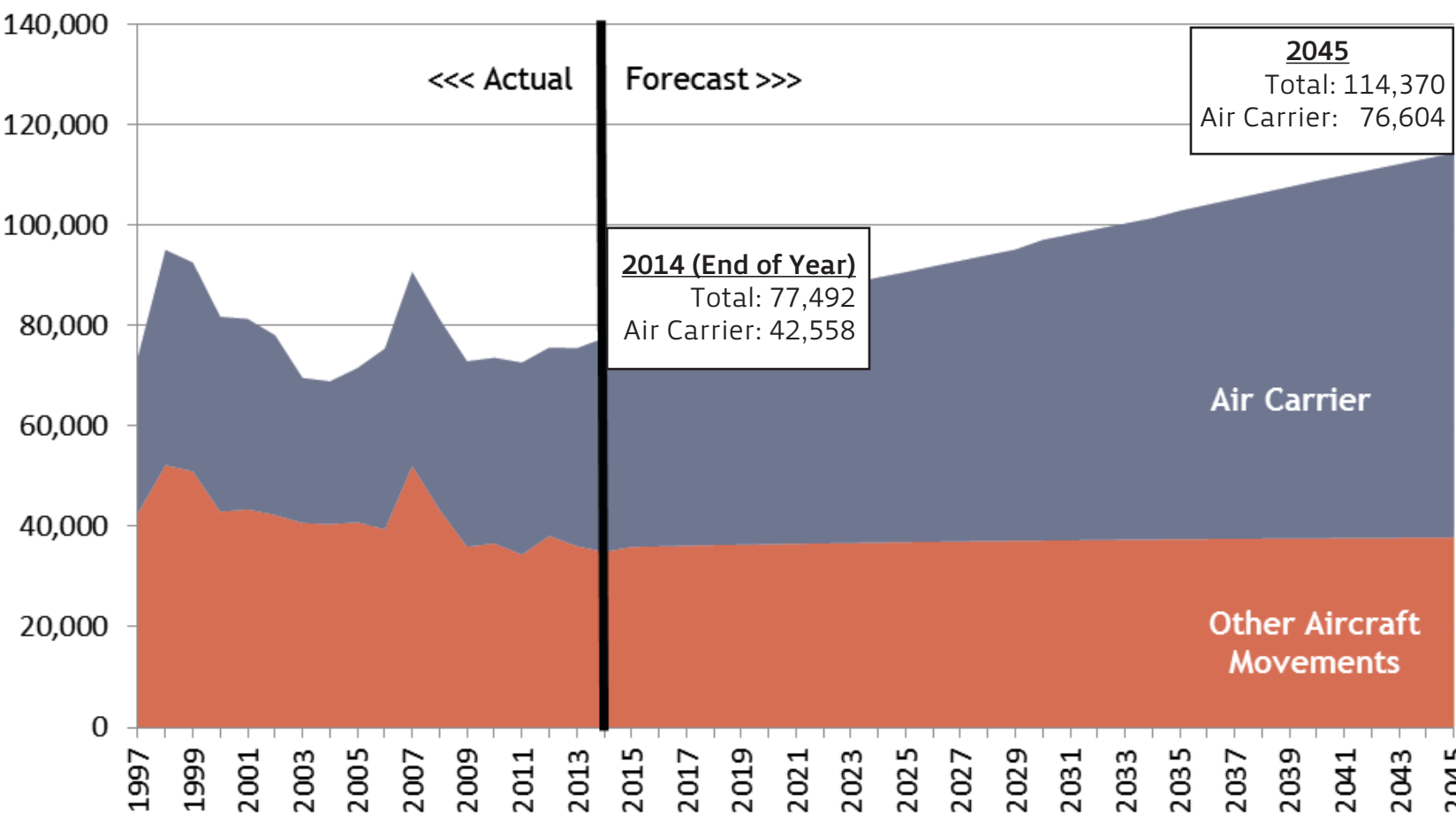
Commercial Land Development: Airside and Groundside

Potential Land Acquisition Areas

Noise Contours and Other Environmental Considerations

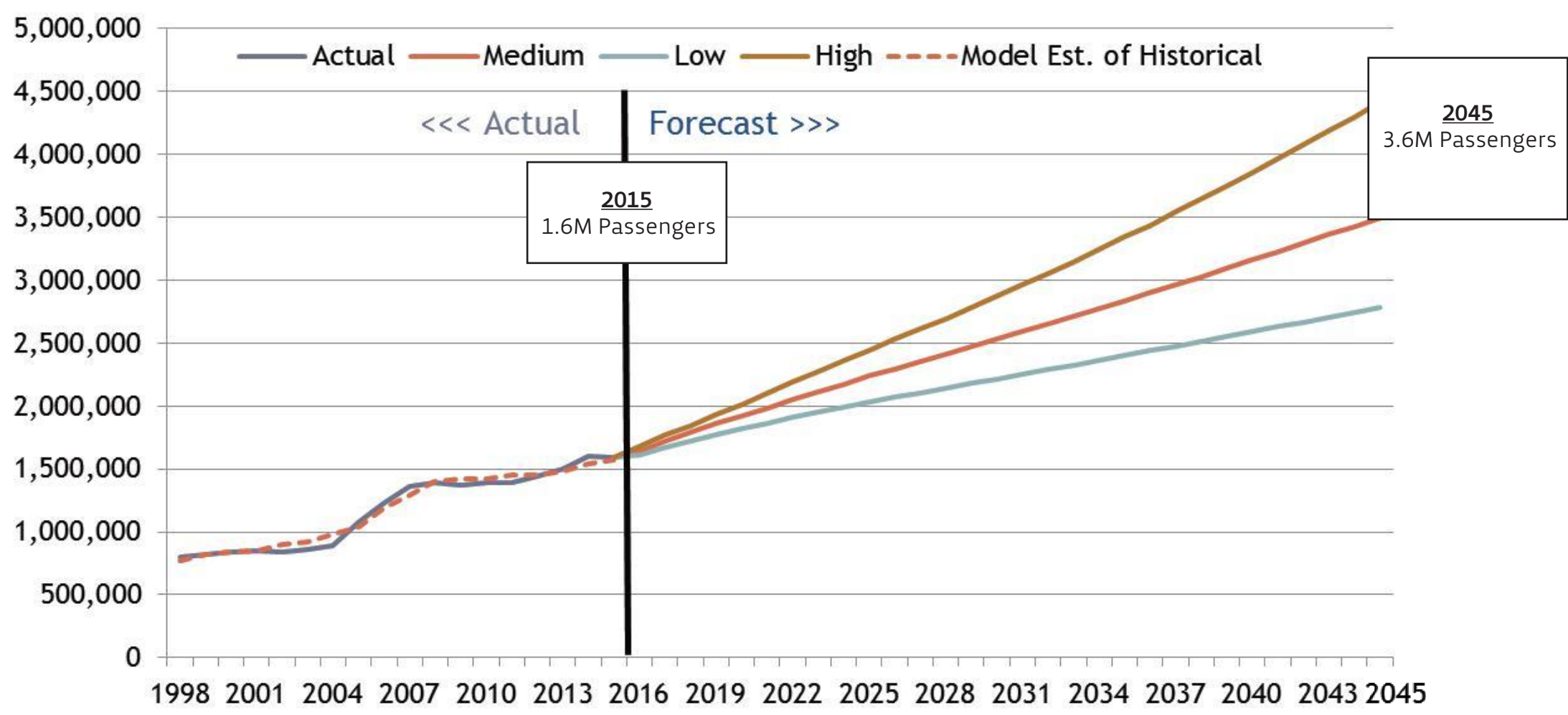
## Air Traffic and Passenger Growth

### Aircraft Takeoffs and Landings



Growth at 2% per year  
(majority attributable to air carrier services)

### Air Traffic Growth: Passengers



Passenger growth to continue at  
**3% annually** (medium forecast)

## Strategic Development Plan Key Success Drivers

**Operate and maintain**  
safe and secure  
best-in-class  
facilities and services

**Foster**  
economic development  
for the region

**Act**  
in a financially responsible and  
sustainable manner

**Exceed**  
customer service expectations  
of the travelling public in collaboration with  
airport partners and the community

Please Tell Us How We're Doing!

# AIRPORT INFRASTRUCTURE

## Noise Exposure, Runways/Apron and Aircraft Parking, and Land Considerations



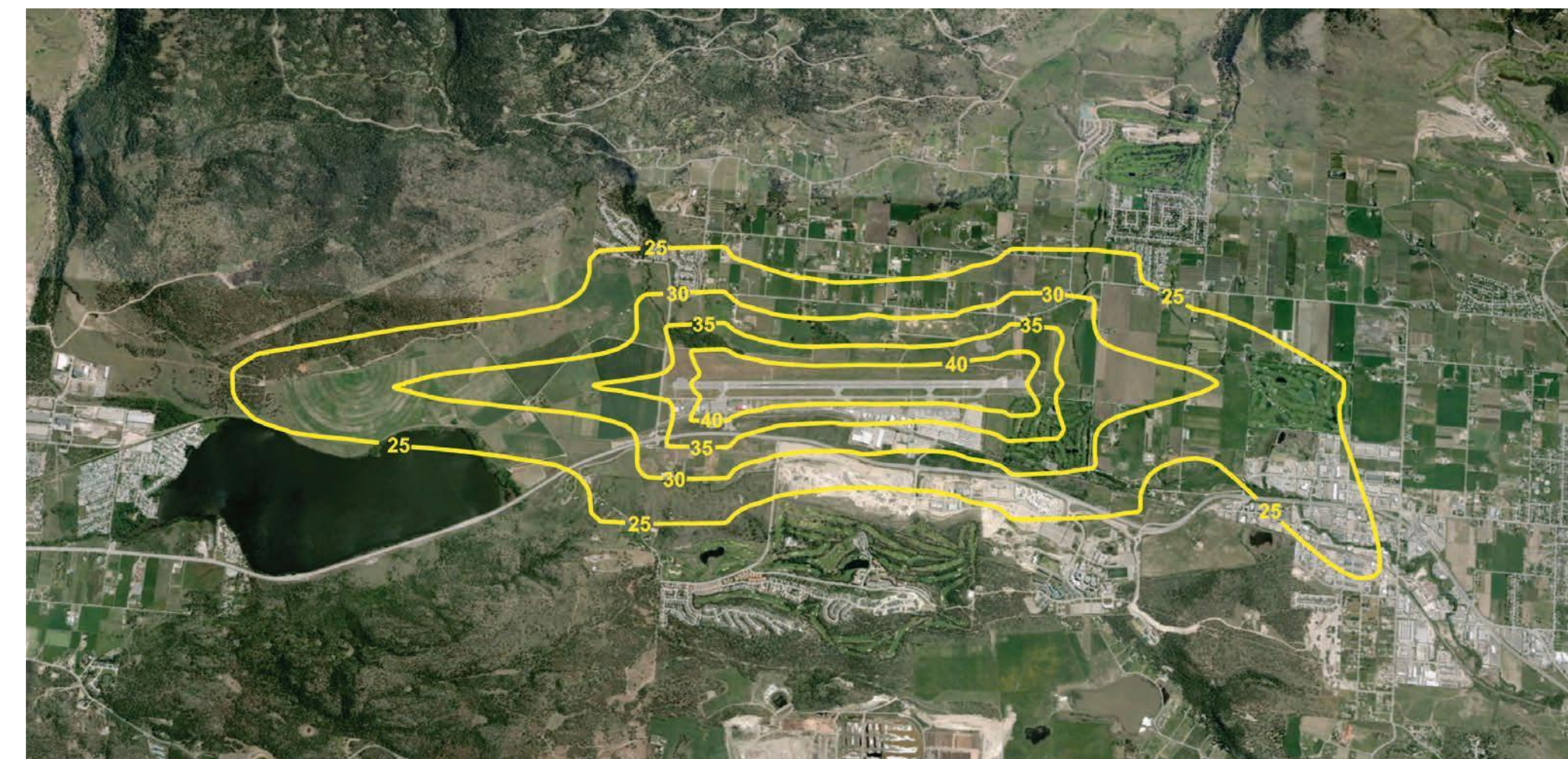
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### ❓ )) Noise Exposure

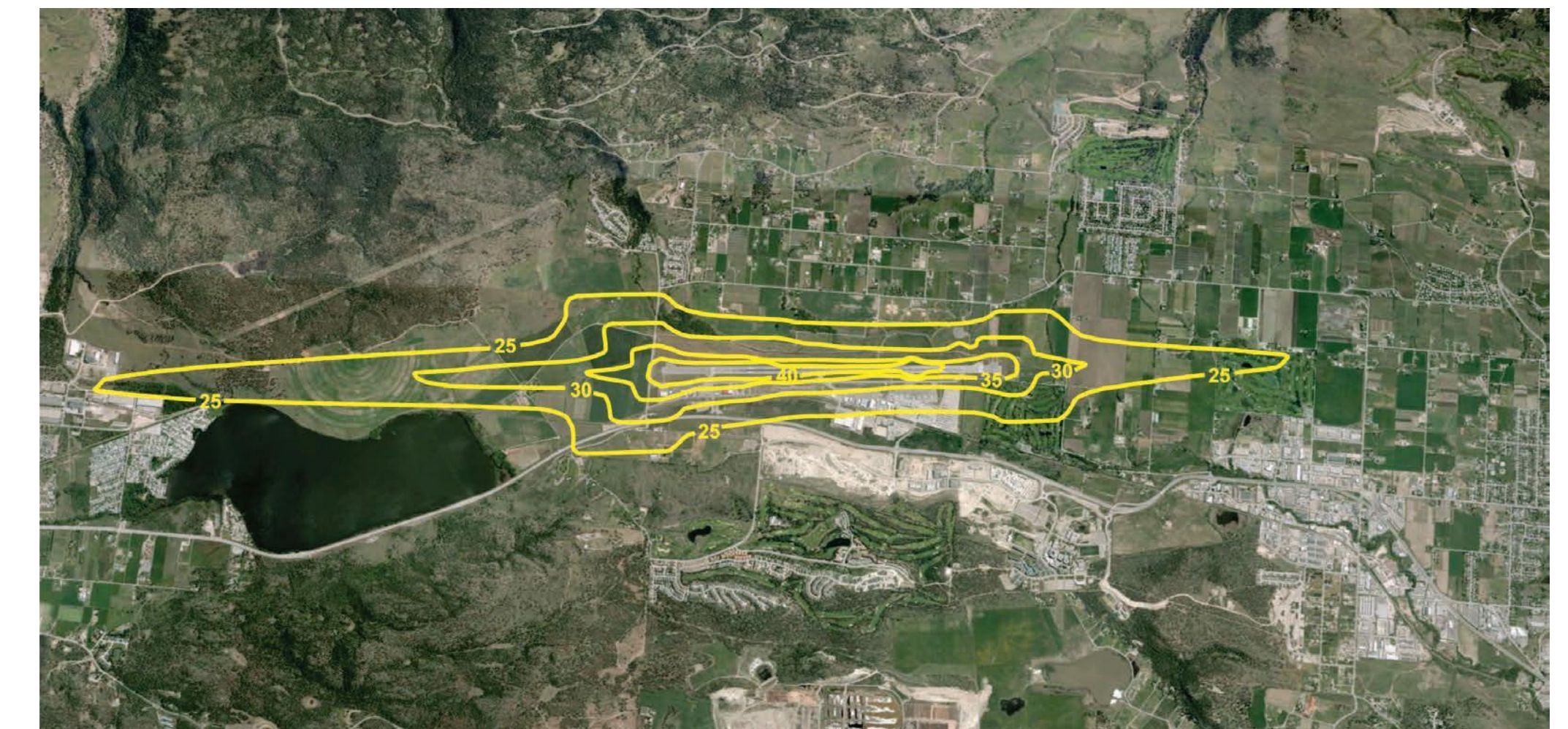
- ▶ No changes are recommended off-airport land zoning based on the preliminary Master Plan findings.
- ▶ Noise contours depict areas of noise exposure based on frequency of aircraft movements, and are not directly related to measured noise.

### ✈ Runway Capacity and Length

- ▶ The existing single runway meets the needs to 2045. New standards will require the addition of Runway End Safety Areas (RESA).
- ▶ Recommendation for future runway expansion on land immediately to the south of the current runway to accommodate larger aircraft as demand increases.



2025 Noise Exposure Forecast



2045 Noise Exposure Forecast

### ✈ Apron and Aircraft Parking

- ▶ No new terminal gates are required until beyond 2035. One new terminal gate stand is recommended between 2035 and 2045. Five new remote aircraft parking stands are recommended by 2045. Two apron options are also under review (refer to presentation slides for graphics).
- ▶ Aircraft movements are forecast to increase by 50% (2045), which will increase future demand on groundside and airside facilities.

### 📍 Land Considerations

#### On YLW Lands

Additional development of commercial land is required on airport property. Continued capital development also recommended.



- Existing Groundside Commercial
- Future Groundside Commercial
- Airport Boundary
- Existing Airside Commercial
- Future Airside Commercial

#### Off YLW Lands

Shadow Ridge Golf Course acquired to meet future demand. Also, the parcel of land immediately to the south of the existing runway recommended for future acquisition as demand increases.



- Potential Land Acquisition Areas
- Recently Acquired Land (Golf Course Still in Operation)
- Airport Boundary

# YLW Master Plan 2045



# AIRPORT INFRASTRUCTURE

## Airport Terminal Building, Car Parking and Roads

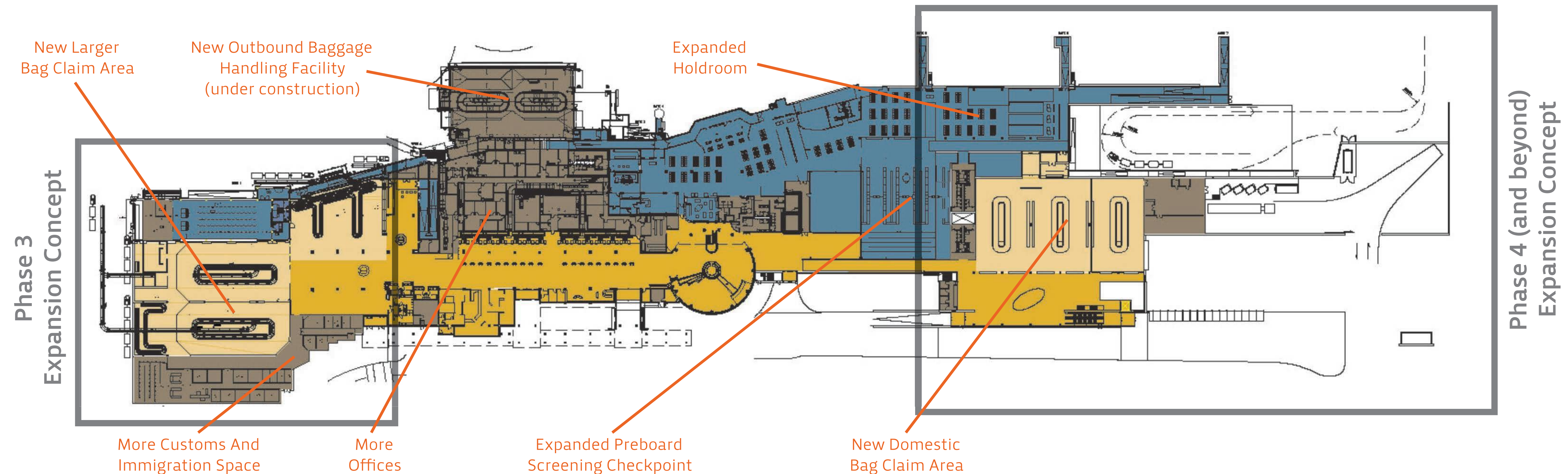
### Airport Terminal Building

Current and Future (Recommended) Expansion Program

► Existing facilities require reconfiguration and expansion. Recommendation for Phase 3 and 4 (and beyond) expansion areas (see illustration below)

Source: Dialog and SNC-Lavalin

\*Details of future layouts are at the discretion of YLW



### Car Parking and Roads

**Existing roadways and parking facilities**  
require reconfiguration and expansion

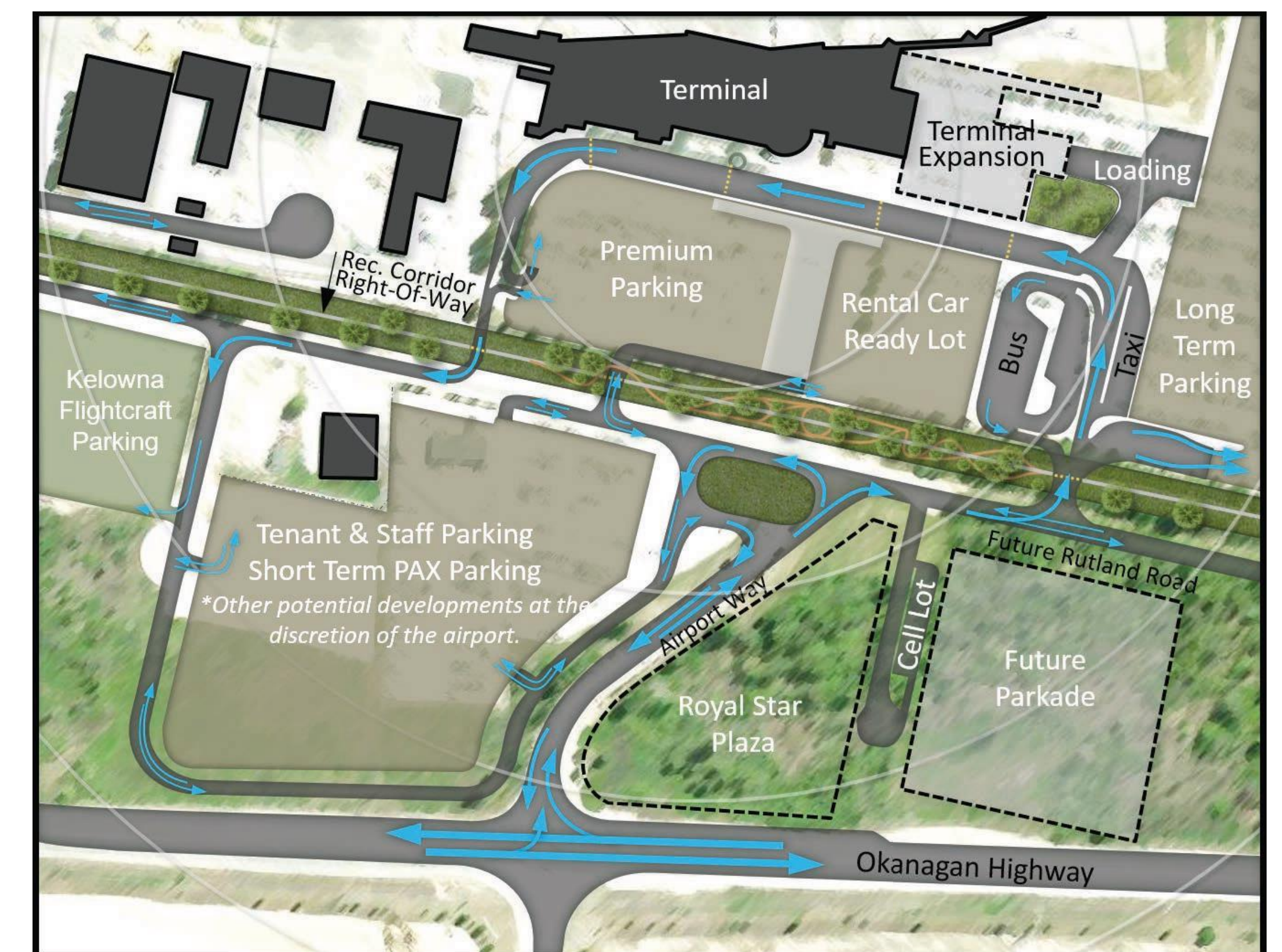
**Current forecasts indicate**  
parking facilities will not meet demand in 5 – 10 years

**Recommended to increase parking stalls**  
by 1,800 by 2045

**A portion of the existing long-term lot**  
is needed for future apron expansion -- option of relocating the lot to the south is under review

**Industry trends**  
such as share ride services will have impacts

**Connectivity to/from YLW**  
to be considered as part of overall transportation network



Source: Airbiz 2015

\*Preliminary Groundside Development Proposal

# YLW Master Plan 2045

# PRELIMINARY MASTER PLAN 2045 FINDINGS



## Next Phase: Final Master Plan Development

The project team is continuing their research, analysis and recommendations through 2016 that will inform the final Master Plan 2045 development.

### Have Your Say!

Your feedback into the Master Plan 2045 process is important! Please review all the material and complete the printed survey or visit us online at <https://www.surveymonkey.com/r/MASTERPLAN2045YLW-1>

## Keeping You Connected

[ylw.kelowna.ca](http://ylw.kelowna.ca)  
250.807.4300  
[airport@kelowna.ca](mailto:airport@kelowna.ca)  
250.765.0213 (fax)  
Airport Administration  
1 – 5533 Airport Way  
Kelowna BC V1V 1S1

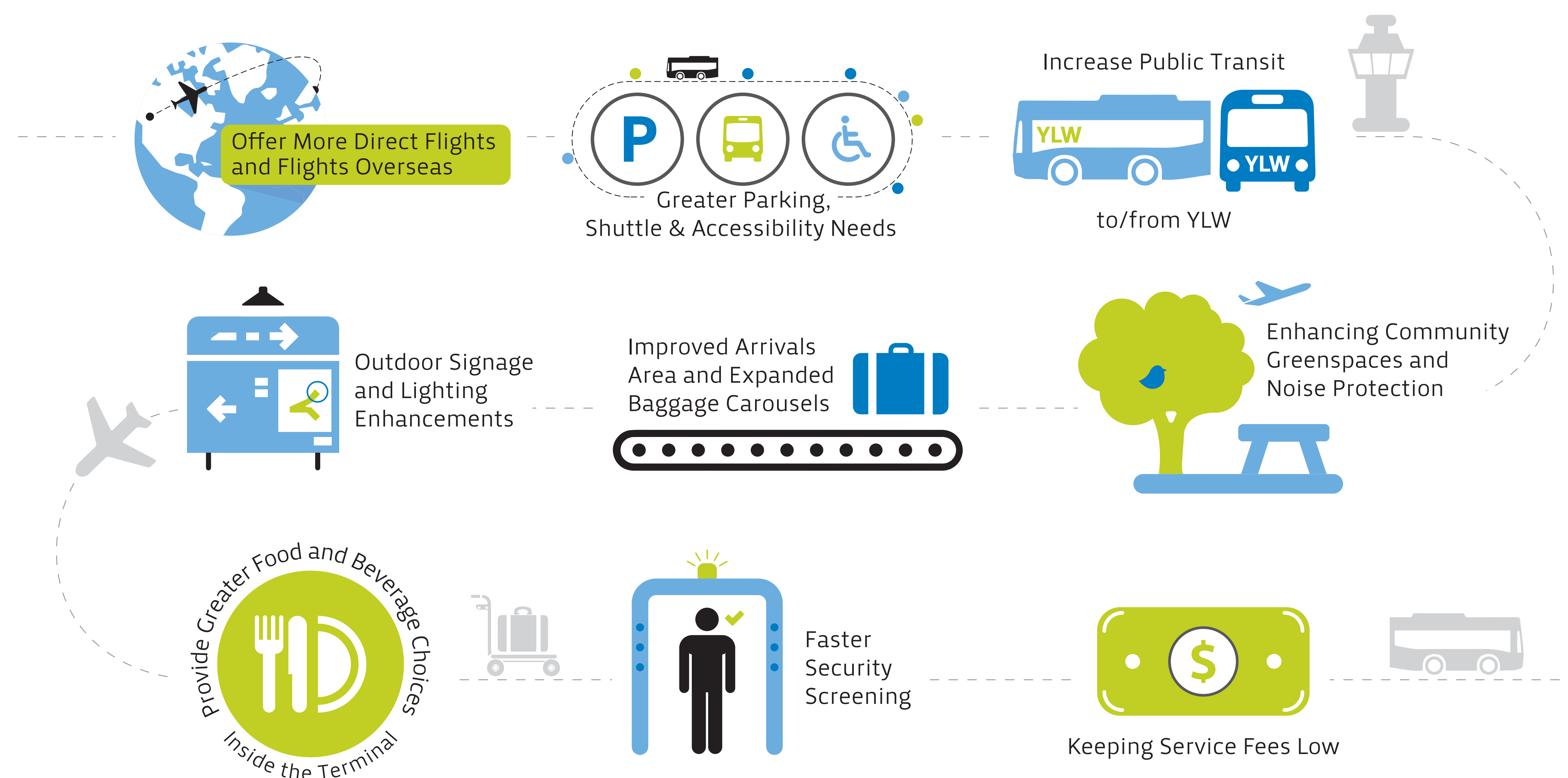
**Thank you  
for your  
participation!**

# OUR MASTER PLAN 2045 PROGRESS TO DATE!

- > Over 20 Meetings and Presentations Completed
- > Over 220 Feedback Forms Received
- > YLW Spring 2016 Open House Completed
- > Council Workshop Completed
- > Online and Social Media Updates Completed
- > Updated Airside Development Program
- > Updated Air Terminal Building Development Plan
- > Landside Roads and Parking Plan
- > Provided Preliminary Airport Access Options
- > Provided Commercial Land Development Concepts

## The Most Important Priorities You've Told Us So Far Are...

Our technical analysis together with public and stakeholder feedback have been considered in the Detailed 2045 Master Plan to date.



# WE'RE GROWING AND MAKING IMPROVEMENTS!



The Master Plan guides our long-term future planning that allows us to plan and implement our annual Capital improvements at YLW.

These are our current Capital improvements underway based on our 2025 Master Plan.

**YLW is considering your feedback into its long-term Master Plan 2045 and we appreciate your input.**

## Master Plan 2045: What's Next

- > Continued Community Outreach at Orchard Park Mall in August 2016 and Social Media Outreach
- > Continued Stakeholder Meetings and Workshops Summer/Fall
- > Second Council Workshop Fall
- > Continued Technical Analysis and Stakeholder Feedback Consideration into Final 2045 Master Plan Summer/Fall
- > Final 2045 Master Plan Council Presentation November 2016

# Master Plan 2045 Survey

## Have Your Say!



As Kelowna International Airport (YLW) plans for the future, your comments are important to include as part of the final Master Plan 2045.

Thank you for visiting us at Orchard Park Mall! Additional background information is available on the display boards and online at [ylw.kelowna.ca](http://ylw.kelowna.ca).

1) What do you think can be improved with YLW’s long-term planning?

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2) What long-term planning do you think YLW is doing well?

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3) What is your most important priority for YLW’s future growth?

---

---

---

---

---

4) Do you have any concerns about YLW’s development and growth?

☐ Yes      ☐ No

---

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5) How would you rate your overall experience inside the YLW Terminal Building?

☐ Excellent      ☐ Good      ☐ Satisfied      ☐ Not Satisfied      ☐ Needs Improvement

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(continued on next page)

[illegible]

Your comments will be considered as the project team continues the analysis and recommendations that informs the final Master Plan 2045.

 Airport Administration  
1 – 5533 Airport Way  
Kelowna BC V1V 1S1

# Appendix D : ICAO Type A Obstacle Chart and Flightway Obstruction Charts

---

KELOWNA (CYLW) INTERNATIONAL AIRPORT RUNWAY 16 OBSTACLE INFORMATION				
Number	Feature Description	Elevation (Metres ASL)	Ground Distance (metres) From Threshold Line A-B	Ground Distance Off Centreline (m) From Line C-D
1	BLAST FENCE	438.33	109.0	0.0
2	MOBILE OBSTRUCTION	439.80	116.9	89.4
3	DECIDUOUS TREES	455.14	1024.8	-161.4
4	DECIDUOUS TREES	456.42	1025.4	-139.0
5	EVERGREEN TREES	529.77	3378.4	233.5
6	TRANSMISSION TOWER	541.62	3517.2	316.9

RUNWAY 16-34 OPERATIONAL DATA		
RUNWAY 16		RUNWAY 34
2712.7m/8900ft	TAKE OFF RUN AVAILABLE	2712.7m/8900ft
2712.7m/8900ft	ACCELERATE-STOP DISTANCE AVAILABLE	2712.7m/8900ft
2840.7m/9320ft	TAKE OFF DISTANCE AVAILABLE	2819.7m/9251ft
2347.0m/7700ft	LANDING DISTANCE AVAILABLE	2590.8m/8500ft

KELOWNA (CYLW) INTERNATIONAL AIRPORT RUNWAY 34 OBSTACLE INFORMATION				
Number	Feature Description	Elevation (Metres ASL)	Ground Distance (metres) From Threshold Line A-B	Ground Distance Off Centreline (m) From Line C-D
1	BLAST FENCE	420.45	129.7	0.0
2	MOBILE OBSTRUCTION	421.70	153.6	-64.0
3	TREE	427.41	460.4	-56.1
4	UTILITY POLE	428.44	547.6	-135.0
5	UTILITY POLE	432.90	587.5	146.8
6	NDB TOWER	431.71	604.3	0.0
7	TREE	433.91	670.6	-134.8

PLAN VIEW LEGEND

○

 - TOWER OR ANTENNA

★

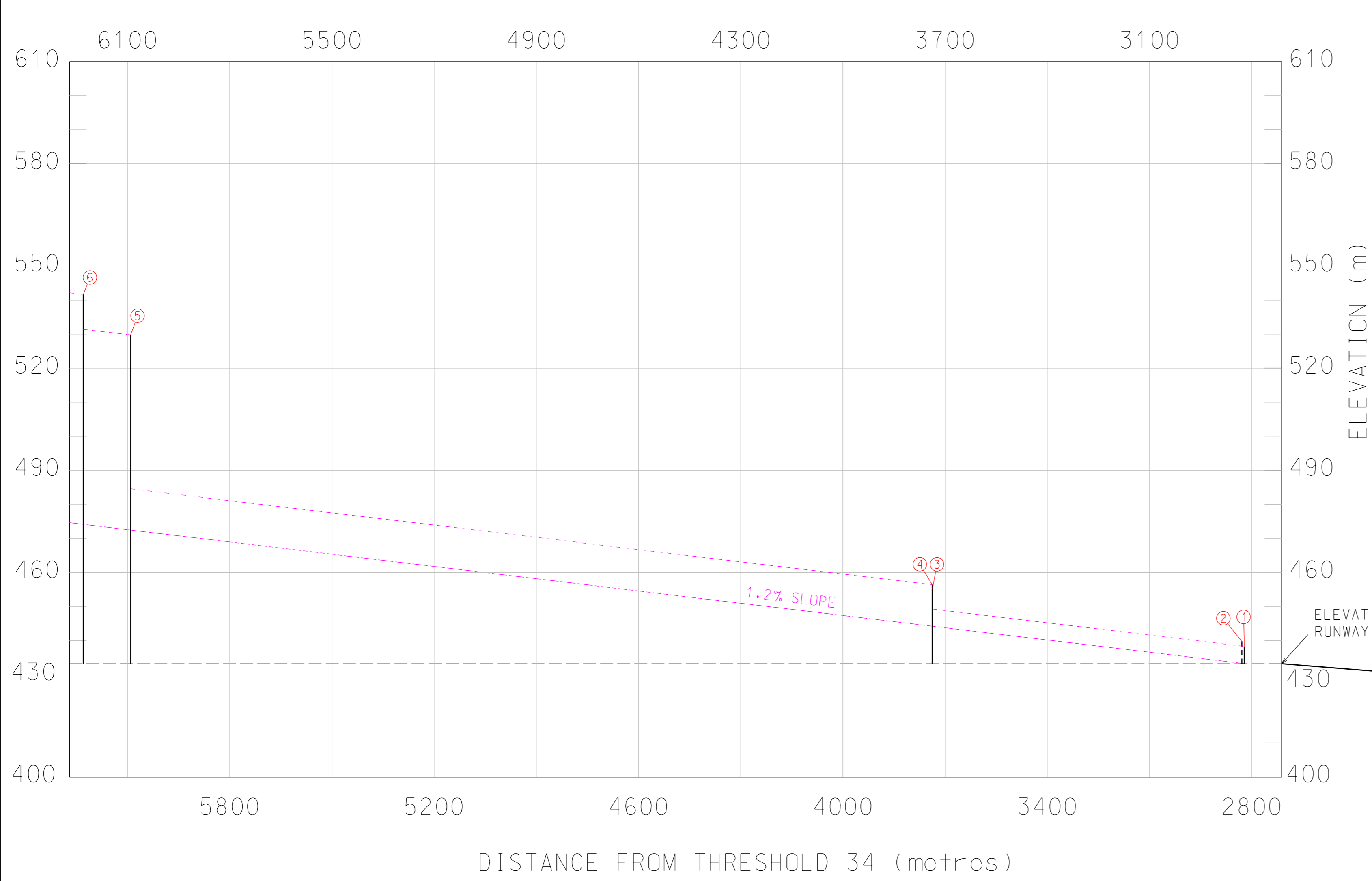
 - TREE

●

 - MOBILE OBSTRUCTION

■

 - BUILDING OR OBJECT



RUNWAY THRESHOLD CO-ORDINATES (UTM Zone 11):

16 - North 5,537,937.26m, East 329,361.27m  
Latitude 49°58'09.673" North, Longitude 119°22'46.550" West

34 - N5,535,230.44m, E329,517.61m  
Latitude 49°56'42.266" North, Longitude 119°22'34.395" West

NOTES:

- TRUE NORTH IS 1°49'15" EAST OF GRID NORTH (CONVERGENCE)
- MAGNETIC DECLINATION: 17°08' EAST OF TRUE NORTH (2008)
- SURVEY COMPLETED NOVEMBER 2008
- ALL DISTANCES SHOWN IN METRES
- CO-ORDINATE REFERENCE ELLIPSOID: NAD83
- UTM COMBINED SCALE FACTOR 0.999549
- ELEVATIONS REFERRED TO MEAN SEA LEVEL

PROFILE VIEW LEGEND

---

 - 1.2% SLOPE

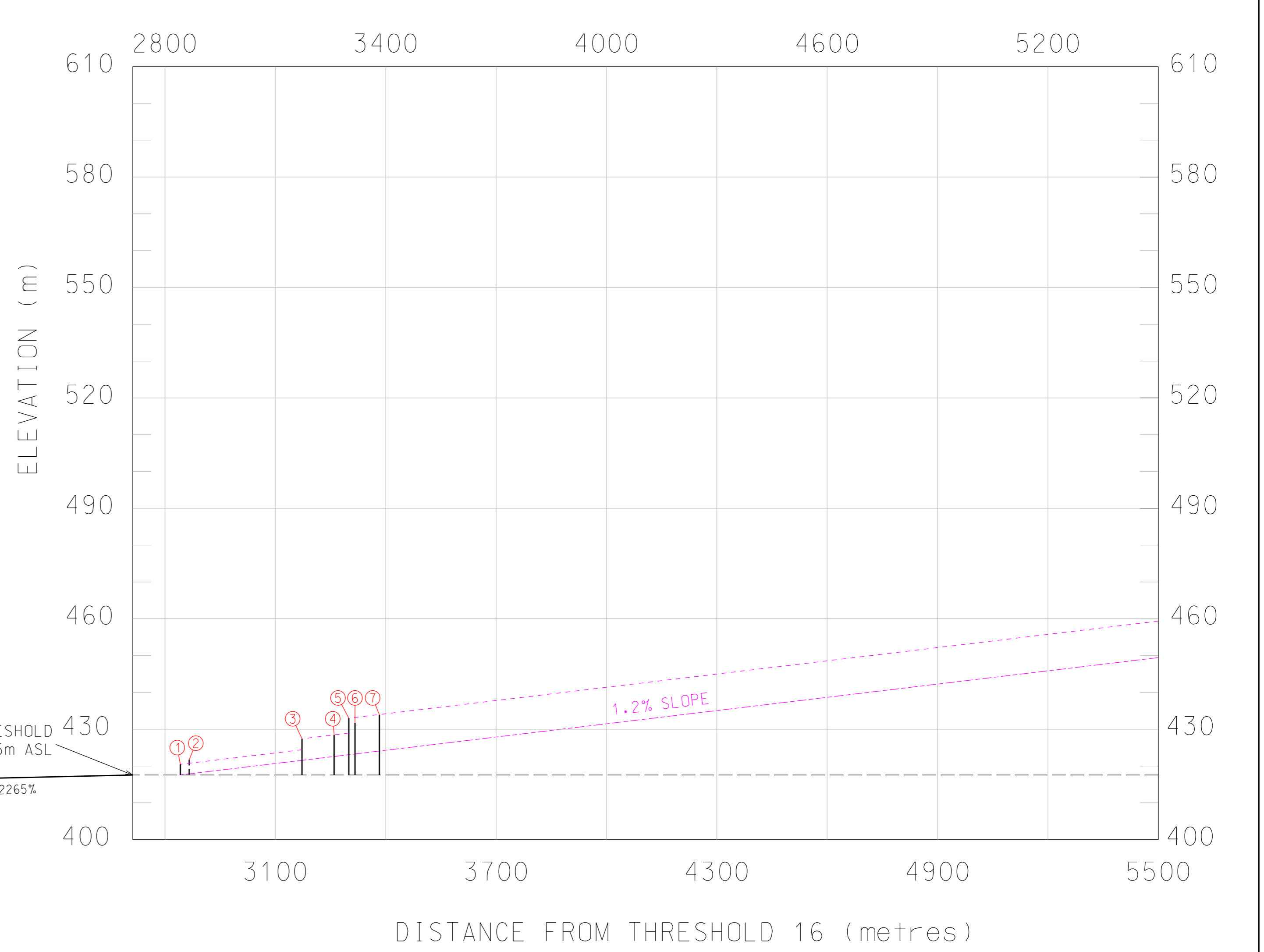
①


 - OBSTACLE IDENTIFICATION NUMBER

---

 - OBSTACLE SHADOW LINE

HORIZONTAL SCALE 1:10,000  
VERTICAL SCALE 1:1,000



 Skyline Surveys  
#3 - 4748 53rd Street  
Delta, British Columbia  
Canada V4K 2Z1  
604-831-1156

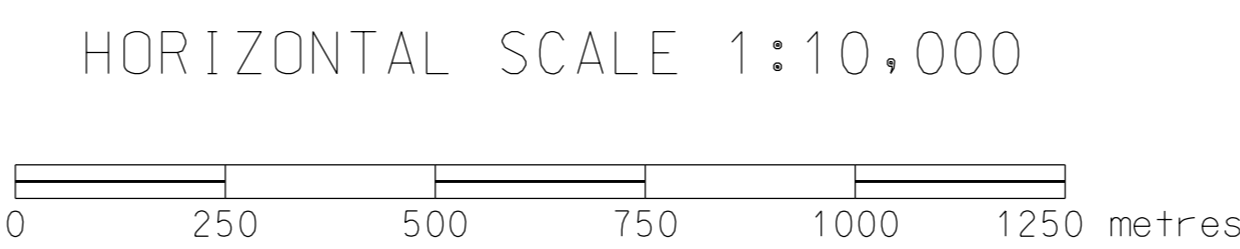
KELOWNA AIRPORT AUTHORITY

plotting date:  
2008/12/30

drawn by:  
J. HAY

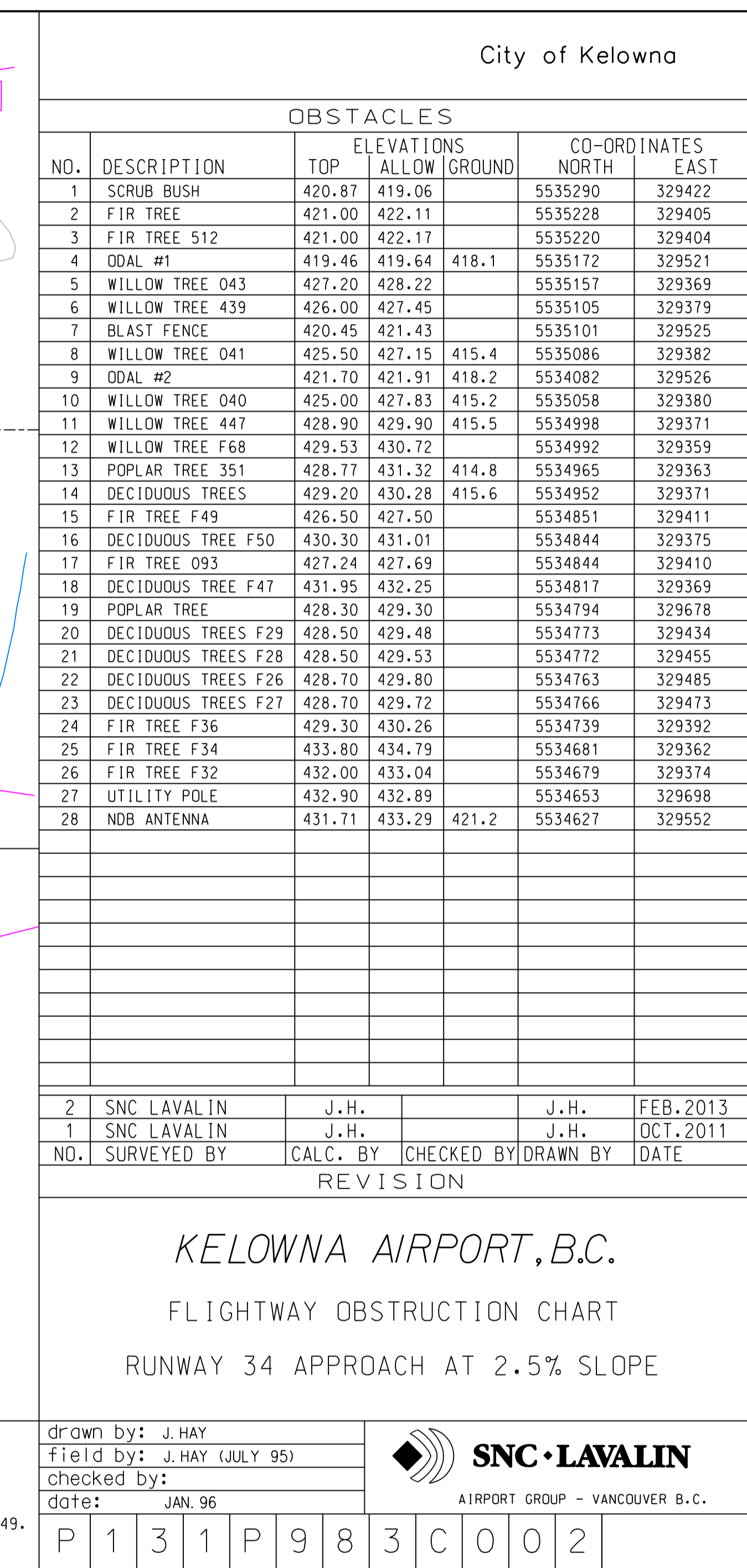
revised by:  
\_\_\_\_\_

sheet no:  
1 of 1



KELOWNA INT. AIRPORT (CYLW)  
ICAO TYPE A OBSTACLE CHART

16=341CA0chart.dgn





# Appendix E : Kelowna International Airport Master Plan Technical Report— Air Traffic Forecasts Report

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# **Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Final)**

**Kelowna International Airport**

**March 2016 (Amended August 2016)**





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## **APPENDICIES**

- A Aircraft Gating Charts for Busiest Day in Busy Week in 2015, 2020, 2025, 2030 and 2035**
- B Busy Week Flight Schedule for 2020, 2025, 2030 and 2035**



## 1.0 INTRODUCTION

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Aviation traffic forecasts are the cornerstone of the airport master planning process. Credible forecasts define the demand for infrastructure by sector and the likely capacity requirements that will need to be met – airside, groundside and everywhere in between. They help define the trigger conditions for infrastructure investment in a way that can be readily understood by Airport Boards who are asked to make investment decisions and those that finance those capital investments – such as banks and bond holders. They also form the basis of revenue projections, both aeronautical and non-aeronautical, which in turn help define the debt that will be incurred in any CapEx activity.

The air traffic forecasts described in this report were prepared as part of the Master Plan for Kelowna International Airport (YLW).

### 1.1 PURPOSE

The primary objective of this component of the Master Plan Study was to develop a reliable and comprehensive set of traffic forecasts that could be used for medium and long-term facility planning for YLW. In particular, through analysis and consultation with key stakeholders, the study develops:

- Annual forecasts of passengers, aircraft movements and cargo in aggregate and by sector and segment for 2015 to 2045;
- Forecasts of peak planning day/hour passengers by direction and sector, aircraft movements by segment and future flight schedules; and
- Aircraft gate and stand requirements by ICAO code and sector.

### 1.2 METHODOLOGY

The steps undertaken in developing the traffic forecasts are summarized below:

1. Data collection and interviews with airport personnel, air carriers, and local economic development and tourism organizations;
2. Analysis/review of historical traffic and the operating environment;
3. Analysis of factors driving traffic growth;
4. Development and calibration the forecasting model;
5. Specification of forecast assumptions;
6. Preparation of annual forecasts;
7. Preparation of busy week nominal schedules; and
8. Development of peak hour and gating requirement forecasts.

The primary data sources were:

- Kelowna International Airport – passenger and cargo traffic, facilities and plans;



## *Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Final)*

- International Air Transport Association (IATA) Innovata SRS and Official Airline Guide (OAG) – airline schedules 2004-2016;
- Conference Board of Canada – Kelowna and Canada economic data;
- Major Canadian banks – economic data and forecasts
- International Monetary Fund (IMF) – Canada, U.S., and international economic data;
- Statistics Canada – Canada movement data, and economic data; and
- BC Stats and BC Tourism – demographic and tourism data.

Interviews were conducted with the following:

- WestJet – Station Manager;
- Air Canada – Station Manager; and
- Kelowna International Airport – planning and air service development staff.



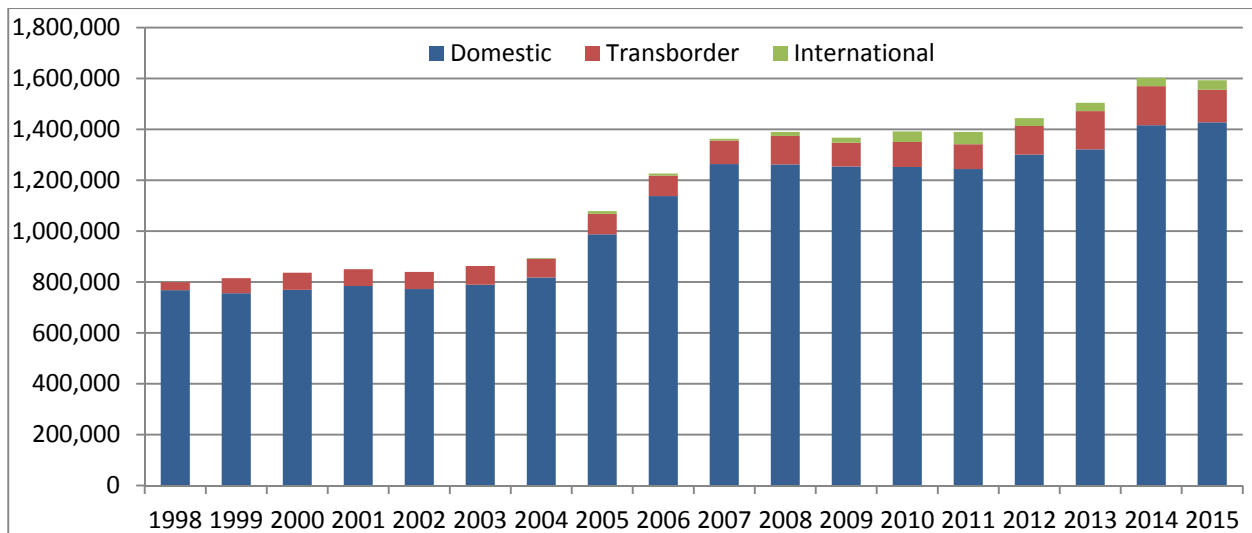
## 2.0 HISTORICAL TRAFFIC REVIEW AND FACTOR ASSESSMENT

### 2.1 HISTORICAL ACTIVITY

#### 2.1.1 PASSENGER TRAFFIC

YLW handled 1.594 million passengers in 2015, slightly less than 2014, but an increase of 6.0% over 2013. Domestic passengers totaled 1.432 million, 89.9% of the total. As shown in Exhibit 2.1, passenger traffic at YLW increased slowly in the late 1990 and early 2000s but grew strongly during the four year period of strong economic growth from 2005 to 2008. Traffic declined in 2009 with the global financial crisis and recession, then recovered slowly in 2010 and 2011, before growing strongly again in 2012 to 2014. YLW first received transborder service in 2004 and, since then, transborder passengers have accounted for 6.5% to 10% of total traffic, the high being reached in 2013. Other international traffic has fluctuated between 0.3% and 3.5% of total traffic, the high being recorded in 2011.

**Exhibit 2.1**  
**Annual Enplaned/Deplaned Passengers by Sector, 1998 to 2015**



The numbers of Enplaned/Deplaned (E/D) passengers by sector, as well as annual and average growth rates for the past 17-, 10- and 5-year periods are presented in Exhibit 2.2. Annual growth rates have varied from a high of 20% in 2005 to a decline of 1.6% in 2009. For the aggregate periods, growth rates fluctuated significantly. Over the past 17 years, growth in total traffic averaged 4.1%, but averaged only 2.8% over the past five years. Growth has been much higher for transborder, 8.6% and other international<sup>1</sup>, 13.8%, while domestic traffic grew by only 3.8% per year between 2005 and 2015.

<sup>1</sup> International includes transborder unless otherwise stated throughout this report

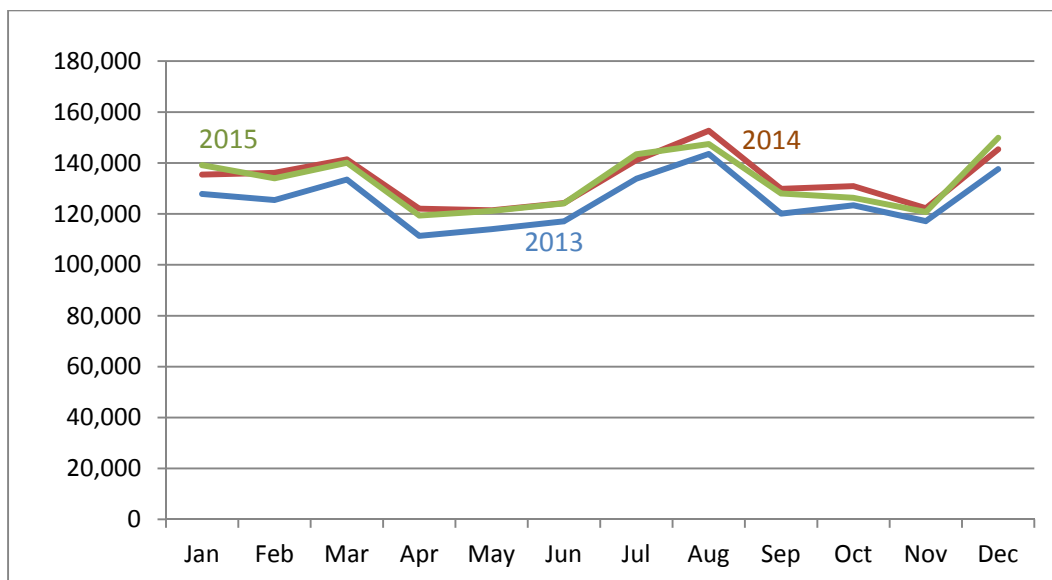


**Exhibit 2.2**  
**Annual E/D Passengers by Sector, 2004 to 2015, and Average Annual Growth Rates**

Year	Domestic	Transborder	Intern'l	Total	Growth
2004	817,659	74,084	2,818	894,561	1.8%
2005	987,368	80,976	10,308	1,078,652	20.6%
2006	1,138,176	80,085	8,181	1,226,442	13.7%
2007	1,263,943	92,506	6,942	1,363,391	11.2%
2008	1,262,380	112,359	15,144	1,389,883	1.9%
2009	1,254,544	92,531	20,556	1,367,631	-1.6%
2010	1,252,112	98,329	41,366	1,391,807	1.8%
2011	1,243,999	97,601	48,587	1,390,187	-0.1%
2012	1,301,068	112,250	30,679	1,443,997	3.9%
2013	1,321,453	150,661	32,580	1,504,694	4.2%
2014	1,415,423	154,017	33,459	1,602,899	6.5%
2015	1,432,456	126,559	34,591	1,593,606	-0.5%
<b>Average Annual Growth Rate</b>					
1998-2015	3.7%	8.6%	n.a.	4.1%	
2005-2015	3.8%	4.6 %	12.8%	4.0%	
2010-2015	2.7%	5.2%	-3.5%	2.7%	

The number of E/D passengers by month for 2013, 2014 and 2015 are presented in Exhibit 2.3. The busiest month for total passengers is August, while for transborder and other international passengers (not shown) it is March. December is the second busiest month in total traffic and March is the third busiest, while April and November are the least busy. The season variation in traffic has been very consistent over these years.

**Exhibit 2.3**  
**Total Passengers by Month, 2013 to 2015**



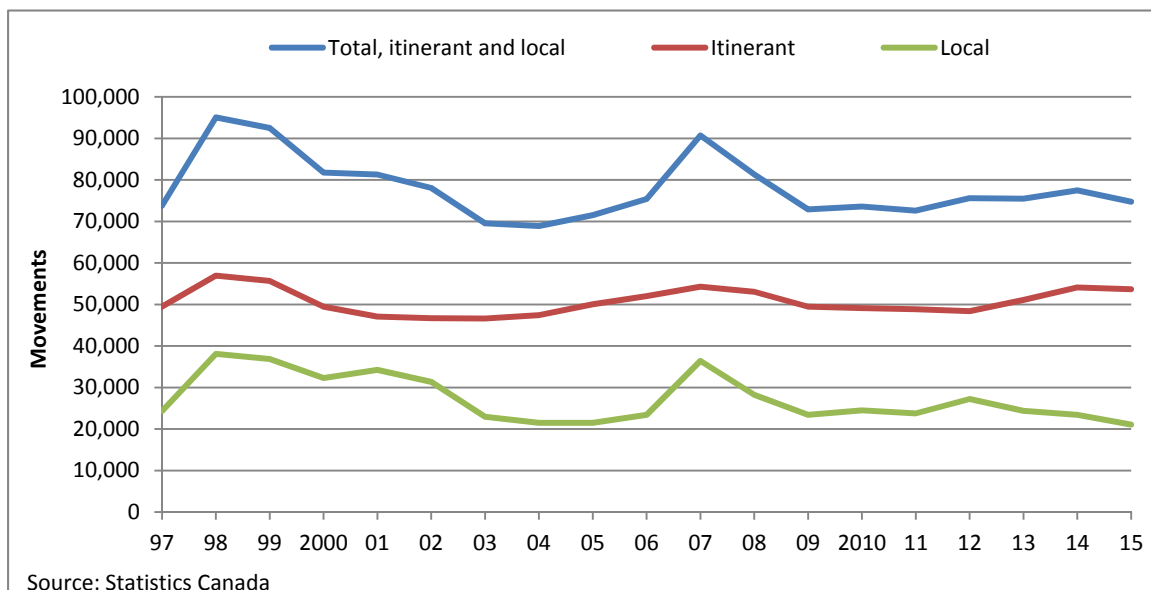


YLW has very few connecting passengers, less than 1% of the total, thus almost all passengers have YLW as either their origin or destination. Approximately 20% of flights are through flights which could carry transit passengers, but almost all are flights between Vancouver (YVR) and Calgary (YYC) and, as there are many non-stop flights per day between those cities, people would only use flights stopping over at YLW when the non-stop flights are full. There is a weekly flight between YVR and Whitehorse which stops at YLW and could also carry transit passengers. One seasonal winter charter flight to/from Mexico starts and ends at Vancouver and has some transit passengers onboard at YLW. These passengers stay on the plane and do not enter the terminal building in either direction. Overall, the number of transit passengers at YLW is likely very small, less than 2%, and all transit passengers would remain on the aircraft.

## 2.1.2 AIRCRAFT MOVEMENTS

In 2015 YLW had 74,789 aircraft movements, 53,669 being itinerant and 21,120 being local. The number of aircraft movements at YLW has fluctuated over the past 18 years, as shown in Exhibit 2.4, but has not changed significantly over that period. The variation generally follows periods of economic growth in the region. The variation in total movements is largely due to changes in local movements (essentially recreation and flight training aircraft movements) which account for 30-40% of all movements. Over most of the 18-year period, itinerant movements showed a similar trend as local movements, but with less variation. However, since 2012, itinerant movements have increased by 11% (3.6%/yr) while local movements have declined significantly (-8.1%/yr).

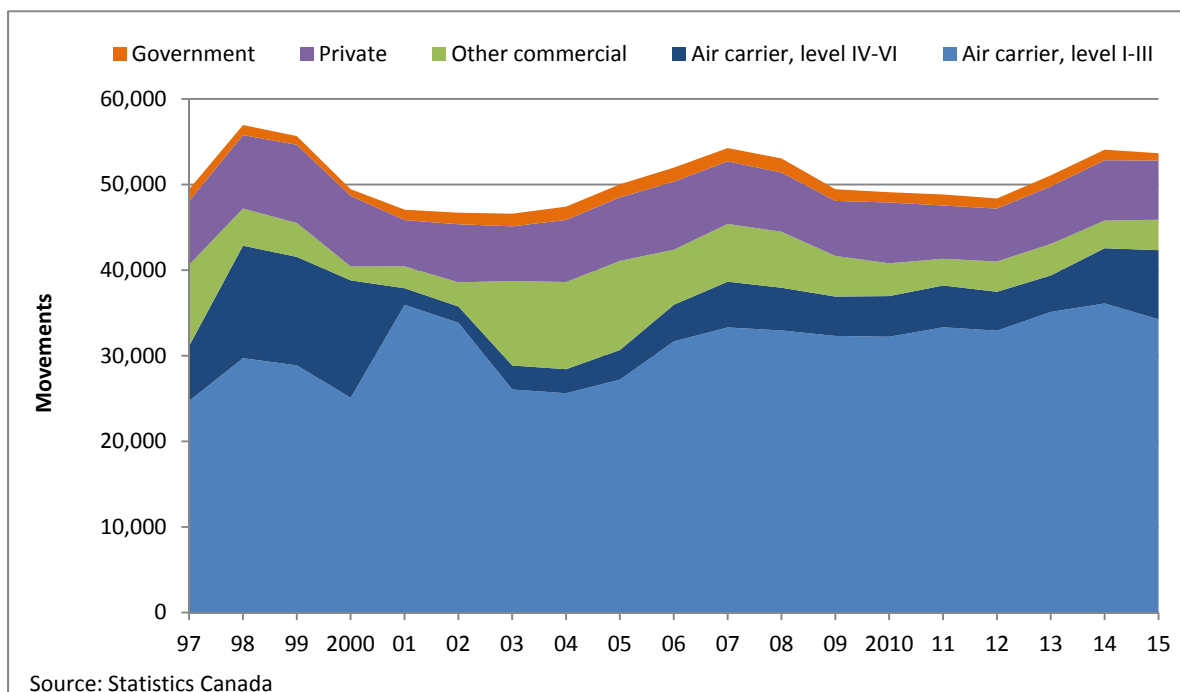
**Exhibit 2.4**  
**Annual Itinerant and Local Aircraft Movements, 1997 to 2015**





Air carriers are the predominant operator of aircraft at YLW accounting for 79% of itinerant movements in 2015 – see Exhibit 2.5. The larger, Levels I-III air carriers<sup>2</sup> accounted for most of these itinerant movements (34,264, 64% of the total). These include 25,414 movements on scheduled service, accounting for 47% of itinerant movements. Private is the next largest operator segment accounting for 13% of itinerant movements. “Other commercial” (aerial photography, remote sensing, etc.) accounted for 7% of itinerant movements, down from 21% in 2005, while government accounted for only 2% in 2015. Large air carriers (Levels I-III) are the only segment of operators whose movements have increased significantly over the past 18 years, with an average growth rate of 1.8% per year. Other commercial movements have declined over the period, changing by an average of -5.3% per year, while private and government have declined slowly averaging -0.4% and -2.6% per year, respectively.

**Exhibit 2.5**  
**Annual Itinerant by Operator Type, 1997 to 2015**



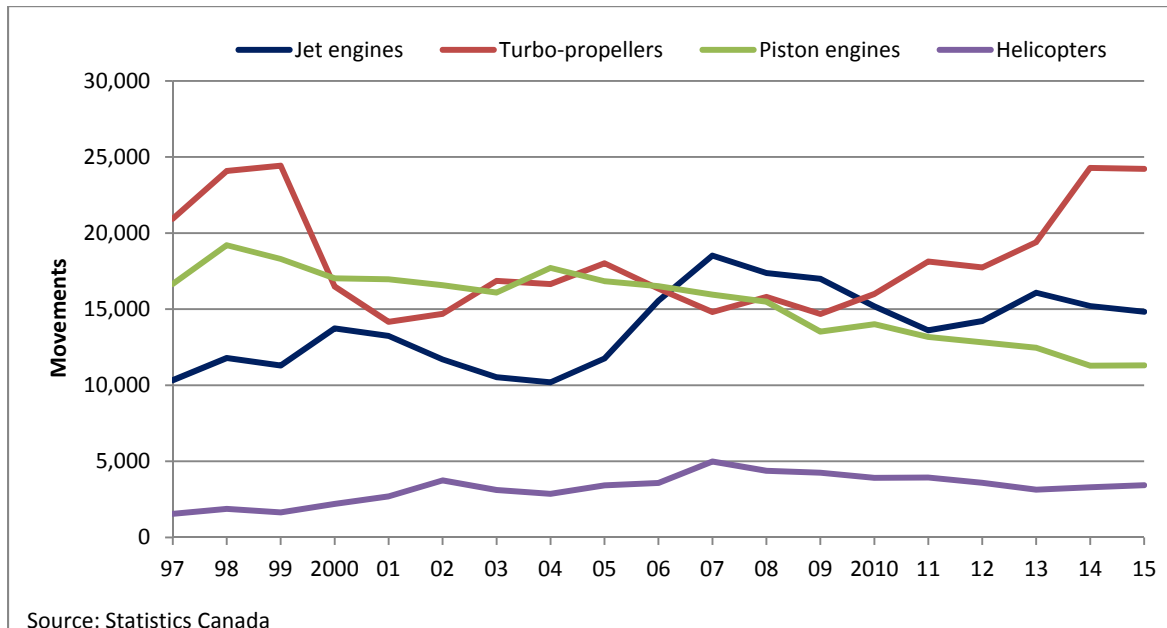
Itinerant movements by engine type are presented in Exhibit 2.6. The numbers of movements for each engine type have fluctuated significantly over the 18-year period. Turboprops were the most common type in the late 1990s. Their prominence declined greatly in 2001, but their numbers have increased significantly since 2011. In 2014, with the use of Q400s by both Air Canada and WestJet, turboprops were again the most common type accounting for 45% of

<sup>2</sup> Levels I-III carriers includes every Canadian air carrier that, in each of the two calendar years immediately preceding the report year, transported 100,000 revenue passengers or more, or 30,000 tonnes of revenue goods, or realized annual gross revenues of \$1,000,000 or more for the air services for which the air carrier held a licence.



itinerant movements, and remained at that level in 2015. Jet aircraft accounted for 28% of itinerant movements in 2015 and have grown by an average of 2.1% per year since 1997. Piston aircraft movements declined steadily between 1997 and 2015, averaging of -2.4% per year, and their share of itinerant movements has fallen from 34% to 20% in that period. This is consistent with a general trend in the industry. Helicopter movements increased fairly steadily from 1997 to 2007, but declined slowly from 2008 to 2013, before increasing slightly in 2014 and 2015.

**Exhibit 2.6  
Annual Itinerant by Engine Type, 1997 to 2015**



A more detailed breakdown of itinerant movements by aircraft types in 2014/2015 based on NCAMS data<sup>3</sup> is presented in Exhibit 2.7<sup>4</sup>. The figure also shows the split between flights under visual and instrument flight rules (VFR and IFR) for each type in 2014/2015. Overall, 72% of itinerant movements are IFR.

<sup>3</sup> NCAMS data includes detailed information on each movement collected by Nav Canada and is published by Statistics Canada but excludes Military and RCMP flights

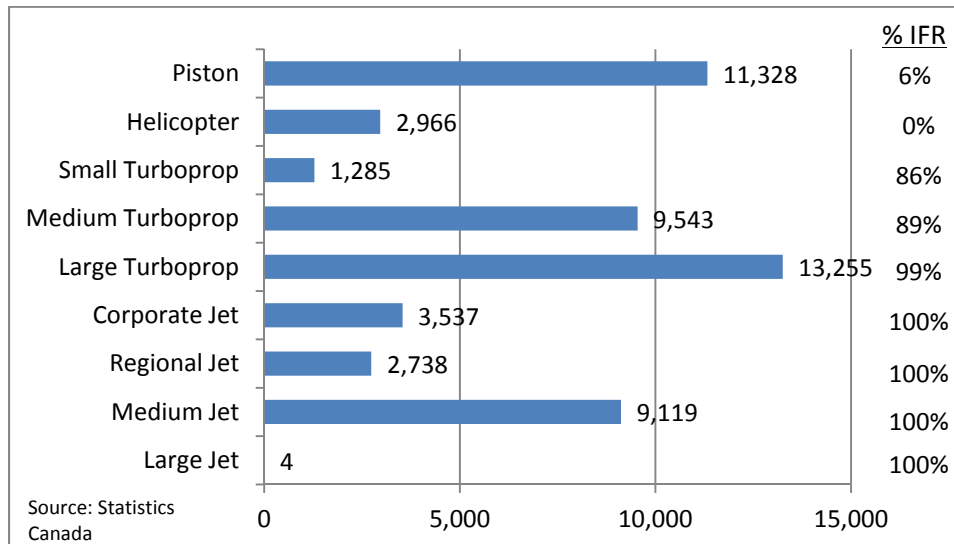
<sup>4</sup> Data for Mar. 2014 to Feb. 2015. For the purposes of this report, the following definitions are used:

Aircraft Categories	Weight (t)	Example Aircraft	Aircraft Categories	Weight (t)	Example Aircraft
Large Jet - Widebody	>100	B767, A330	Large Turboprop	14+	DHC-8 (all), ATR-72/42
- Narrowbody	>100	B757	Medium Turboprop	5.67 - 14	DO328, BE1900, BE200
Medium Jet	50 - 100	A321, 737-800, MD87	Small Turboprop	<5.67	DHC-6, E110, BE-100
Regional Jet	20 - 50	E190, CRJ9, E135	Piston	All	
Corporate Jet	3 - 30	GLF6, CL60, C550	Helicopters	All	



The breakdown of movements by runway for the 12-months March 2014 to February 2015 is summarized in Exhibit 2.8. Runway 16 is by far the most commonly used runway handling 72% of itinerant flights, and 77% of itinerant flights which use a runway.

**Exhibit 2.7**  
**Annual Itinerant by Aircraft Category and Percentage IFR, March 2014 to February 2015**



**Exhibit 2.8**  
**Annual Itinerant Movements by Runway in 12 Months, March 2014 to February 2015**

Runway	No. of Movements	% of Total Movements	% of Runway Movements
<b>Runways</b>	<b>50,752</b>	<b>94%</b>	<b>100%</b>
16	38,868	72%	77%
34	11,884	22%	23%
<b>No Runway</b>			
Helicopter	3,023	6%	n.a.
<b>Total</b>	<b>53,775</b>	<b>100%</b>	<b>n.a</b>

Source: Statistics Canada, NCAMS data (excludes Military and RCMP flights)

### 2.1.3 AIR CARGO

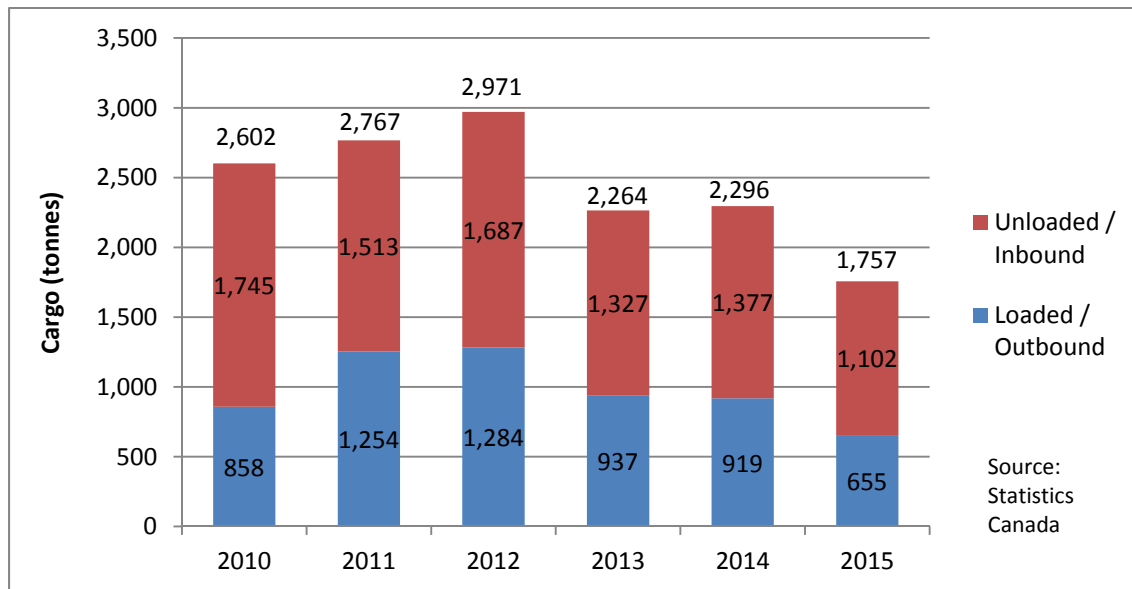
Comprehensive information on air cargo is not available. Only one carrier reports cargo tonnages to YLW. Statistics Canada data is often dated and incomplete, although its coverage has improved greatly from 5-10 years ago. Historical air cargo tonnages by direction for 2010 to 2015 reported by Statistics Canada are presented in Exhibit 2.9<sup>5</sup>. Total cargo handled peaked in 2012 at 2,971 tonnes, but declined by 24% in 2013 and a further 23% in 2015 to 1,757 tonnes. Approximately 60% of the cargo is inbound and unloaded at YLW. Tonnages for the period 2005

<sup>5</sup> 2015 values not available from Statistics Canada as of February 16, 2016



to 2015 were available from one carrier accounting for a third of the total tonnages and indicated their cargo handled fluctuated, but on average increased by an average of 1.1% per year over the ten years. All of this growth, however, was due to increases in inbound cargo.

**Exhibit 2.9**  
**Air Cargo by Direction at YLW, 2010-2015**



Kelowna Flight has its base at YLW and operated freighter services throughout Canada on behalf of Purolator until March 15<sup>th</sup> 2015 when their contract expired. They operate one weekly scheduled courier flight from YLW and also provide on demand charter air cargo service. FedEx also provides courier services out of YLW. Some cargo at YLW is also carried in the belly of passenger aircraft on scheduled passenger service. A breakdown of the types of cargo handled at YLW is provided by two of the smaller cargo carriers and items included airline company materials (e.g., aircraft parts), wine, fruit, personal effects, general cargo and kenneled animals.

#### **2.1.4 BASED AIRCRAFT**

YLW had 101 aircraft based at the airport in March 2015. Exhibit 2.10 presents a breakdown by aircraft type and operator segment. Two-thirds of the based aircraft were owned by commercial operators and included 17 narrow-body jets, 4 wide-body jets, 30 turboprops and 9 helicopters. All 33 privately owned aircraft were piston. The operators with the most based aircraft were Carson with 33, Kelowna Flightcraft with 20, and Flair Airlines with 7. The loss of the large contract with Purolator could affect the numbers of aircraft operated by Kelowna Flightcraft and based at YLW in the future.



**Exhibit 2.10**  
**Based Aircraft at YLW by Aircraft Type and Operator Segment**

Type		Commercial	Private	Total
Fixed Wing	Piston	5	33	38
	Turboprop	30		30
Jet	Business Jet	3		3
	Narrow-body	17		17
	Wide-body	4		4
Helicopter		9		9
Total		68	33	101

Note: Numbers as of February 2015

## 2.2 HISTORIC AND CURRENT AIR SERVICES

In June 2016, YLW was served by seven airlines providing scheduled or major charter service, including:

- Two mainline Canadian operators (including their regional affiliates) – Air Canada (including Air Canada Express) and WestJet (including Encore);
- Two regional operators – Central Mountain Air (CMA) and Pacific Coastal Airlines<sup>6</sup>;
- One U.S. based operators – Alaska Airlines (operated by Horizon); and
- Two airlines providing major charter services – Air Transat and Sunwing.

These carriers link Kelowna to eight destinations year-round, including seven domestic (Vancouver, Calgary, Toronto, Edmonton, Victoria, Cranbrook, Prince George), and one U.S. (Seattle). YLW also has service to six seasonal destinations, including two in the U.S. and four in Mexico. A number of charter carriers also provide domestic passenger service from the air terminal building (ATB) in 2014/2015, including Air North, Flair Airlines and Canadian North, and the private operator, Suncor, although this declined in the second half of 2015.

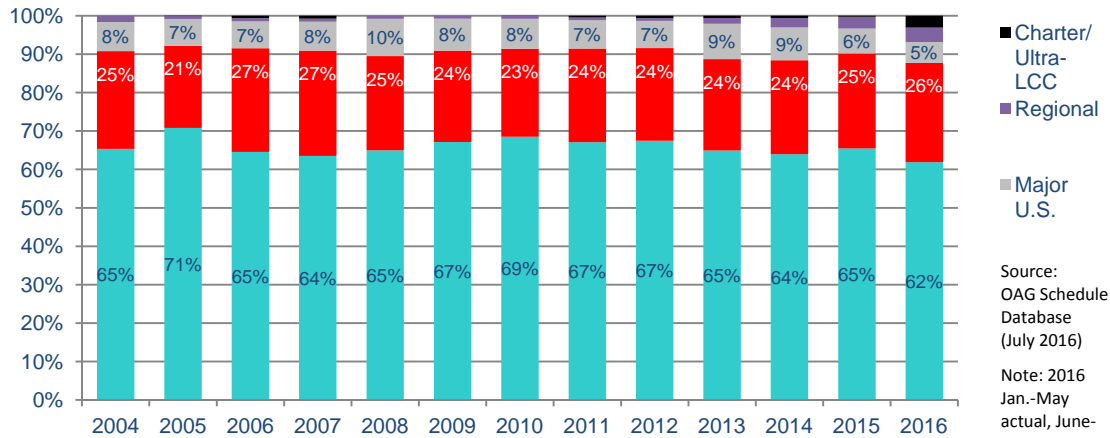
### 2.2.1 TRENDS IN PASSENGER SERVICES

WestJet accounts for almost two-thirds the available seat capacity at YLW, as shown in Exhibit 2.11, but this is anticipated to drop to 62% in 2016 (based on published schedules). Air Canada's share has remained at around 25% during that period, while the share for U.S. based airlines has been in the range 7-10% of capacity, but is expected to fall to 5% in 2016. Regional carriers account for only 3% of seats, up from 1% in the past 10 years, and charter/ultra low-cost carriers' share of seats is anticipated to be 3% of the total in 2016 with the commencement of service by NewLeaf.

<sup>6</sup> Northwestern Air suspended service to Red Deer in mid-March 2015



**Exhibit 2.11**  
**Market Share of Departing Seats from YLW by Airline Group, 2004-2015**

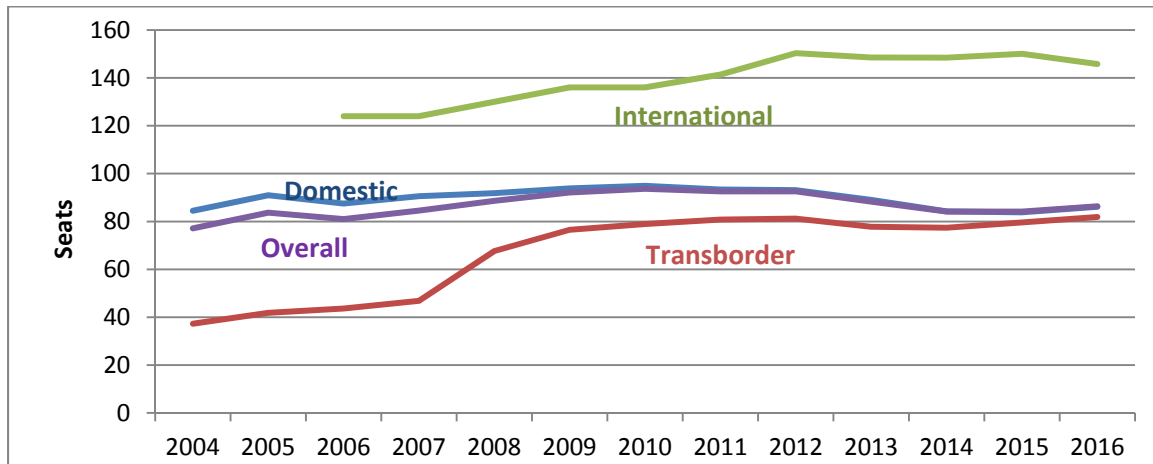


There is competition for the three major domestic markets (Vancouver, Calgary and Toronto) plus two international markets, but in most of the smaller markets competition is provided by connecting service. Competition to U.S. destinations was relatively strong in 2014 with both Alaska and United offering connecting service through U.S. airports; and Air Canada and, to a lesser extent WestJet, through YVR and YYC, to most major destinations. WestJet also serves the major winter seasonal markets (Los Vegas and Phoenix). However, competition decreased in 2015 with the suspension of United Airlines service in April. United previously operated a service to Los Angeles from late 2012 and they switched the service to San Francisco in September 2015 due to scheduling issues at Los Angeles International Airport.

The size of aircraft serving YLW, as measured by the average number of seats per aircraft, has not changed significantly over the past 12 years – see Exhibit 2.12. After increasing steadily to an average of 94 seats per aircraft in 2010, it has declined to 86 in 2016 – the same size as in 2007-2008. Aircraft size increased in the transborder sector with the replacement of the Dash 8-300 with larger Q400s in 2008-2009; while use of the Q400s rather than larger jet aircraft and the increase in commuter flights in the 2011 to 2014 period led to a decline in average seats on domestic services. The size of aircraft on service to other international markets has increased with the introduction of B737-800s on many of these services.

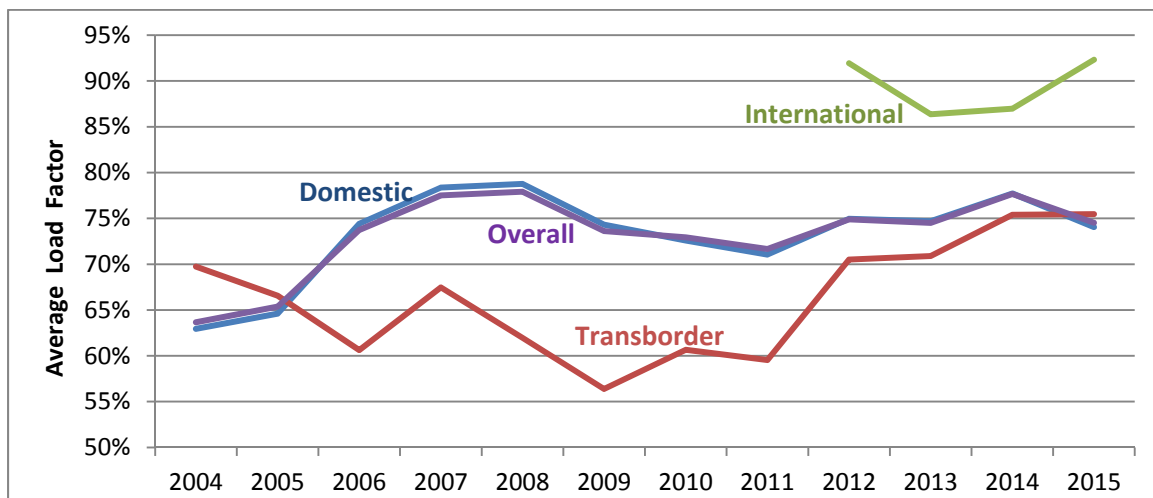


**Exhibit 2.12**  
**Average Seats per Aircraft from YLW by Sector, 2004-2016**



Average load factors on flights from YLW have for the most part followed industry trends over the past 10 years. Exhibit 2.13 presents the average E/D load factors by sector for the period 2004 to 2015. Note that E/D load factors do not include the transit passengers onboard and actual loads can be significantly higher on some flights. Domestic load factors have remained in the 70-78% range since 2006. They declined to the low 70% following the 2009 recession, but increased back to 78% in 2014 before falling to 74.2% in 2015. Including transit passengers, average domestic load factors are likely around 76%. Transborder load factors were low during much of this period, but increased sharply in 2012 to over 70% and averaged 75% in 2014 and 77% in 2015. Other international flights are all operated on a seasonal basis, many by charter airlines and load factors have been high, in the 87-92% range between 2012 and 2015.

**Exhibit 2.13**  
**Average Enplaning/Deplaning Load Factors by Sector, 2004-2015**





## **2.4 DRIVERS OF AIR TRAFFIC GROWTH**

There are a number of drivers of air passenger traffic at YLW. These are discussed below.

### **2.4.1 POPULATION AND DEMOGRAPHICS**

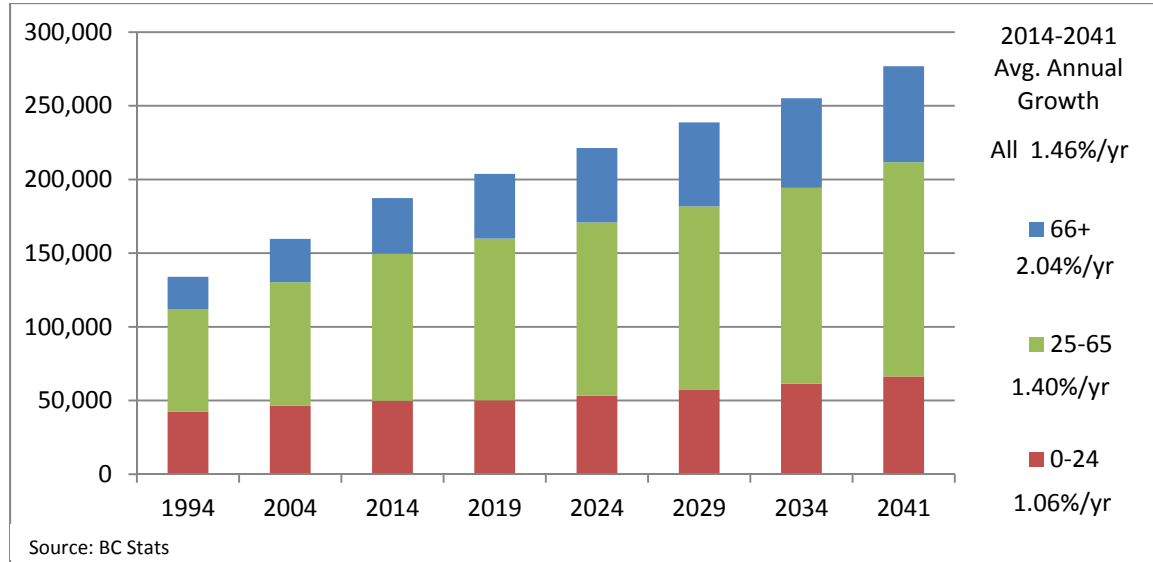
Population growth in Kelowna and the Central Okanagan region (including Peachland, West Kelowna, Kelowna and Lake Country) has been a strong driver of air travel demand at YLW. High migrant inflows to the Central Okanagan have resulted in the population doubling in the 25 years, 1986 to 2011 from 93,000 to 183,000. Average annual growth rates average 2.75% during this period. This is well above the population growth of B.C. as a whole, which averages only 1.5% per year over this period. The population of the City of Kelowna has also grown strongly with a consistent growth rate of around 1.82% per year for the 15 years from 1996 to 2011. BC Stats data indicates that that population growth in the Central Okanagan has slowed greatly in the past few years averaging only 0.7% per year over the 3 year 2012, 2013 and 2014.

BC Stats forecasts population growth in the Central Okanagan to slow from 1.69% per year between 2014 to 2019 to 1.06% per year between 2034 and 2041. Growth over the 27 year period, 2014 to 2041, is forecast to average 1.40% per year. All of this growth is forecast to be due to people moving to the region as the fertility rate is forecast to fall to close to zero. The high proportion of migrants to the region should stimulate air travel associated with visiting friends and relatives. Population growth in the Central Okanagan is forecast to be 36% higher than that of B.C. as a whole where growth is expected to average just 1.03% per year over that 27-year period. The City of Kelowna Official Community Plan (OCP), released in November 2013, projected a population of 161,701 in 2030 which corresponds to an average annual growth rate since 2011 by 1.7%, which is significantly higher than the more recent forecasts by BC Stats.

The age structure of the population is also an important factor in air travel demand as children and elderly people travel far less than people in the 20 to 70 year age group. This age group is strongly correlated to disposable income as people in this age group are likely to have much higher incomes than other age groups. The population of the Central Okanagan is forecast to age over the next 25 years with the proportion of people aged over 65 increasing from 20% to 24%, and aged 80 or older increasing from 5.8 to 8.8%. This is due to the much faster growth rates forecast for the older age groups as shown in Exhibit 2.14. The Okanagan Business Development Commission has recognized that an aging population could cause a shortage of workers in the region and has implemented a strategy to bring more young workers and their families to the region. This strategy was successful in 2014 and could, if this continues over the longer term, reduce the aging of the population and spur economic growth and air travel demand.



**Exhibit 2.14  
Actual and Forecast Population of Central Okanagan and Growth Rates by Age Group,  
2014-2041**



## 2.4.2 INCOME AND LOCAL ECONOMY

The propensity to travel by air grows as people's disposable income rises and/or business activity increases. The Gross Domestic Product (GDP) is a measure of an economy's total economic activity and includes not only the income of the population, but the activity of businesses in the area. Thus, GDP includes the effects of changes in demographic factors such as population and age structure, as well as personal and business related income. Real disposable income (RDI) is a similar measure related more to the total amount of income residents have available for spending on activities such as travel and has been found to be strongly correlated with air travel demand.

As many of the passengers at YLW are visitors to the region, air travel demand is related to not only the GDP and RDI of the Central Okanagan region, but of Canada as a whole for domestic traffic, and of the U.S. for transborder traffic. Almost all travellers on other international flights at YLW are residents of the area and thus other international traffic is most strongly related to local regional GDP and RDI. Travellers from overseas access the Okanagan via large international airports such as Vancouver or Calgary and travel on domestic flights to Kelowna and thus, domestic traffic is related to a small extent to economic growth in the regions of these visitors.

Central Okanagan is the hub of the Okanagan Valley and has a well-diversified economy with health care, education, construction, high technology, manufacturing, agriculture and tourism being key economic drivers. The warm climate and sunny skies (boasting 2,000 hours of sunlight annually) makes this area one of the more important agricultural centres in the province and is



one of many attractions for tourists. The Central Okanagan has the most small businesses per capita in Canada. Many of these are professionals and consultants that choose to live in the area for the lifestyle it affords and travel a lot by air on business. The IT sector employs over 6,500 workers in the region and has strong connections to Silicon Valley and Los Angeles. For example, Disney bought out a Kelowna startup IT company and now has 400 employees in the area.

The University of B.C. Okanagan Campus (UBCO) is located in Kelowna and is a significant economic driver for the community. With 15,000 students, two-thirds from outside the area, including international students, the staff and students generate significant economic activity and air travel in the area. The Kelowna General Hospital, which had a \$218 million expansion in 2012, is also an important generator of economic activity in the region. The construction industry is buoyant due to the population growth and increasing demands for residential, business and commercial space, including a \$120 million building downtown for businesses, a 21 story condo complex and a 24-story 200-room hotel and convention centre.

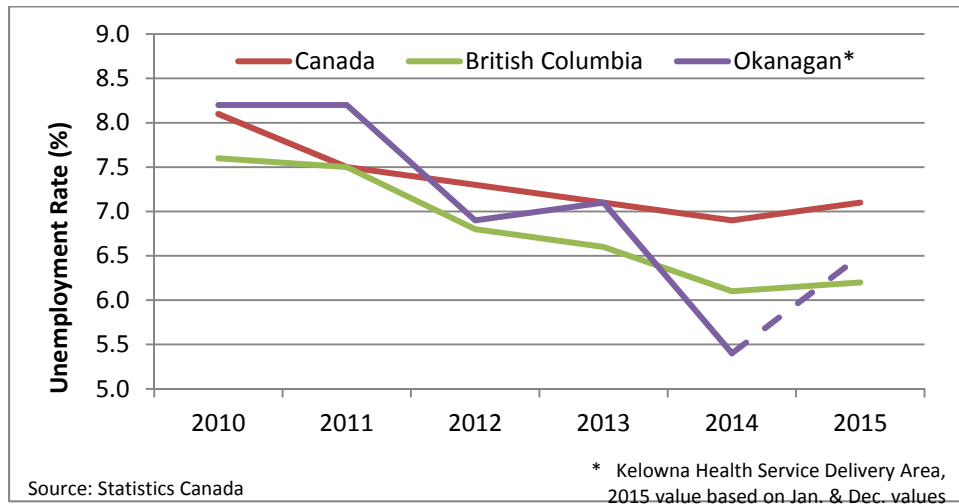
The Okanagan had approximately 5,000 workers that commute to work in Northern B.C. or Alberta, mostly on rotational shifts, in 2014. This segment alone represented approximately one hundred thousand passengers per year travelling through YLW in 2014. These workers, many with families in the Okanagan, spend most of their earning in the Okanagan. The recent drop in the price of oil has led to a slowdown in construction activity in the oil sands and led to a reduction in commuter workers, which negatively impacted traffic at YLW in 2015. Construction activity in the Central Okanagan remains strong and many will find work locally. Also, the commencement of work on the Site C hydro dam project in B.C and potential LNG projects in northern B.C. could create demand for commuter workers using YLW in the future.

The median household income of residents of the Central Okanagan rose by an estimated 2.5% per year from 2011 to 2014 to \$60,360, which is consistent with provincial trends<sup>7</sup>. Kelowna's unemployment rate closely followed that of B.C. and Canada over the five years from 2009 to 2015 except for 2014 when it was significantly lower (see Exhibit 2.15). The unemployment rate for Kelowna was 2.9% and for the southern interior BC region was 6.7% in January 2015 but increased to 7.5% in January 2016. The labour force participation rate was close to that for Vancouver and B.C. as a whole (63%) in 2014, but declined in 2015 and was 59.3% in January 2016. This is much lower than for major Alberta cities such as Calgary and Edmonton (68-70%). GDP data is not available for Kelowna or the Central Okanagan, but the City estimates that economic activity grew by over 10% per year in the four years 2005 to 2008. This is consistent with the growth in population and per capita incomes in B.C. during that period.

<sup>7</sup> Source: Environics Based on National Household Survey and Regional District of Central Okanagan



**Exhibit 2.15**  
**Unemployment Rate in Okanagan, B.C and Canada – 2010 to 2015**

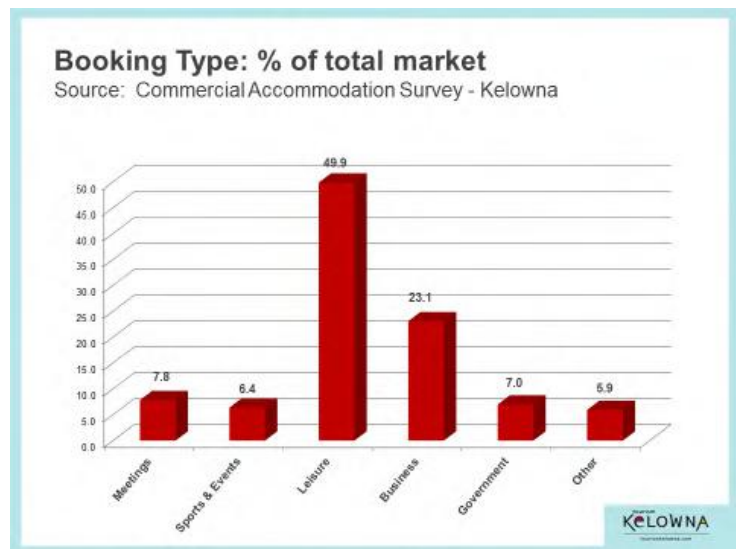


### 2.4.3 TOURISM

The drivers of tourism growth are largely related to the same factors affecting air passenger travel in general such as population, age structure and income in the origin region, and travel costs. Tourism growth also depends on improvements to tourism infrastructure, including hotels and transportation, security, and tourism marketing.

Tourism is a significant component of the economy of Kelowna and the Central Okanagan and the region attracts many visitors from all over Canada and internationally. International travellers typically fly into Vancouver or Calgary and either travel by road or fly on domestic flights to YLW. The major tourism segments in the Central Okanagan are:

- Wine travel, primarily April to October;
- Skiing / snowboarding / back country in winter;
- Lake / hiking in summer
- Meetings / conventions / festivals / sporting events;
- Golf in April to October; and
- Food & agri-tourism (farm/orchard/ farmers market visits; farm to table food movement).





In 2011, 1.5 million tourists visited the Kelowna area, up 27% from the number in 2006 (6%/year). In 2014, the number of tourists was expected to reach 1.7 million. Leisure accounts for almost half of the booking of overnight accommodation in Kelowna. Air travel is particularly important for meetings/conferences, events, and golf and ski vacations, while summer vacation travellers tends to predominantly access the area by road. While all segments have been growing, summer leisure tourism has been growing faster than other segments, but this segment has lower proportion travel by air than tourism overall. It is estimated that roughly 400,000 tourists accessed the Kelowna area by air in 2014, representing almost a quarter of all tourists to the area<sup>8</sup>.

Most tourists come from Canada, the large majority of these from B.C. (60%) or Alberta (23%). Approximately 17% come from more distant provinces where all would likely fly, with Ontario being the largest of these accounting for 7% of domestic tourists. International tourists account for about 10% of tourists, the majority of these from the U.S. (mostly Washington State), with 1-2% of the total coming from Europe, and a similar number from other international regions.

Kelowna Tourism uses a very targeted marketing approach to align with drive and fly markets and travellers within these markets that have a demonstrated interest in the experiences available in the area. Significant improvements in consumer and on-line research techniques has allowed for marketing to become very efficient, focused and targeted. Kelowna Tourism has stable funding which increases as tourism grows. With the continuation of strong marketing of tourism in the area, the numbers of tourists are expected to grow in line with growth in population and disposable incomes of the major tourism markets for the region. Growth in tourism infrastructure will for the most part be by incremental improvements of many smaller facilities. Only one major new tourism development is planned for the region to open in the next four years, a 24-story hotel and convention centre in Kelowna. No other developments are planned which by themselves would significantly impact air travel at YLW.

The Thompson Okanagan Tourism Association (TOTA) markets the wider Okanagan region and has a 10-year strategy for the region to be a highly successful year-round destination, with a strong and attractive image that is clearly differentiated from its competitors. TOTA identifies the key primary geographic markets for the Okanagan Valley as B.C. and Alberta. Many tourists from these provinces will access the area by road. Secondary markets include Manitoba, Ontario, western United States, the UK, Germany and Australia. Emerging markets that have a growing interest in the Valley include Florida, the eastern US, Mexico, Brazil, India and China. All tourists from the secondary and emerging markets will access the region by air, although some may fly from YLW. The strategy is focused on achieving a target of 3% real growth in revenue

<sup>8</sup> Kelowna Tourism indicated that visitor travel represents approximately 50% of total air passengers at YLW. Half the deplaning passengers at YLW, or approximately 400,000 passengers are deemed to be tourists. Assuming number of visitors in 2014 is 1.7 million, roughly 24% of tourists to the region are coming by air. For 2011 the ratio was 23%.



per year throughout the Okanagan region and in each Regional District and sub-region.

#### **2.4.4 TRAVEL COSTS**

Reductions in the cost of travel have been a significant driver of increases in air travel over the past 20 years. Real airfares for travel within Canada were 30-35% lower in 2014 than in the early 1990s despite the increase in fuel costs. The emergence of the low-cost airline model catering primarily to non-business travellers has reduced airfares and stimulated new demand for air travel. This has particularly benefited markets such as Kelowna which have a high proportion of leisure travellers. Leisure travellers are more price sensitive than other travellers and would travel more due to availability of low-cost air service. Network air carriers have had to improve the cost efficiency of their operations and lower their airfares to compete with the low-cost carriers, further stimulating traffic. Increases in airport and air navigation charges (discussed later) and ancillary fees (for checked bags, meals, seat selection, etc.) have offset some of this decline in airfares.

Reductions in airline costs per passenger have been achieved through improvements in various aspects of airline operations, including:

- **Ticketing** – electronic tickets, direct sale of tickets through the internet, reduction in fees paid to travel agents, common-use self-serve terminals (for obtaining boarding passes), etc.;
- **Customer service efficiencies** – provision of many customer services through their internet sites and email, including notices of schedule and flight changes, booking itineraries and confirmations, etc.;
- **Capacity management** – better matching of capacity to demand levels resulting in higher load factors, lower operating costs per passengers and higher aircraft utilization;
- **Controlling employee costs;**
- **Leasing aircraft** – leasing part or all of their aircraft fleet which allows greater flexibility to match capacity to demand; and
- **Improvements in aircraft design** – allows carriers to better match the aircraft to the properties of the route, provide improved fuel efficiency, and lower noise levels.

While further improvement in many of these aspects can be expected in the future, some will reach a point where further savings are difficult to achieve. For example, improvements in load factors of 10-15% have been achieved by most airlines over the past 20 years. However, with average load factors over 80% for many carriers, the scope to improve them much further is limited. It is generally accepted that the effective maximum average load factors for scheduled carriers is in the 85-90%.

Another important component of travel costs is the cost of aviation fuel. With the price of oil at around CND\$60 per barrel in 2015, fuel accounted for 15% of operating costs, much lower than



30% of operating costs when oil was priced at around CND\$100 per barrel in 2014. Due to competitive pressures, airlines are slow to increase fares as prices rise but must eventually do so to cover costs; while when prices fall they are slow to reduce prices without strong competitive forces. Oil prices (in US dollars) fell 70% between August 2014 and January 2016 due to various factors including the expansion of oil production from alternative sources such as shale oil in the U.S. and oil sands in Canada, export sanctions lifted on Iran, weak global demand, and an unwillingness of key suppliers not to reduce supply. The more costly producers are scaling back production and delaying expansion of new production and this is expected to lead to a gradual increase in the price over the coming years as world demand grows. Forecasters are predicting the price of oil will average US\$43 per barrel in 2016 and increase to around \$48 in 2017 increasing to \$60 in 2020, and average around US\$65 in the following ten years, barring wars and other conflicts impacting supply. However, the growing demand in emerging economies such as China, India and Brazil, as well as the higher cost of developing most new petroleum sources, could possibly increase the price of oil to \$75 or more per barrel in the longer term.

Small increases in the real (inflation adjusted) price of oil of around 0.5% per year will not significantly affect airfares as this increase can be offset by improvements in fuel efficiency of airline fleets. However, price increases of more than this will start to affect the cost of air travel and travel demand.

The impact of higher oil prices on airline travellers is threefold: first, fare increases raise the cost of airline travel; second, increased energy prices faced by consumers in other (non-airline travel-related) areas tend to reduce the discretionary income available for airline travel; and thirdly, people in regions benefiting from higher oil prices have greater income, offsetting the impacts of airfare and other price increases, and will likely travel more (e.g., residents of Alberta).

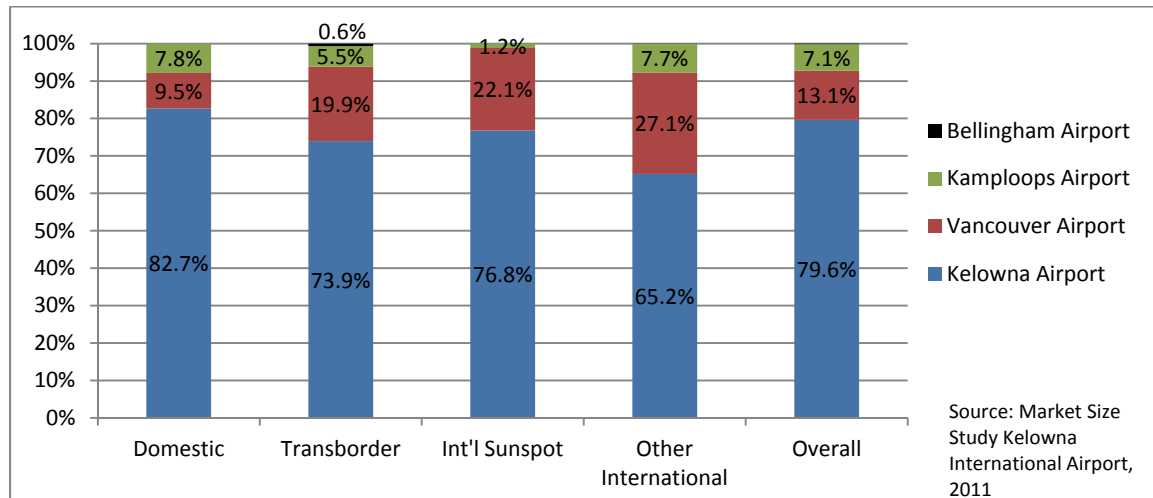
An associated cost is charges and/or taxes to reduce the amount of greenhouse gas (GHG) emissions emitted when burning fossil fuel. B.C. introduced a carbon tax on 2008 which increased from \$10 to \$30 per tonne over the years 2008 to 2012. The tax applies to jet fuel, but international flights are exempt. While a number of jurisdictions have instituted a carbon tax or carbon trading scheme, there is no national scheme and their scope and impact is limited. However, at the United Nations Paris Climate Change Conference in November 2015 the urgency for reductions in GHG emissions was acknowledged, and countries, including Canada, have committed to instituting measures to significantly reduce GHGs. Some form of carbon pricing is likely across Canada in the next year or two and this would likely increase the price of air travel and dampen air travel growth to some extent. The carbon price, will likely increase in future years in order to reach GHG emission targets and could significantly impact air transportation demand over the 30-year planning period.



#### 2.4.8 COMPETITION FROM NEARBY AIRPORTS

The Central Okanagan region is the primary catchment area for YLW. However, YLW has long experienced competition for travel from Vancouver Airport (YVR), particularly for international travel, and to a much less extent, from Kamloops Airport. YVR, 400 km from Kelowna, has multiple airlines with non-stop flights to the U.S., Europe and Asia with fares often significantly lower than flying out of YLW. There is also a greater choice of charter flights to sun destinations which attract some Kelowna residents. A market study for YLW conducted in 2011 estimated the breakdown of the local airports used by origin/destination passengers in the Central Okanagan region and the results are summarized in Exhibit 2.16<sup>9</sup>. Overall 80% of passengers used YLW and 20% were leaked to other airports, mostly YVR. It was estimated that 27% of travellers between Kelowna and Europe, the Middle East and Asia use YVR and travel by car or bus to/from Kelowna. Without direct service, this is unlikely to change significantly. Leakage of domestic passengers was much smaller, 17.3%, and will decrease as traffic grows and air services improve at YLW. Leakage to international sunspot destination, accounting for 23% of Kelowna area passengers to those destinations in 2010, will also decrease as demand grows and more flights are offered to those destinations from YLW.

**Exhibit 2.16**  
**Proportion of Kelowna Catchment Area Passengers by Local Airport Used, 2010**



Bellingham Airport in Washington State is 367 km (3 hours 45 min drive) from Kelowna and attracts many Kelowna area residents travelling to the U.S. Travellers are attracted by the cheap fares to U.S. destinations, especially on low-cost airlines, and lower fees (by avoiding the ATSC and U.S. customs & immigration fees, and with lower U.S. taxes, air navigation and airport fees).

<sup>9</sup> The study was updated in 2016, but findings provided only gave the airport breakdown of passengers for the full catchment area (including the Northwest, Northeast and Southern Okanagan areas), not just Central Okanagan



Leakage in 2010 to Bellingham was estimated to be approximately 0.6% of travellers to the U.S., mostly vacation travellers, but this has likely increased as low-cost carriers have increased service at Bellingham Airport and more people are aware of the option. Almost 20% of Kelowna area transborder passengers in 2010 used YVR, but this is likely less now, possibly 15%, with the introduction of the Phoenix and Los Angeles/San Francisco services in 2011 and 2012.

The Okanagan region has three main airports, YLW, Kamloops and Penticton. Each has Air Canada and WestJet service and all have schedule service to YVR and YYC. YLW also has service to Toronto and Seattle and several regional airports, and seasonal service to several U.S. Mexican destinations, plus greater frequencies and larger aircraft than Kamloops and Penticton. Kamloops and Penticton service their local area, but YLW attracts air travellers from throughout the Okanagan region due to the superior services it provides. A study in 2011 estimated that 8% of passengers using the Kelowna airport come from outside of the Primary Kelowna catchment area, broken down as follows:

- 8% from Revelstoke/Shuswap;
- 7% from South Okanagan (prior to WestJet service from Penticton); and
- 3% from Kamloops.

The proportion from the Southern Okanagan has likely decreased significantly to around 4% with the commencement of WestJet Encore service from Penticton to Calgary in 2014. In future, as travel demand grows, air services are expected to improve and traffic to grow at all three airports. The levels of leakage from Penticton and Kamloops airports to YLW will however likely remain similar or increase, as YLW is more likely to get services to new destinations given its central location in the area and greater population.

Overall, YLW can be expected to recover some of the leakage to YVR and to continue to capture and possibly increase passengers from other parts of the Okanagan Valley in the future as demand rises and air service at YLW continues to improve.

#### **2.4.9 EXCHANGE RATE**

Changes in exchange rates can significantly affect the total cost of an international trip. An increase in the value of the Canadian dollar will make it cheaper for Canadians to travel abroad and more expensive for people travelling to Canada. If the numbers of people travelling between the Okanagan and another country are split equally between residents and visitors, the overall effect of a change in the exchange rate would be negligible. However, the number of local resident travellers typically exceeds the number of visitors by a factor of 2:1 in Canada.

The value of the Canadian dollar increased from around US\$0.65 in 1996 to close to parity between 2010 and 2013. This resulted in a reduction in total travel costs by Canadians to the



U.S., Mexico and the Caribbean (costs in Mexican and Caribbean vacation areas closely follow the U.S. dollar), but increased costs for travellers from those regions. As the large majority of the travellers to/from YLW are Canadian, the increase in the exchange rate over that period stimulated total travel demand. However, in the past year the value of the Canadian dollar fell to US\$0.70 before recovering to around US\$0.77 which has increased the cost for Canadians travelling to the U.S. and Mexico, and has, to some extent, discouraged travel, particularly to the U.S. However, the fall in the value of the dollar may contribute to stimulating demand for domestic travel to and from the region.

#### **2.4.5 OTHER FACTORS**

**Taxes and charges on air tickets** levied on travellers by airports and governments (including security, immigration and air navigation charges) increase the cost of travel and can account for a significant proportion of the fare, often over 30%. Airport and air navigation fees have increased significantly over the past 20 years, off-setting some of the decrease in airfares. However, the increased charges have resulted in improved efficiency of airport and air navigation systems, saving time and fuel for airlines and improving the traveller experience.

The higher level of ticket taxes and fees in Canada than the U.S., and the U.S. immigration fees applied to transborder air tickets but not to travellers crossing at land borders, has resulted in a large number of people driving to U.S. border airports rather than flying from Canada. The impact on Kelowna transborder traffic is low compared to many Canadian cities. Bellingham Airport, with service by several low-cost U.S. airlines, likely attracts only about 1% of people travelling between Kelowna and the U.S. based on the 2011 YLW market study.

**Air transport liberalization** can be a macro-driver of traffic growth. The signing of the Open Skies agreement between the U.S. and Canada in 1995 led to a large increase in non-stop service and airline competition for flights to the U.S. The YLW Horizon/Alaska service would likely not have commenced without the Open Skies agreement. No new agreements are likely to significantly impact YLW traffic over the forecast period.

**Air service characteristics** will influence demand and travel patterns to/from specific markets. Strong growth in low-cost airline services in Canada, the U.S., and other countries, and in charter services internationally has led to reductions in airfares and increase service to leisure destinations. WestJet's expansion to international destinations has greatly benefited YLW. Expansion of Air Canada Rouge and possible startup of new ultra-low cost airlines Canada will continue to stimulate growth in air travel demand in Canada. Much of the growth in air travel in the developed world over the past 20 years is associated with the expansion of low-cost carriers.

Increases in direct, particularly non-stop, air service also stimulate travel demand. The expansion of services to Mexico since 2005 by low-cost and charter carriers, has led to strong growth in passengers to this region. Similarly, reductions in direct service will decrease demand



given the likely reduction in competition. Service on some new routes, likely to regional airports in B.C. are likely over the forecast period, and possibly a seasonal charter flight from Europe.

**Security** concerns affect people's propensity to fly, particularly for U.S. travellers. Measures to improve security have been successful in deterring terrorist in developed countries with terrorists tending to focus on softer targets. However, these measures can also discourage air travel as they are costly. The Air Transport Security Charge (ATSC) at \$14.69 round-trip domestically, is approximately 4% of the average domestic airfare. Line-ups for security screening and uncertainty in time to get through security add to total travel time and can significantly erode the travel time advantage for short-haul flights. Also, security screening procedures such as body searches and scans are annoying and intrusive, and many travellers are concerned that frequent scans can be a health hazard. No significant changes in security and its impact of air travel demand is envisaged during the forecast period, but any event could significantly impact traffic growth.

**Airport facilities** can significantly impact the amount of traffic at the airport. Runway and terminal congestion can restrict the number of aircraft arrivals and departures, as well as the number of aircraft that can be gated at any given time. This typically only restricts air traffic during the peak periods. Runway congestion usually has a greater effect on traffic levels than congestion in the terminal. Airport facilities such as the runway length can also impact the air services that can be provided, either restricting the service, or requiring the use of inefficient aircraft which could jeopardize the service. The extension of the runway at YLW to allow B767-300 flights from Europe has removed an obstacle to this service and opens the way for a possible flight in the future.

**Interconnectivity**, including trade, and residents and business ties with people across Canada, the U.S. and internationally, also affect the demand for air travel. Greater use of web-based conferencing (including both shared computer screen displays, voice over internet and/or video) may also impact air travel demand, particularly during economic downturns or periods of government restraint. However, past experience has shown that people and businesses prefer face-to-face meetings and that travel usually recovers once economic conditions improve. Interconnectivity is a strong driver of air travel due to the large number of people moving to the region and high numbers of professionals and consultants living in the area.



## **3.0 ANNUAL TRAFFIC FORECASTS**

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### **3.1 INTRODUCTION**

This section outlines the structure of the model for forecasting annual passenger, aircraft movement and air cargo traffic, and the numbers of based aircraft. The input variables, and parameter values for the model, and the assumptions made, are provided and the traffic forecasts presented in this section.

### **3.2 FORECASTING MODEL**

#### **3.2.1 MODEL STRUCTURE**

The model forecasts total passengers and breaks downs passengers by sectors using forecasts of the percentages of passengers in each sector. While it is preferable to forecast origin/destination (O/D) passengers, E/D passengers forecast provided, as less than 1% of passengers are connecting at YLW and reliable historical data on O/D passengers are unavailable.

Passenger traffic in future years is forecast using an estimated value for 2016 and forecasts of the change in traffic due to changes in various factors for future years. Elasticity parameters are used which provide estimates of the percentage change in passengers due to a given percentage change in a specific parameter. In addition, adjustments are made which incorporate the effects of other factors which could not be included in the mathematical model calibrated on historical traffic. These include, for example, announced changes in air services, the impact of major tourism events, development projects and changes in leakage to other airports. The estimated value in 2016 takes into account changes in airline seat capacity (as reported in February 2016), and expected changes in load factors and economic factors in 2016. The reported seat capacity is typically fairly accurate for the next six months, but can change significantly for the period of six months to a year ahead as airlines adjust capacity to match the evolving demand levels. Load factors can also change significantly so that changes in scheduled future seat capacity are only a guide to possible future passengers.

The following factors are incorporated into the model:

- RDI and GDP for B.C. and Canada;
- Population growth for Central Okanagan;
- Change in average airfare which includes changes in oil price, environmental charges, fleet fuel efficiency, airline efficiency improvements, etc.; and
- Average exchange rate change with the U.S. dollar which affects transborder and international travel.



It should be noted that the elasticities for travel cost, RDI and GDP apply to changes in real costs and real GDP, i.e., excluding changes due to inflation.

Population, RDI and GDP were found to be strongly correlated with each other and, similarly, GDP and RDI values for B.C., Canada and the U.S. were also found to be strongly correlated. When the factors (independent regression variables) are highly correlated it is not possible to accurately estimate the relationship with each due to multi-co-linearity. As GDP and RDI forecasts were not available for Kelowna or the Central Okanagan, but population forecasts were available from BC Stats, the GDP and RDI for the Central Okanagan were approximated by multiplying the average RDI and GDP per capita for B.C. by the forecast population of the Central Okanagan. These were then examined for inclusion in the model. Where it was appropriate, the average RDI growth rates for Central Okanagan and Canada were used rather than the rates separately to avoid the problem of multi-co-linearity. A similar approach as used for GDP.

### **3.2.2 MODEL CALIBRATION AND PARAMETER VALUES**

The elasticity parameters were determined using historical data for each factor and E/D passengers from 1996 to 2015. Sub-periods within this 20-year timeframe were also considered to ensure coefficients were relatively stable.

RDI, GDP and population values for B.C. and Canada were obtained from the Conference Board of Canada, Central Okanagan population values were obtained from BC Stats, and the Canadian-US dollar exchange rate were obtained from the IMF World Economic Database. Canadian domestic and international airfares were obtained from Statistics Canada.

Regression analysis [ $\log(Y)$  to  $\log(X_s)$ ] is used to estimate the elasticity parameters. Various combinations of the factor-variables were examined. The RDI or GDP measure with the highest explanatory power was used in the model. Factors which were not at all significant were excluded.

Checks were made to ensure that the values were reasonable – the correct sign and in the range of elasticity values found for other airports from published research and past experience. Elasticities tend to decrease over time, particularly for high growth regions and traffic segments. The data was examined to determine if such an effect was evident for traffic at YLW.

RDI was found to be more closely related to passenger travel at YLW than GDP. The RDI Index for Central Okanagan was found to have the strongest correlation with passenger traffic and was used in the model. An elasticity of 1.45 was estimated. The elasticity is fairly high and shows a decreasing trend over the historical analysis period. This is incorporated into the forecasts with the elasticity falling to 1.36 in 2025, to 1.29 in 2035 and to 1.24 in 2045. A low elasticity with exchange rate of -0.08 was found and is consistent with the expected effect of the exchange rate on travel demand. Fare elasticities estimated were found to be of the wrong sign, likely due



to the correlation between airfares and RDI, and the use of average national domestic airfares. Other studies have found airfares to impact travel demand and a conservative estimate of their effect was incorporated in the model. An elasticity value of -0.4 used corresponds to a low elasticity for a route of 0.6 multiplied by a factor of 0.7 to account for all routes being affected by the fare change (factors based on published research). The immediate effect of factors affecting airline costs may not lead to expected change in fares initially due to competitive pressures, but over the longer term the changes in costs will be largely be reflected in airfares.

### **3.2.3 AIRCRAFT MOVEMENTS**

Aircraft movements were forecast separately for itinerant by operator type (commercial passenger air carrier, other air carrier, other commercial, private and government) and for local movements.

The numbers of commercial passenger aircraft movements were determined based on the forecast numbers of E/D passengers, and the average load factors and average numbers of passenger seats on flights.

Other commercial, private, government and local movements were forecast based on previous trends at YLW, economic forecasts, outlook for the industry, and input from major operators.

### **3.2.3 BASED AIRCRAFT**

The numbers of based aircraft at YLW were forecast separately by operator type and aircraft category. Historical data on based aircraft were not available and forecasts are based on information provided by the air carriers and assuming similar growth trends as the forecast numbers of aircraft movements of those operator and aircraft types.

## **3.3 PASSENGER FORECASTS**

Passenger forecasts were prepared under three scenarios: a Medium Case or Most Likely Scenario, a Low Case Scenario, and a High Case Scenario. The assumptions and resulting forecasts under each scenario are presented below.

### **3.3.1 SCENARIO ASSUMPTIONS**

The forecasts under the Medium Case Scenario are based on the following assumptions (see Exhibit 3.1):

- RDI for B.C. and Canada based on forecasts by the Conference Board of Canada with adjustments to reflect decline in oil prices and economic outlook between when those forecasts were developed in Nov. 2015 and Feb. 2016;
- Population growth forecast by BC Stats;



- Growth rate after 2025 for B.C. RDI, not forecast by the Conference Board, was assumed to decline slowly after 2025, similar to the slowdown forecast for Canada;
- Exchange rates, which dropped to around \$0.70 in early 2016, recover slightly to average \$0.73 in 2016 and increase steadily to \$0.80 in 2020 and remain at that level throughout the remainder of the forecast period.

**Exhibit 3.1**

**Average Annual Growth Rates in Real GDP and Exchange Rate – Medium Case Scenario**

Year	C. Okanagan Population	B.C. RDI	Canada RDI	Exchange Rate
2016	1.70%	2.05%	0.36%	0.76
2017	1.73%	2.50%	0.1.88%	0.77
2018	1.71%	2.53%	2.04%	0.78
2019	1.70%	2.16%	2.24%	0.79
2020	1.69%	2.85%	2.29%	0.80
2020-2025	1.62%	1.68%	2.08%	0.80*
2025-2030	1.43%	1.51%	1.95%	0.80*
2030-2035	1.22%	1.50%	1.92%	0.80*
2035-2045	0.99%	1.49%	1.88%	0.80*

\* Exchange rate at end of period

Airfares are forecast to decline in 2016 due to decline in fuel costs, then increase slightly to 2020 as fuel costs rise, then declining a little due to fuel efficiency and operational improvements before increasing again as price on carbon increases – see Exhibit 3.2. This is based on the assumptions:

- Oil Price – 2016 to 2020 prices are values used by major Canadian banks in their economic forecasts, medium term forecasts based on IEA industry statements, long-term forecasts assume price increases 0.5% above inflation rate;
- Airlines pass little of the fuel cost saving to reduce airfares in 2016 and when fuel costs increase in 2017 to 2020, pass only part of the cost increase to passengers in higher fares;
- Price on carbon (in 2014\$s) – B.C. current prices prorated to affect on airfares from Kelowna, national price on carbon starting at \$20/tonne in 2018 and increasing steadily to \$45/tonne in 2025, and to \$80/tonne by 2045 (national price not in addition to B.C. price so no impact until national price exceeds the B.C. price);



**Exhibit 3.2**  
**Average Price of Oil, Carbon Tax and Airfares– Medium Case Scenario**

Year	Oil Price US\$ (WTC)	Price on Carbon \$/tonne	Avg. Domestic Airfare
2016	\$43	\$13	\$200
2017	\$48	\$16	\$200
2018	\$50	\$20	\$201
2019	\$55	\$23	\$201
2020	\$59	\$27	\$201
2025	\$64	\$46	\$197
2030	\$68	\$55	\$199
2035	\$71	\$66	\$201
2045	\$78	\$80	\$203

Notes: Carbon price and airfare values in constant 2014 \$s

- Fleet fuel efficiency improvement averaging 0.6% per year – based on efficiency of new aircraft entering fleet; and
- Non-fuel airline efficiency improvements of 0.7% in 2015, slowing to 0.5% by 2026 and to 0.4% by 2045

Other assumptions under the Medium Case Scenario include:

- Connecting passengers: no significant change, remains at approximately 1% of passengers
- Tourism – growth in-line with growth in RDI of BC and Canada, similar to past trends and in-line with growth targets;
- Leakage of traffic to Vancouver and Bellingham airports slows;
- Taxes – no new air traveller taxes, and taxes increase with inflation rate; and
- Security – continuation of threats but no terrorist attacks on aircraft leading to loss of life in North America.

Note that the Medium Case Scenario forecasts do not consider the impacts of the introduction of new ultra-low-cost carrier services. This provides a conservative reflection of initial service growth at YLW. Strong growth in air service, including an ultra-low-cost carrier, is included in the High Case forecasts.

The High and Low Case scenarios allowed for uncertainty in various model inputs, these included:

- Ultra low-cost airline New Leaf is assumed to commence services at YLW in mid-2016 using the proposed schedule in the High Case scenario;
- RDI annual growth rates will be approximately 0.4% lower for the Low Case scenario and 0.4% higher in the High Case scenario;



- Exchange rates were assumed to be \$0.02 to \$0.03 lower for the Low Case scenario and \$0.02 to \$0.05 higher for the High Case scenario;
- Changes in airfares, which are determined from oil price and airline factors, and were up to \$3 to \$18 higher for the Low Case scenario, and \$2 to \$16 lower for the High Case scenario; and
- RDI elasticity value, which was estimated from historical data, differed from the Medium Case values based on the standard error of the estimated elasticities.

The differences in the RDI growth rates, exchange rate, airfares and RDI elasticity values from the Medium Case scenarios for the High and Low Case scenarios are presented in Exhibit 3.3. The difference varies by year and values are provided for 2016 and for 2045. The level of leakage to or from nearby airports was also assumed to differ a little under the Low and High Case scenarios.

Scheduled seat capacity for 2016<sup>10</sup> shows an increase of 4.1% compared to 2015, but seats for the domestic segment are up 5.0% while transborder are down 6.8% and other international seats are up 5.9%. The model estimates were adjusted up for 2016 to account for some of the changes in seat capacity, but load factors were assumed to decline slightly in 2016 in the Medium Case. Load factors were assumed to be approximately 0.8% higher (lower) in the High Case (Low Case) scenario. Other assumptions made in the Medium Case Scenario remained unchanged.

**Exhibit 3.3**  
**Model Inputs for the Low and High Case Scenarios Different from the Medium Case Scenario**

Scenario	Year	Difference from Medium Case Value			
		RDI Growth Rate	Airfares	Exchange Rate	RDI Elasticity
Low Case	2016	-0.4%	\$3	-\$0.02	-0.12
	2045	-0.4%	\$18	-\$0.03	-0.07
High Case	2016	0.4%	-\$2	\$0.02	0.12
	2045	0.4%	-\$16	\$0.05	0.07

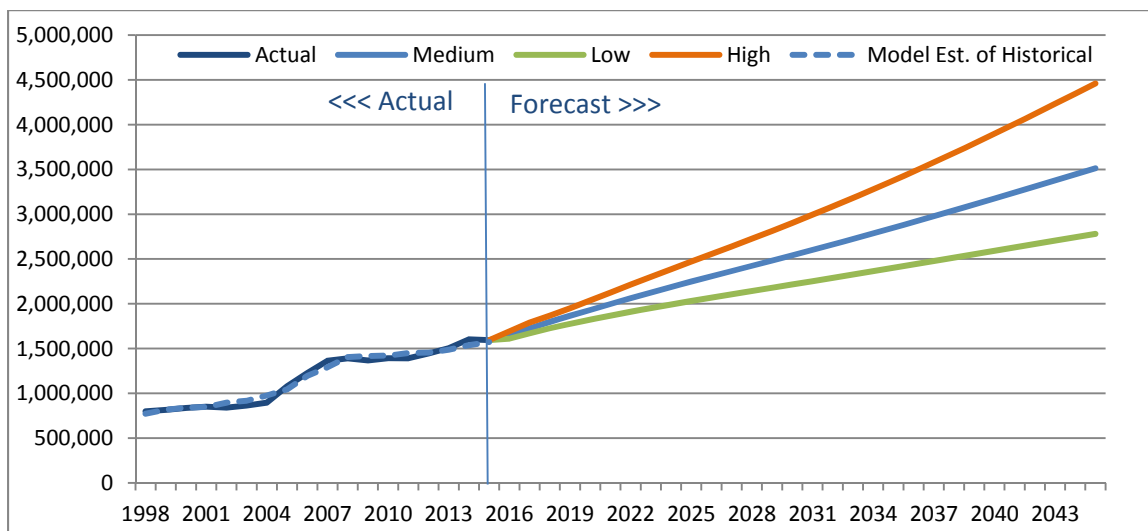
<sup>10</sup> As published by in the OAG on February 11, 2016



### 3.3.2 BASE CASE FORECASTS

Passenger forecasts under the Low, Medium and High Case Scenarios are presented in Exhibit 3.4 together with historical traffic, both actual and estimated using the model. E/D passengers under the three scenarios are tabulated in Exhibit 3.5 and a breakdown by sector is presented in Exhibit 3.6. The forecasts show that traffic will grow at a moderate rate of 3.4% in 2016 under the Medium Case Scenario. Stronger growth of 4.6% and 4.4% is forecast for 2017 and 2018, with growth slowing to 3.7% in 2019 and 3.3% in 2020. Growth slows gradually after that to 2.8% in 2025.

**Exhibit 3.4**  
**Historical and Forecast E/D Passengers– Low, Medium and High Case Scenarios**





**Exhibit 3.5**  
**Forecasts E/D Passengers and Average Annual Growth Rates**  
**Medium, Low and High Case Scenarios**

Year	E/D Passengers			Avg. Annual Growth Rates		
	Medium	Low	High	Medium	Low	High
2015 Actual	1,593,606	1,593,606	1,593,606	-0.6%	-0.6%	-0.6%
2016	1,650,000	1,610,100	1,692,900	3.5%	1.0%	6.2%
2017	1,725,000	1,670,000	1,788,000	4.5%	3.7%	5.6%
2018	1,800,000	1,726,000	1,868,000	4.3%	3.4%	4.5%
2019	1,867,000	1,776,000	1,950,000	3.7%	2.9%	4.4%
2020	1,929,000	1,820,000	2,037,000	3.3%	2.5%	4.5%
2021	1,995,000	1,865,000	2,124,000	3.4%	2.5%	4.3%
2022	2,063,000	1,911,000	2,215,000	3.4%	2.5%	4.3%
2023	2,125,000	1,952,000	2,300,000	3.0%	2.1%	3.8%
2024	2,187,000	1,992,000	2,385,000	2.9%	2.0%	3.7%
2025	2,249,000	2,031,000	2,472,000	2.8%	2.0%	3.6%
2026	2,306,000	2,068,000	2,556,000	2.5%	1.8%	3.4%
2027	2,364,000	2,105,000	2,640,000	2.5%	1.8%	3.3%
2028	2,422,000	2,142,000	2,726,000	2.5%	1.8%	3.3%
2029	2,481,000	2,179,000	2,813,000	2.4%	1.7%	3.2%
2030	2,541,000	2,216,000	2,902,000	2.4%	1.7%	3.2%
2035	2,848,000	2,401,000	3,375,000	2.2%	1.6%	3.0%
2040	3,176,000	2,592,000	3,898,000	2.2%	1.5%	2.9%
2045	3,513,000	2,780,000	4,460,000	2.0%	1.3%	2.6%
<b>Average Annual Growth Rates</b>						
2005-2015	4.0%					
2010-2015	2.7%					
2015-2020	3.9%	2.7%	5.0%			
2020-2025	3.1%	2.2%	3.9%			
2025-2030	2.5%	1.8%	3.3%			
2030-2045	2.2%	1.5%	2.9%			
2015-2030	3.2%	2.2%	4.1%			
2015-2045	2.7%	1.9%	3.5%			

### 3.4 AIRCRAFT MOVEMENT FORECASTS

#### 3.4.1 FORECAST ASSUMPTIONS

Air carrier movements forecast were based on the forecasts of passengers with the assumptions that:

- Load factors will increase over the forecast period from 74% in 2015 to 83% by 2045 on domestic flights, from 79% in 2015 to 84% in 2045 on transborder flights, and will remain at approximately 90% on other international flights; and



**Exhibit 3.6**  
**Forecasts E/D Passengers and Average Annual Growth Rates – Medium Case Scenario**

Year	E/D Passengers				Avg. Annual Growth Rates			
	Domestic	TB	Intern'l	Total	Domestic	TB	Intern'l	Total
2015 Act'l	1,432,456	126,559	34,591	1,593,606	1.1%	-17.5%	4.7%	-0.6%
2016	1,493,600	121,200	35,200	1,650,000	4.3%	-4.2%	1.8%	3.5%
2017	1,559,900	127,400	37,700	1,725,000	4.4%	5.1%	7.1%	4.5%
2018	1,626,100	133,700	40,200	1,800,000	4.2%	4.9%	6.6%	4.3%
2019	1,685,000	139,400	42,600	1,867,000	3.6%	4.3%	6.0%	3.7%
2020	1,739,200	144,800	45,000	1,929,000	3.2%	3.9%	5.6%	3.3%
2021	1,796,900	150,500	47,600	1,995,000	3.3%	3.9%	5.8%	3.4%
2022	1,856,300	156,500	50,200	2,063,000	3.3%	4.0%	5.5%	3.4%
2023	1,910,200	162,000	52,800	2,125,000	2.9%	3.5%	5.2%	3.0%
2024	1,963,900	167,700	55,400	2,187,000	2.8%	3.5%	4.9%	2.9%
2025	2,017,600	173,300	58,100	2,249,000	2.7%	3.3%	4.9%	2.8%
2026	2,066,700	178,600	60,700	2,306,000	2.4%	3.1%	4.5%	2.5%
2027	2,116,500	184,100	63,400	2,364,000	2.4%	3.1%	4.4%	2.5%
2028	2,166,300	189,500	66,200	2,422,000	2.4%	2.9%	4.4%	2.5%
2029	2,216,700	195,200	69,100	2,481,000	2.3%	3.0%	4.4%	2.4%
2030	2,268,100	200,900	72,000	2,541,000	2.3%	2.9%	4.2%	2.4%
2035	2,529,300	230,900	87,800	2,848,000	2.1%	2.8%	3.9%	2.2%
2040	2,806,300	263,800	105,900	3,176,000	2.1%	2.7%	3.7%	2.2%
2045	3,088,300	298,800	125,900	3,513,000	1.9%	2.5%	3.5%	2.0%
<b>Average Annual Growth Rates</b>								
2005-2015	3.8%	4.6%	12.9%	4.0%				
2010-2015	2.7%	5.2%	-3.5%	2.7%				
2015-2020	4.0%	2.7%	5.4%	3.9%				
2020-2025	3.0%	3.7%	5.2%	3.1%				
2025-2030	2.4%	3.0%	4.4%	2.5%				
2030-2045	2.1%	2.7%	3.8%	2.2%				
2015-2030	3.1%	3.1%	5.0%	3.2%				
2015-2045	2.6%	2.9%	4.4%	2.7%				

- Aircraft size will increase overall, particularly as the DHC-8-300s and smaller regional jets (RJs) are replaced with Q400s, with the average seats per aircraft increasing from 85.5 in 2015 to 95 by 2030 and to 99 by 2045;

The long-term trend of declining piston aircraft movements at YLW will continue but slowdown, and this will be offset by an increase in turboprop movements. This is consistent with the current trend throughout North America of growth in business jets and turboprops, and a decline in piston movements. Growth in non-scheduled air carrier, other commercial and private movements show a weak relationship with population and economic activity and were related to these factors, but accounting for a slowdown in the decline in piston movements as their contribution to total movements declines. Government operations have fluctuated over the



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past 20 years and are assumed to grow very slowly with increased population in the area.

### 3.4.2 ANNUAL MOVEMENT FORECASTS

The forecast aircraft movements under the Medium Case Scenario are presented with average annual growth rates in Exhibit 3.7.

**Exhibit 3.7**  
**Forecast Aircraft Movements by Operator Segment – Medium Case Scenarios**

Year	Itinerant Movements						Local	Total Movements
	Air carrier Scheduled	Air carrier Non-scheduled	Commercial	Private	Government	Total Itinerant		
2015 Actual	25,414	16,927	3,509	6,953	866	53,669	21,120	74,789
2016	25,906	17,139	3,515	6,958	867	54,386	21,068	75,454
2017	26,400	17,482	3,523	6,967	870	55,241	21,111	76,352
2018	26,876	17,836	3,532	6,976	872	56,092	21,157	77,249
2019	27,219	18,144	3,540	6,983	874	56,760	21,166	77,925
2020	27,345	18,413	3,546	6,990	875	57,170	21,143	78,313
2021	27,944	18,687	3,553	6,996	877	58,057	21,120	79,177
2022	28,565	18,964	3,560	7,003	878	58,970	21,098	80,069
2023	29,099	19,211	3,565	7,009	880	59,764	21,052	80,816
2024	29,630	19,449	3,571	7,014	881	60,545	20,998	81,543
2025	29,999	19,684	3,576	7,019	883	61,161	20,942	82,103
2026	30,455	19,921	3,582	7,025	884	61,866	20,884	82,750
2027	30,923	20,158	3,587	7,030	885	62,583	20,824	83,407
2028	31,389	20,395	3,592	7,035	887	63,297	20,764	84,061
2029	31,865	20,633	3,597	7,040	888	64,023	20,702	84,725
2030	33,135	20,871	3,603	7,045	889	65,543	20,638	86,181
2035	36,025	22,065	3,628	7,070	895	69,684	20,304	89,988
2040	39,338	23,265	3,652	7,093	901	74,251	19,942	94,192
2045	42,736	24,467	3,675	7,116	907	78,902	19,555	98,457
<b>Average Annual Growth Rates</b>								
2015-2020	1.5%	1.7%	0.2%	0.1%	0.2%	1.3%	0.0%	0.9%
2020-2025	1.9%	1.3%	0.2%	0.1%	0.2%	1.4%	-0.2%	0.9%
2025-2030	2.0%	1.2%	0.1%	0.1%	0.1%	1.4%	-0.3%	1.0%
2030-2045	1.7%	1.1%	0.1%	0.1%	0.1%	1.2%	-0.4%	0.9%
2015-2030	1.8%	1.4%	0.2%	0.1%	0.2%	1.3%	-0.2%	0.9%
2015-2045	1.7%	1.2%	0.2%	0.1%	0.2%	1.3%	-0.3%	0.9%

The number of itinerant aircraft movements is expected to increase by approximately 1.3% per year over the next 15 years, with air carriers accounting for most of this growth. Little growth in private movements is forecast as the increase in private jet and turboprop movements is offset by the decline in piston movements. Local movements are forecast to decline very slightly over the next 30 years. Total movements are forecast to increase by about 0.9% per year over that



period.

The number of aircraft movements under the Low, Medium and High Cases are summarized in Exhibit 3.8. Total movements are forecast to reach 98,400 by 2045 under the Medium Case Scenario, but range from 83,000 to 120,000 under the Low and High Case Scenarios.

**Exhibit 3.8**  
**Forecast Aircraft Movements under the Medium, Low and High Case Scenarios**

Year	Medium Case			Low Case			High Case		
	Itin- erant	Local	Total	Itin- erant	Local	Total	Itin- erant	Local	Total
2015 Actual	53,669	21,078	74,747						
2016	54,386	21,068	75,454	53,867	20,767	74,634	55,119	21,383	76,502
2017	55,241	21,111	76,352	54,479	20,683	75,162	56,490	21,553	78,043
2018	56,092	21,157	77,249	55,031	20,603	75,634	57,632	21,730	79,362
2019	56,760	21,166	77,925	55,453	20,499	75,952	58,725	21,859	80,585
2020	57,170	21,143	78,313	55,645	20,378	76,022	59,890	21,949	81,840
2021	58,057	21,120	79,177	56,152	20,257	76,408	61,275	22,040	83,316
2022	58,970	21,098	80,069	56,678	20,137	76,815	62,715	22,132	84,847
2023	59,764	21,052	80,816	57,111	20,003	77,115	64,022	22,192	86,215
2024	60,545	20,998	81,543	57,527	19,866	77,393	65,312	22,243	87,555
2025	61,161	20,942	82,103	57,930	19,728	77,658	66,243	22,290	88,533
2026	61,866	20,884	82,750	58,308	19,590	77,897	67,589	22,335	89,924
2027	62,583	20,824	83,407	58,688	19,452	78,140	68,937	22,377	91,314
2028	63,297	20,764	84,061	59,072	19,314	78,386	70,312	22,418	92,730
2029	64,023	20,702	84,725	59,457	19,176	78,633	71,701	22,457	94,158
2030	65,543	20,638	86,181	59,844	19,039	78,883	73,117	22,494	95,611
2035	69,684	20,304	89,988	61,800	18,354	80,154	80,566	22,652	103,218
2040	74,251	19,942	94,192	64,016	17,675	81,691	88,725	22,764	111,489
2045	78,902	19,555	98,457	66,194	17,005	83,199	97,384	22,831	120,215
<b>Average Annual Growth Rates</b>									
2015-2020	1.3%	0.0%	0.9%	0.7%	-0.7%	0.3%	2.2%	0.8%	1.8%
2020-2025	1.4%	-0.2%	0.9%	0.8%	-0.6%	0.4%	2.0%	0.3%	1.6%
2025-2030	1.4%	-0.3%	1.0%	0.7%	-0.7%	0.3%	2.0%	0.2%	1.6%
2030-2045	1.2%	-0.4%	0.9%	0.7%	-0.8%	0.4%	1.9%	0.1%	1.5%
2015-2030	1.3%	-0.2%	0.9%	0.7%	-0.7%	0.4%	2.1%	0.4%	1.7%
2015-2045	1.3%	-0.3%	0.9%	0.7%	-0.7%	0.4%	2.0%	0.3%	1.6%

### 3.4.3 FORECASTS BY AIRCRAFT SIZE CATEGORY

The numbers of movements by aircraft weight category under the Medium Case scenario are summarized in Exhibit 3.9. Aircraft under 2 tonnes, all piston aircraft, are forecast to decline slowly averaging -1.1% per year, while the other categories of aircraft are forecast to grow at around 2% per year.



**Exhibit 3.9**  
**Forecast Aircraft Movements by Aircraft Weight Category – Base Case Scenarios**

Year	0 - 2.00 tonnes	2.01 - 4.00 tonnes	4.01 - 5.67 tonnes	5.68 - 9.00 tonnes	9.01 - 18.00 tonnes	18.01 - 35.00 tonnes	35.01 - 70.00 tonnes	Over 70 tonnes	Total Itinerant
2015 Actual	12,235	1,640	4,411	8,831	1,331	15,250	9,899	72	53,669
2016	11,814	1,374	4,287	9,756	1,050	15,715	10,329	61	54,386
2017	11,678	1,422	4,463	9,995	1,079	16,015	10,527	63	55,241
2018	11,544	1,470	4,642	10,239	1,109	16,304	10,720	64	56,092
2019	11,401	1,517	4,811	10,455	1,135	16,513	10,863	65	56,760
2020	11,251	1,561	4,971	10,643	1,160	16,591	10,927	66	57,170
2021	11,101	1,605	5,132	10,856	1,185	16,953	11,156	67	58,057
2022	10,952	1,650	5,294	11,073	1,211	17,329	11,394	68	58,970
2023	10,798	1,693	5,449	11,271	1,234	17,652	11,599	69	59,764
2024	10,641	1,735	5,602	11,464	1,257	17,972	11,803	70	60,545
2025	10,484	1,778	5,755	11,649	1,280	18,196	11,939	80	61,161
2026	10,327	1,820	5,907	11,839	1,303	18,470	12,114	85	61,866
2027	10,170	1,863	6,060	12,029	1,326	18,751	12,293	90	62,583
2028	10,013	1,905	6,213	12,219	1,349	19,031	12,472	95	63,297
2029	9,856	1,948	6,366	12,410	1,372	19,317	12,654	100	64,023
2030	9,699	1,990	6,519	12,641	1,395	20,080	13,114	105	65,543
2035	8,912	2,203	7,286	13,625	1,511	21,816	14,204	129	69,684
2040	8,124	2,415	8,053	14,631	1,627	23,806	15,442	153	74,251
2045	7,335	2,628	8,821	15,643	1,742	25,846	16,709	177	78,902

### 3.5 AIRCRAFT CARGO FORECASTS

Air cargo tonnage forecasts are presented in Exhibit 3.10. With the strong economic growth in the region and possible increases in air shipments of time-sensitive agricultural products, cargo volumes are expected to recover from the decline in 2015 over the next 5-10 years, then grow slowly over the longer term. Under the Medium Case scenario, total air cargo is forecast to grow by an average of 2.0% per year. Outbound cargo is forecast to increase more slowly averaging 1.8% per year, while inbound cargo is forecast to grow at a moderate rate of 2.3% per year. The increase in size of aircraft used on passenger services, particularly the transition from DH8-300s to Q400s by Air Canada, should increase the cargo capacity at YLW. Fuel prices are a major component of costs for cargo carriers and the recent decline in fuel prices should greatly benefit cargo carriers. With oil prices are expected to remain low for several years and even in the medium term be in the US\$55-\$65 range, this should lead to lower freight rates which should stimulate new demand. YLW has only limited freighter service and this is not expected to change significantly due to its proximity to the major cargo hub at YVR. Total air cargo is forecast to reach almost 3,200 tonnes by 2045 under the Medium Case Scenario, but ranges from 2,600 to 4,200 under the Low and High Case Scenarios.



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**Exhibit 3.10**  
**Forecast Air Cargo Tonnage under the Medium, Low and High Case Scenarios**

Year	Medium Case			Low Case			High Case		
	Loaded / Outbound	Unloaded / Inbound	Total	Loaded / Outbound	Unloaded / Inbound	Total	Loaded / Outbound	Unloaded / Inbound	Total
2015 Act'l	655	1,102	1,757	655	1,102	1,757	655	1,102	1,757
2016	682	1,140	1,822	679	1,133	1,812	689	1,148	1,838
2017	711	1,178	1,889	703	1,165	1,868	725	1,196	1,921
2018	741	1,218	1,958	728	1,198	1,926	763	1,246	2,009
2019	771	1,259	2,031	754	1,231	1,985	803	1,298	2,101
2020	804	1,302	2,105	781	1,266	2,047	845	1,352	2,197
2021	837	1,346	2,183	809	1,301	2,110	889	1,408	2,298
2022	872	1,391	2,263	838	1,337	2,176	935	1,467	2,403
2023	908	1,438	2,346	868	1,375	2,243	984	1,528	2,512
2024	946	1,487	2,433	900	1,413	2,313	1,035	1,592	2,627
2025	981	1,539	2,520	928	1,455	2,383	1,083	1,662	2,746
2026	996	1,553	2,549	935	1,461	2,396	1,108	1,696	2,805
2027	1,009	1,570	2,579	941	1,468	2,409	1,134	1,731	2,865
2028	1,023	1,587	2,609	948	1,474	2,422	1,160	1,766	2,926
2029	1,036	1,604	2,640	954	1,480	2,435	1,186	1,802	2,988
2030	1,050	1,621	2,671	961	1,487	2,448	1,213	1,839	3,052
2035	1,121	1,709	2,830	995	1,520	2,515	1,359	2,034	3,393
2040	1,197	1,802	2,999	1,030	1,554	2,583	1,522	2,251	3,772
2045	1,278	1,900	3,178	1,066	1,588	2,654	1,704	2,490	4,194
<b>Average Annual Growth Rates</b>									
2015-2020	4.2%	3.4%	3.7%	3.6%	2.8%	3.1%	5.2%	4.2%	4.6%
2020-2025	4.1%	3.4%	3.7%	3.5%	2.8%	3.1%	5.1%	4.2%	4.6%
2025-2030	1.4%	1.0%	1.2%	0.7%	0.4%	0.5%	2.3%	2.0%	2.1%
2030-2045	1.3%	1.1%	1.2%	0.7%	0.4%	0.5%	2.3%	2.0%	2.1%
2015-2030	3.2%	2.6%	2.8%	2.6%	2.0%	2.2%	4.2%	3.5%	3.7%
2015-2045	2.3%	1.8%	2.0%	1.6%	1.2%	1.4%	3.2%	2.8%	2.9%



### 3.4 BASED AIRCRAFT FORECASTS

The forecast numbers of based aircraft by operator segment and aircraft category are presented in Exhibit 3.11. Total based aircraft are forecast to increase from 101 in 2014 to 125 in 2045 with most of the growth being in turboprop aircraft. Under the Low Case scenario, the numbers of based aircraft are forecast to increase to 106 by 2045 with the numbers of narrow-body and wide-body jets declining, while under the High Case based aircraft are forecasts increase to 153 by 2045.

**Exhibit 3.11  
Forecast Numbers of Based Aircraft by Operator Segment and Aircraft Category and by  
Scenario for Total Aircraft**

Year	Medium Case								Low Case Total	High Case Total
	Private	Commercial						Total		
	Piston - Private	Piston – Comm'l	Turbo-prop	Business Jet	Narrow-body	Wide-body	Heli-copter			
2015	31	4	29	3	11	3	9	92	88	93
2016	31	5	30	3	11	3	9	92	88	95
2017	30	5	31	3	12	3	9	94	89	97
2018	30	5	32	3	12	3	10	95	90	99
2019	30	5	33	3	13	3	10	97	91	101
2020	30	5	34	3	13	4	10	98	92	103
2021	29	5	34	3	14	4	10	100	93	105
2022	29	5	35	3	14	4	10	101	94	108
2023	29	5	36	4	15	4	10	102	95	110
2024	28	5	37	4	15	4	10	104	96	112
2025	28	5	37	4	16	4	11	105	97	114
2026	28	5	38	4	16	4	11	106	97	116
2027	28	5	39	4	16	4	11	107	98	118
2028	27	5	40	4	16	4	11	108	98	119
2029	27	5	40	4	17	4	11	109	99	121
2030	27	5	41	4	17	5	11	110	99	123
2035	25	6	45	4	18	5	12	115	102	132
2040	24	6	49	5	19	5	13	120	104	142
2045	22	6	52	5	20	5	14	125	106	153
Average Annual Growth Rates										
2015-2020	-1.2%	1.7%	2.9%	3.8%	3.7%	3.5%	1.5%	1.3%	1.1%	2.1%
2020-2025	-1.0%	1.2%	2.2%	1.8%	3.7%	3.7%	1.5%	1.4%	1.0%	2.0%
2025-2030	-1.1%	0.9%	1.9%	1.6%	1.2%	1.2%	1.5%	0.9%	0.5%	1.5%
2030-2045	-1.3%	0.6%	1.6%	1.4%	1.2%	1.2%	1.5%	0.9%	0.5%	1.5%
2015-2030	-1.1%	1.3%	2.3%	2.4%	2.8%	2.8%	1.5%	1.2%	0.8%	1.9%
2015-2045	-1.2%	0.9%	2.0%	1.9%	2.0%	2.0%	1.5%	1.0%	0.7%	1.7%



### 3.6 COMPARISON WITH OTHER RECENT FORECASTS

Exhibit 3.12 compares the forecasts passenger growth rates by SLI for YLW with those by Boeing, Airbus and the FAA prepared in 2015 on a national basis. SLI's forecast growth rates for domestic, transborder and international traffic at YLW are about 0.5% higher than those by Airbus and Boeing, but are a slightly lower than the FAA's forecast for total transborder traffic. The generally higher forecasts for YLW are considered to be reasonable as traffic growth at YLW is likely to be higher than the average over the Canada/North America region given the higher forecasts of population and economic growth for Kelowna and B.C. than for Canada as a whole.

**Exhibit 3.12  
Comparison of Forecasts Passenger Growth Rates by SLI and Other Groups**

Sector	Source	Airport/ Region	Average Annual Growth Rates		
			2015-2020	2015-2025	2015-2035
Domestic	SLI	YLW	4.0%	3.5%	2.9%
	Airbus	Canada			2.4%
	Boeing	North Am.			2.4%
Transborder	SLI	YLW	2.7%	3.2%	3.1%
	FAA	Canada	3.5%	3.4%	
	Airbus	Canada			2.5%
Other International	SLI	YLW	5.4%	5.3%	4.8%
	Airbus	Canada			4.0%
	Boeing	North Am.			4.3%
Total	SLI	YLW	3.9%	3.5%	2.9%
	Airbus	Canada			2.6%

It should be noted that the Boeing and Airbus rates are for growth in revenue passenger miles, thus, if international traffic grows faster than domestic, their growth rates for "Total" will be higher than the rate for passengers at airports due to the longer flight distances of international flights.



## **4.0 PEAK HOUR TRAFFIC FORECASTS**

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### **4.1 PEAK HOUR FORECASTING METHODS AND ASSUMPTIONS**

**Planning Peak Hour Passengers** (PPHPs) represent the demand during a typical very busy period, rather than the busiest hour of the year. Different definitions/methodologies are used to define the PPHPs, such as the 40<sup>th</sup> or 30<sup>th</sup> busiest hour of the year, or the second busiest day during a typical week during the busy month. Reasons behind selecting a specific definition/methodology depend primarily on the data available, and on the acceptable frequency and degree to which passenger levels can be above planned capacity.

An industry norm for the peak hour methodology when flight-by-flight passenger data is not available is that it be based on a typical week in the peak month.

#### **4.1.1 PEAK HOUR PASSENGER FORECAST APPROACH**

The methodology used to develop the peak hour passengers and movements involves four steps:

1. Develop forecasts of nominal flight schedules for a typical week in the busiest month (described below) and project peak hour passengers based on these schedule;
  - a. Considers peak hour values on each day of the week;
  - b. Use a combination of maximum, second highest, average and median peak values over the days of the week - this typically gives a value close to the second highest, but is more representative of a busy day in some situations;
2. Project the ratio of PPHPs to annual traffic by traffic segment (sector/total, arrival/departure/total) and use these ratios to project future peak hour passenger values by multiplying the annual traffic values by the adjusted peak hour share;
3. Finalize PPHP values based on the nominal schedule and ratio approaches; and
4. Adjust load factors in nominal schedules to produce a consistent estimate of future PPHP values by traffic segment.

A nominal schedule is a forecast of specific flights: the airline, aircraft type, arrival and departure times, destination or origin and probable passenger loads. Firstly, the current year airline flight schedules of arriving and departing flights on the Busy Week are combined into a single aircraft schedule showing the times of arrival and departure of each aircraft, the origin of the arrival and destination of the departure, airline, aircraft type, seats, etc. A Busy Week aircraft schedule is then developed for each of the forecast years 2020, 2025, 2030 and 2035. This is done by assigning new flights or modifying existing flights so that the traffic in each sector grows at a similar rate as annual traffic, allowing for any changes in seasonality. Input from airlines and airport staff regarding likely route development and fleet changes are used.



Some of the elements taken into account in developing the nominal schedules include:

- Current schedules to each destination and whether carriers will likely add frequency or up-gauge aircraft;
- Fleet development plans of airlines and likely replacement of older aircraft types;
- Operational suitability of aircraft type;
- The aircraft rotations and banks of flights for hub carriers;
- The time of day of current flights and flight times; and
- Airport curfews and other limitations which might exist at YLW and/or the airport at the other end of the route.

August is the busiest month for domestic and total passenger traffic at YLW, while March is the busiest month for international passengers (both transborder and other international) and is the third busiest month for total traffic. The schedules in the second week of August and March in 2015 were examined for use as the Busy Week. The week in March was found to have 8 more flights than the week in August (254 vs 246) but 2% less seats (20,721 vs 21,159). The August week had less than half as many international flights (14 vs 36) and only a third as many seats as the March week. For domestic, the numbers of flights and seats were 6% and 13% less, respectively, in March, but the busiest two days had only one less flight each (34 vs 35) in March. So as to best represent the various segments of traffic for determining the PPHPs and aircraft gate requirements, the second week in March was taken to be the Busy Week and used as the basis for developing the nominal schedules. Load factors for domestic flights were based on the higher August load factors and increased by 4% so that they would better reflect the peak hour passengers in August.

The NCAMS data obtained for Statistics Canada was used to estimate the PPHP values using the 30<sup>th</sup> busiest clock-hour and the 98<sup>th</sup> percentile of rolling 60-minute interval hourly passengers over the year based on actual aircraft movements but with estimated passengers allowing for higher values in the peak periods. This approach is useful, particularly for domestic flights, as it considers all flights over the whole year. These were also used in finalizing the PPHP values.

#### **4.1.2 FACTORS AFFECTING PEAK HOUR TRAFFIC**

Airlines serving YLW will be upgrading their fleets over the forecast period and the new more fuel efficient aircraft that will be replacing the existing aircraft often differ in seat capacity and, more importantly, size/wingspan affecting ICAO Code. The most important changes are as follows.

- **DHC-8-300** (50-seat) replaced with the **Q400** (74 seats, 50% more), both Code C, but preference is for Q400 to use a loading bridge;



- **CRJ** (50-seat) replaced with the **Q400** (74 seats, 50% more), change Code B to C (wingspan 21.1 to 28.4 m), both use loading bridges;
- **E90** –replaced with the CS100 or CS300 – the CS100 will have similar seat capacity as the E90, while the CS300 would be about 25% greater, and both are same Code (C), but the wingspan increases from 28.7 to 35.1 m for CS100/300;
- **B767** – replaced with B787, both have similar seat capacity, but Code changes from D to E;
- **B737** and **A320** aircraft –likely be replaced with B737-MAX and A320-NEO models, possibly with higher seat capacity, all have similar wingspan and will remain Code C; and
- **A319** – likely replaced with CS300 or A319-NEO, both have similar seat capacity and wingspan and will remain Code C.

The net effect of the aircraft replacements will be that slower growth in aircraft required in peak periods due to increases in aircraft seat capacity, increased demand for loading bridges, and/or the wingspan and Code of aircraft will increase. The latter issue can result in additional terminal frontage and apron area being required to handle the same number of passengers.

Load factors are fairly high at YLW, averaging 78% for domestic and 76% for transborder in 2014, but will likely increase over time as airlines continue to better match capacity with demand and reduce costs.

#### **4.2.3 ASSUMPTIONS**

The major air services changes incorporated into the nominal schedules for YLW are as follows:

- Air Canada replaces CRJ and DHC-8-300 aircraft with Q400s gradually over next 7 years, and E90 with CS100 or CS300 between 2020 and 2025;
- WestJet adds second daily to Victoria using Q400 by 2020;
- WestJet adds new daily using Q400 to Comox by 2020 and to Nanaimo by 2030;
- United SFO flight restored to daily by 2020, WestJet serves LAX by 2030;
- New commuter service to Terrace and to Fort St. John by 2020;
- New service to central U.S. hub (Minneapolis or Chicago) by 2025;
- New weekly seasonal charter service to Europe using B767-300 by 2025, switching to B787 by 2035;
- Additional flights to sunspot vacation destinations in southwest U.S. and Mexico; and
- Increases in frequency and/or aircraft size on other routes.

Passenger values were calculated for each flight based on estimated load factors in the peak period. These load factors were assumed to be about 5% higher than average load factor for the airline and sector in that month, March for international and August for domestic in 2015. The



domestic load factors were increased by 4% to account for the use of March instead of August for the Busy Week. Load factors at YLW are relatively high in 2014, but declined in 2015 by approximately 3%, but are expected to increase 2014 levels by 2020 then increase slightly over next 25 years, more so for those segments with lower load factors. Load factors used in the peak hour analysis are presented in Exhibit 4.1. It was also assumed that the load factors on transit flights will be marginally higher and load factors were increased by 5% more than those in the table.

**Exhibit 4.1**  
**Load Factors in the Busy Week Used in the Peak Hour Passenger Analysis**

Airline	Sector	2016	2020	2025	2035
Air Canada	Domestic	86%	89%	89%	90%
	Transborder	86%	89%	89%	90%
	Other Int'l	86%	89%	89%	90%
WestJet	Domestic	86%	89%	89%	90%
	Transborder	86%	89%	90%	90%
	Other Int'l	87%	90%	90%	91%
Tier 3 carriers	Domestic	65%	69%	70%	71%
U.S. carriers	Transborder	79%	82%	82%	84%
Charter	International	93%	93%	93%	93%
Other	Domestic	85%	85%	86%	86%

Note: includes a 4% increase for domestic due to use of week in March as the Busy Week

## **4.2 CURRENT PASSENGERS BY DAY OF WEEK AND HOUR OF DAY**

Exhibits 4.2 to 4.4 present the numbers of deplaning/arriving and enplaning/departing passengers (separately) by day and hour during the Busy Week in 2016 overall and for each sector. The peak activity on each day is fairly similar during the mid-week period, but is different on the weekend which has higher peaks. For total traffic, the daily arriving peak is on Sunday at 20:20, while the departing peak is greatest on Saturday and occurs around 10:45. For domestic traffic, the arrivals peak is at around 20:45 on Thursday, 19:15 on Sunday and 9:45 on other days, while departing peaks occur between 10:45 and 11:30 on most days, the greatest being on Sunday. International daily peaks are based on only a few flights and for arrivals occurs around 20:15 on Sunday, and for departures occurs at 7:00 on Sunday and 16:00 on Saturday.

The PPHP values found using the Busy Week schedule were very similar to those estimated based on the NCAMS flight-by-flight data over the whole year. Differences between the two approaches were 15 for total arrivals, total departures and domestic arrivals. The PPHP values given in the charts are the final values based on the two approaches.

Exhibit 4.2 Total Arriving and Departing Passengers at YLW by Hour and Day of Week, Busy Week, 2016

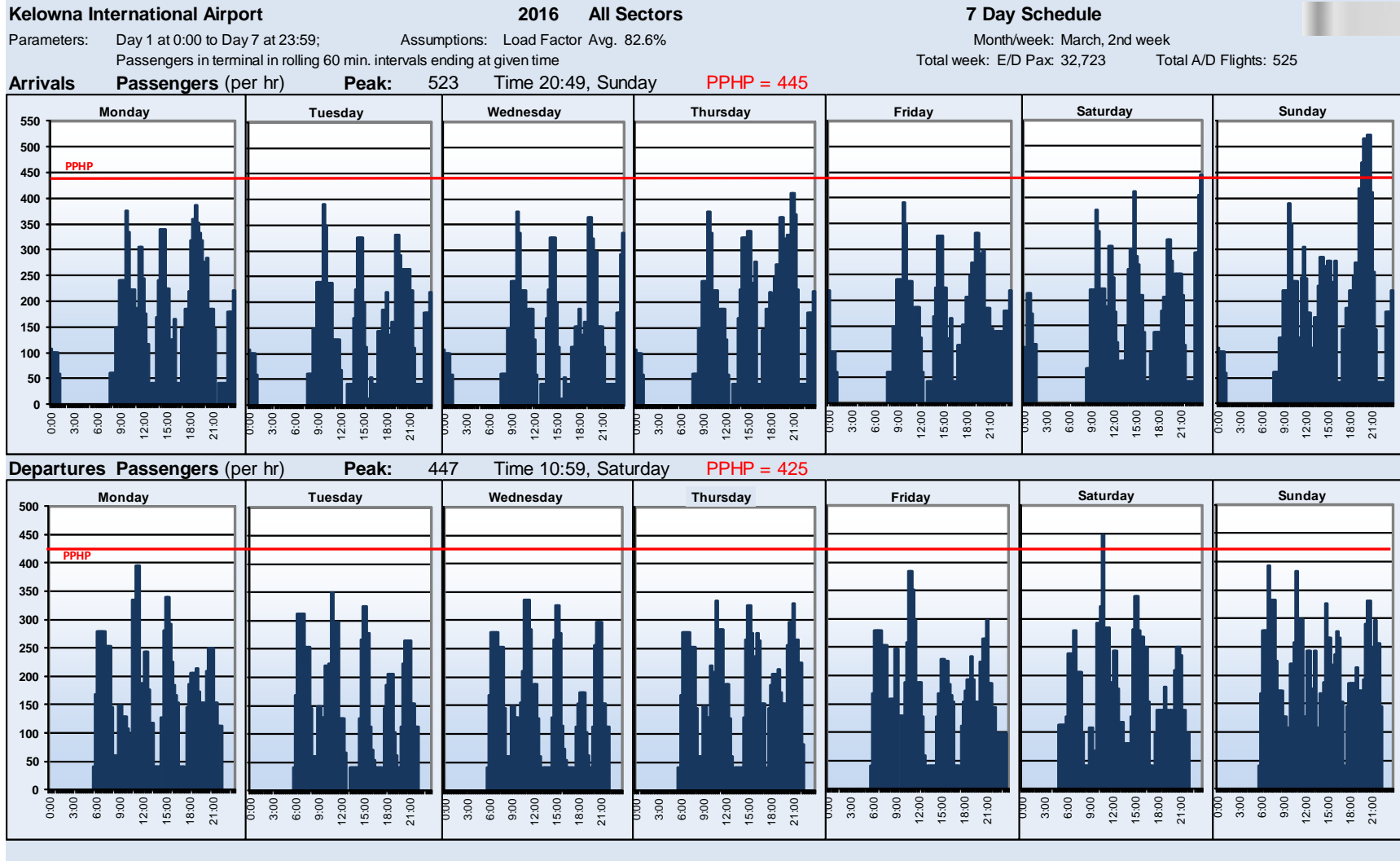
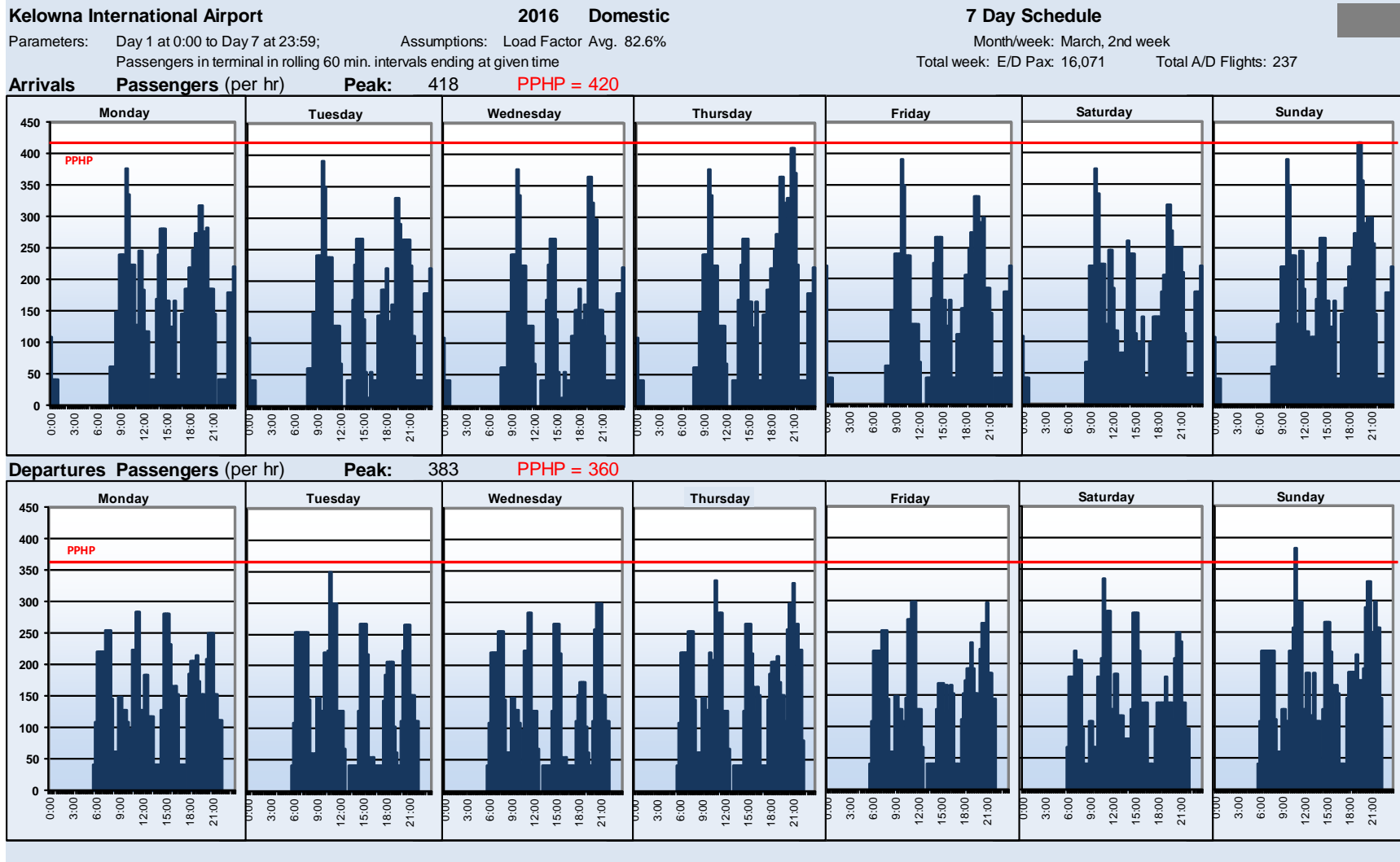
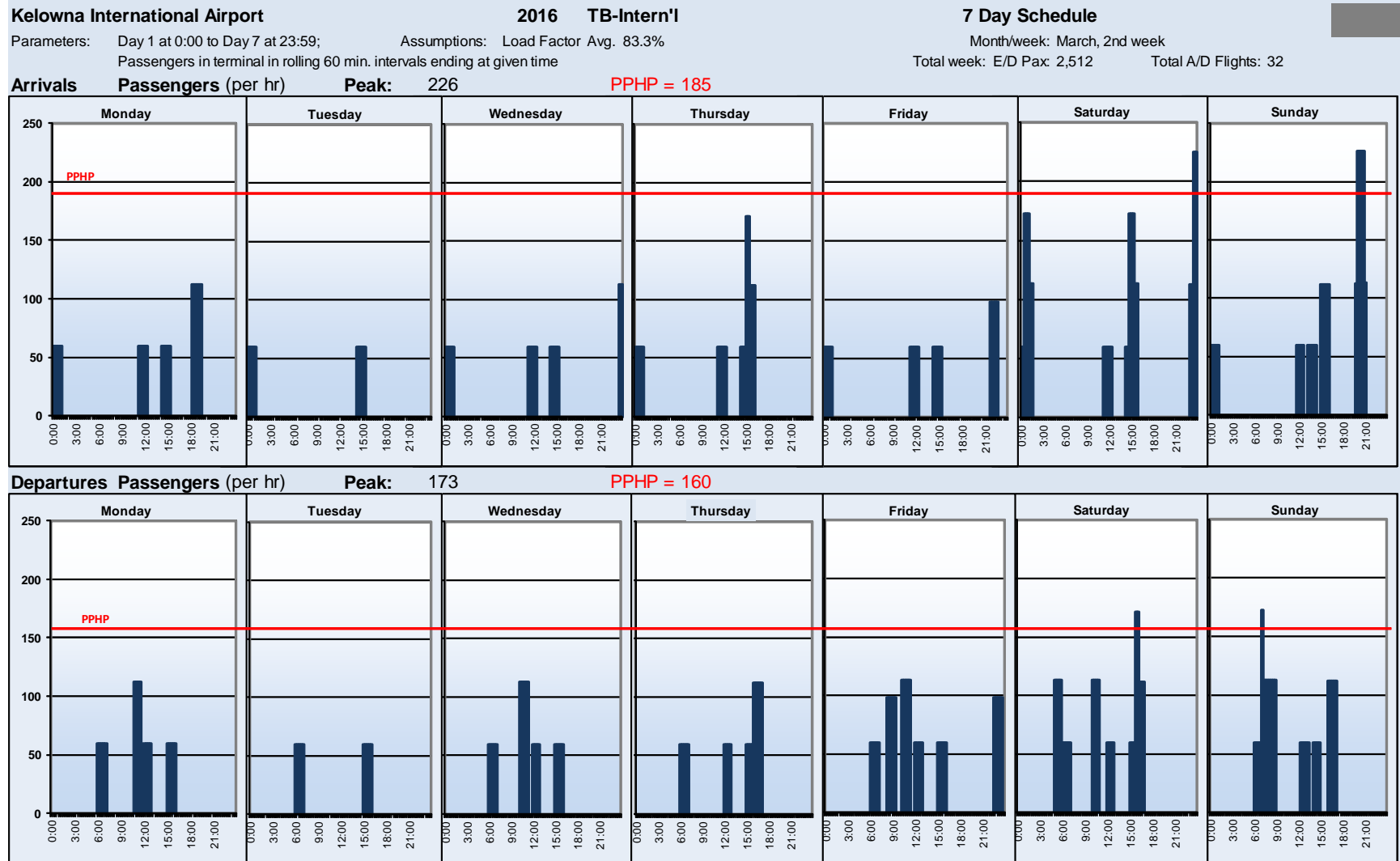


Exhibit 4.3 Arriving and Departing Domestic Passengers at YLW by Hour and Day of Week, Busy Week, 2016



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**Exhibit 4.4 Arriving and Departing International Passengers at YLW by Hour and Day of Week, Busy Week, 2016**





### 4.3 FORECAST PEAK PASSENGER ACTIVITY

Due to the different processing requirements, planning peak hour passenger (PPHP) forecasts were developed separately for the following segments of traffic:

- All sectors combined for both arriving and for departing;
- Arriving domestic passengers;
- Arriving international passengers (including transborder);

Departing passengers are not required to be segregated by sector, thus separate peak hour values by sector are not required. The peak hour passenger forecasts by segment, and combined over all segments, are used for the sizing of various facilities and all are needed when determining facility requirements.

Exhibit 4.5 presents the mid-range (median), mean, second greatest and maximum values of the daily peaks in hourly passengers on all flights at YLW from the nominal schedules, together with peak passenger values obtained using the Ratio Method<sup>11</sup>. These are used in setting the recommended PPHP values which are also presented. Nominal schedules were not prepared for after 2035 due to the uncertainty predicting schedules that far into the future and PPHP values for these years are based on the 2035 values and the growth in annual traffic after 2035.

**Exhibit 4.5  
Peak Hour Passenger Values during Busy Week and Recommended PPHP – All Sectors**

	Nominal Schedule - Rolling 60 min Intervals					Recommended
Year	Median	Average	2nd Greatest	Maximum	Ratio Method	PPHP*
<b>Arrivals</b>						
2016	390	417	445	523	445	445
2020	484	527	607	616	520	565
2025	538	552	618	666	606	600
2030	559	579	646	666	685	630
2035	611	607	646	666	768	660
2040					856	715
2045					947	770
<b>Departures</b>						
2016	384	377	447	447	425	425
2020	472	474	472	510	497	485
2025	555	549	555	556	579	560
2030	598	592	599	600	655	605
2035	620	636	672	715	734	675
2040					818	735
2045					905	780

\* PPHP values in 2016 also based on NCAMS flight-by-flight data over the whole year not shown in table

<sup>11</sup> Ratio method forecasts PPHP values based on the ratio of PPHPs to annual passengers by segment in 2015 and forecast growth in annual passengers by segment.



The recommended PPHPs increase at a slower rate over the forecast period than would be expected based on total passenger growth (represented by the values with the Ratio Method). This occurs because much of YLW's traffic flies to two main hubs, YVR and YYC, plus, to a less extent YEG, and as airlines increase capacity on those routes they will often increase the frequency to those hubs, rather than increase the size of aircraft. Initially Air Canada will replace the 50-seat DHC-8-300 and CRJs with the larger Q400s, and once the DHC-8-300s have been replaced, they will increase frequency. WestJet will likely add frequency using Q400s and later possibly up-gauge some of these to 737s. Peak hour passenger values for domestic and international arrivals are presented in Exhibit 4.6.

**Exhibit 4.6**  
**Peak Hour Passenger Values during Busy Week and Recommended PPHP – By Traffic Segment**

Year	Nominal Schedule - Rolling 60 min Intervals				Ratio Method	Recommended PPHP*
	Median	Average	2nd Highest	Maximum		
Arrivals	Domestic					
2016	390	391	410	418	420	420
2020	454	467	475	505	489	485
2025	459	487	533	544	567	520
2030	470	494	533	544	638	545
2035	497	504	533	544	711	565
2040					789	590
2045					868	610
Arrivals	International					
2016	113	144	225	226	185	185
2020	233	202	234	291	216	235
2025	234	241	292	386	251	280
2030	235	286	376	391	283	325
2035	292	309	376	391	317	340
2040					352	375
2045					389	405

Note: Departing passengers are not required to be segregated by sector, total departures given in previous table

\* PPHP values in 2016 also based on NCAMS flight-by-flight data over the whole year not shown in table

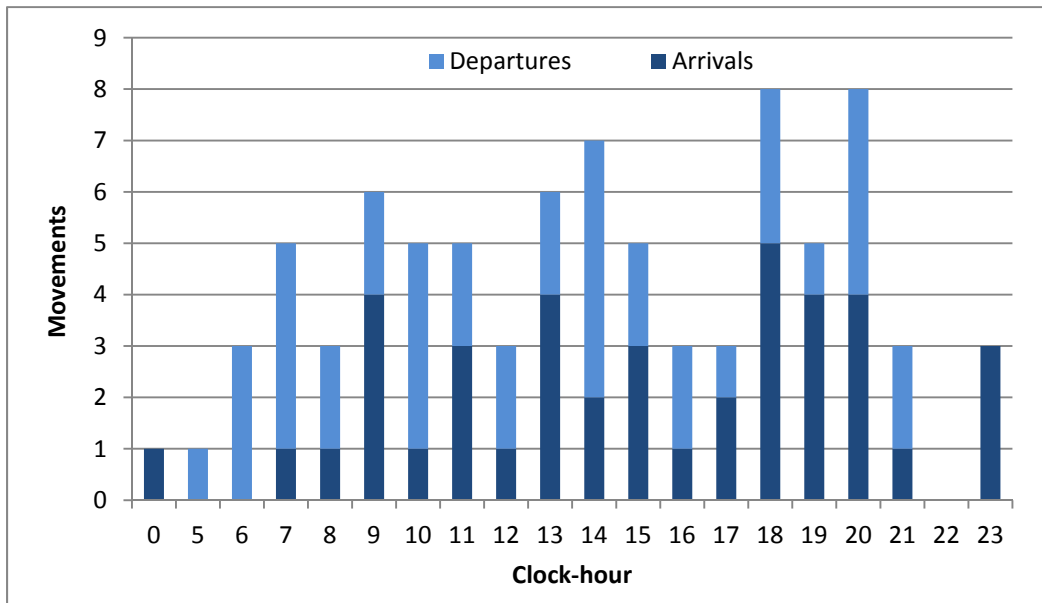
The recommended PPHP values are based on the Medium growth scenario. An indication of the impact of the higher growth scenario was examined by including the proposed schedule for New Leaf Airlines. The additional flights would increase the PPHP by 80 for arrivals and 35 for departures. The domestic arrivals, however, only increase by 5 as the new flights don't occur in the domestic peak period.

#### **4.4 FORECAST PEAK AIRCRAFT ACTIVITY**

Movements of aircraft on commercial passenger (scheduled and major charter) service by clock hour on the busiest day of the Busy Week, Sunday, in March 2016 are presented in Exhibit 4.7. Sunday was the busiest day with 41 arrivals and 42 departures. The maximum movements in a clock-hour was 8, occurring in the two hours 18:00-18:59 and 20:00-20:59, with either 4 or 5 arrivals. The maximum number of movements in a sixty minute interval on the busiest day of the Busy Week was 9 at around 14:00 and 20:00, down from 10 in 2015.

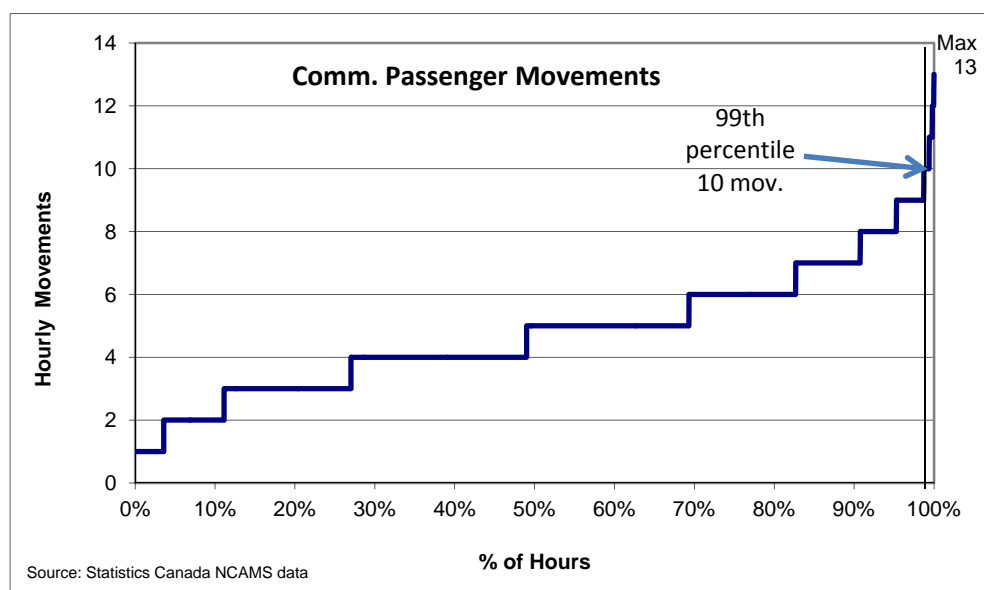


**Exhibit 4.7**  
**Commercial Passenger Aircraft Movements by Hour on Busiest Day of the Busy Week, 2016**



Movement data for the 12-month period March 2014 to February 2015 obtained from Statistics Canada was used to examine the distribution of hourly flights over the year. Exhibit 4.8 shows the distribution of hourly commercial passenger aircraft movements over the year at YLW. The number of the maximum hourly movements over the year was 13, the 95<sup>th</sup> percentile<sup>12</sup> was 8, and the 99<sup>th</sup> percentile was 10 similar to the maximum number in a 60-minute interval in the Busy Week schedule in 2015.

**Exhibit 4.8**  
**Distribution of Commercial Passenger Hourly Aircraft Movements, March 2014 – February 2015**

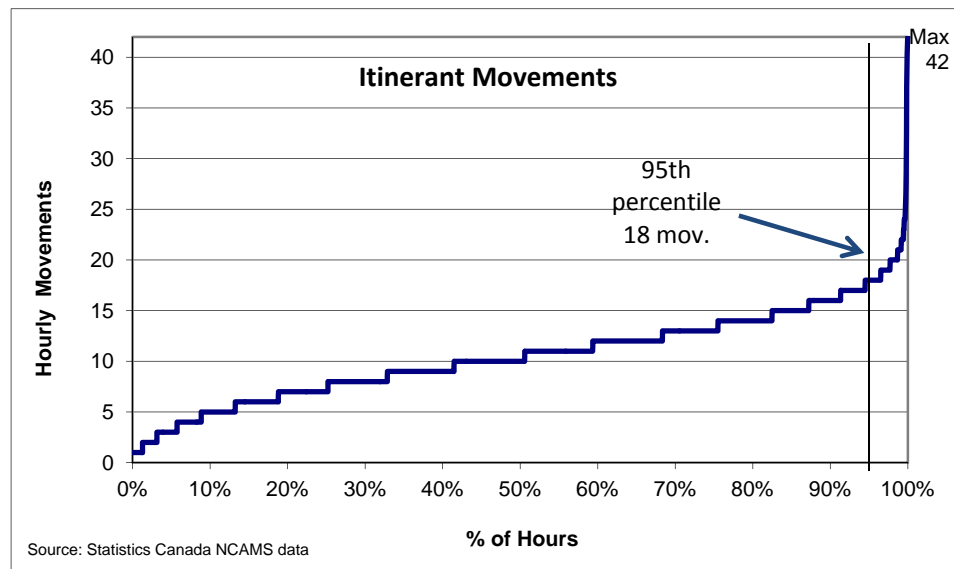


<sup>12</sup> 5% of movements are in hours with more movements than the 95<sup>th</sup> percentile value



Exhibit 4.9 shows the distribution of hourly itinerant aircraft movements over the year at YLW. The maximum number of itinerant movements in an hour in the 12 month period was 42 which occurred on June 7, 2014 at 11:00-11:59. The 95<sup>th</sup> percentile of the hourly itinerant movements over the year was 18 and the 99<sup>th</sup> percentile was 21. During the peak hour, 49% of movements were arriving aircraft.

**Exhibit 4.9**  
**Distribution of Itinerant Hourly Aircraft Movements, March 2014 – February 2015**



Helicopters account for 6% of itinerant movements at YLW and do not use the runway. The maximum number of itinerant movements in an hour where a runway was used in the 12 months was 40 and the 95<sup>th</sup> percentile of the hourly movements was 17.

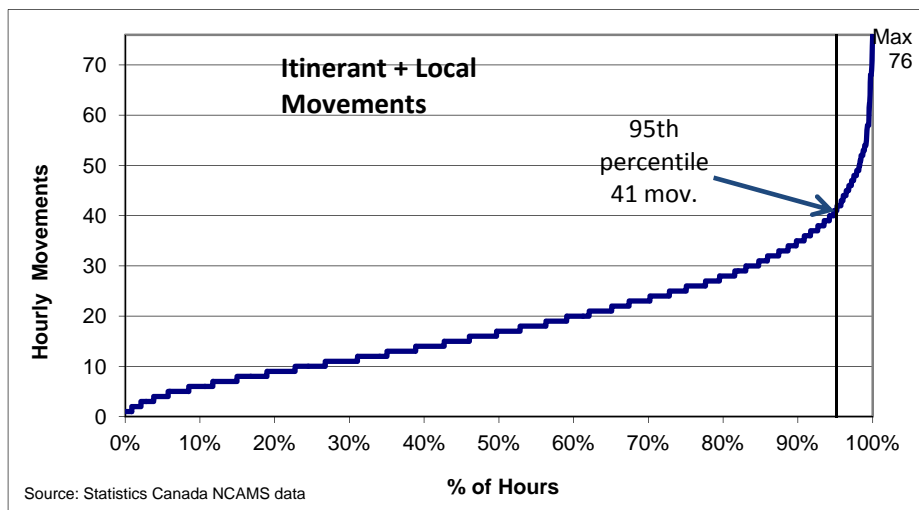
The maximum number of local movements in an hour of the 12-month period was 64 and the 95<sup>th</sup> percentile of hourly local movements was 36.

The distribution of hourly total movements (itinerant plus local) is presented in Exhibit 4.10. The maximum number of all movements in an hour in the 12 months was much higher than for itinerant, 76, and the 95<sup>th</sup> percentile was 41 and the 99<sup>th</sup> percentile 54. Excluding movements not using a runway, the maximum was again 76 and the 95<sup>th</sup> percentile was 40. During the peak periods around 70% of movements are local, averaging 30 per hour. During the busiest hours with around 60 movements per hour, Touch-and-Go movements account for roughly half the movements according to Nav Canada staff. Using this ratio, it is estimated that of the 40 PPHMs, 20 are Touch-and-Go movements.



**Exhibit 4.10**

**Distribution of Hourly Total Aircraft Movements, March 2014 – February 2015**



The Planning Peak Hour Movement (PPHM) values are based on the 95<sup>th</sup> percentile hourly movements, except for commercial passenger movements where the 99<sup>th</sup> percentile hourly movements is used. Growth in commercial passenger PPHMs is based on growth in maximum hourly movements in the nominal schedules. Forecasts of the PPHM for itinerant movements were developed based on the PPHM value of 18 movements in 2014 and the forecast growth in itinerant movements at YLW<sup>13</sup>. It is assumed that the peaking characteristics in relation to total traffic will remain the same over the forecast period. Forecasts of PPHM for all movements (itinerant + local) were developed considering the local movements in the peak hour (41-18 = 23) and the forecast growth of local movements. Forecast for itinerant and total movements using the runway were developed in a similar way. Forecasts of the maximum number of movements per hour and the PPHM are presented in Exhibit 4.11.

**Exhibit 4.11**

**Forecast Planning Peak Hour Activity for Aircraft Movements**

Segment	2014	2015	2020	2025	2030	2035	2040	2045
Itinerant - Max. Hourly	42	47	48	58	57	61	65	69
Sched. Pass. Aircraft	10	10	11	11	12	15	16	17
Itinerant using Runway	17	18	19	20	22	23	25	26
Itinerant	18	19	20	22	23	25	26	28
All (Itinerant + Local)	41	42	43	44	46	47	48	49
Itinerant + Local Excluding Helicopters	40	41	42	43	44	45	47	48

<sup>13</sup> PPHM values for 2015 were determined based on the PPHM values in 2014 and the increase in average monthly peak hour movement values in 2015 compared to 2014 using published Statistics Canada values in CANSIM Table 401-0007



## 4.5 BUSY DAY TRAFFIC

The Busy Day is typically taken to be the second busiest day of the Busy Week and is representative of the 95% busiest day over the year. For total traffic, the Busy Day is a Thursday and the numbers of arriving and departing flights and passengers on that day are summarized in Exhibit 4.12. The busiest day of the week is Sunday for most years, particularly for international passengers where there is more variation over the week. The Busy Day flight schedule for the planning years are summarized in Appendix B.

**Exhibit 4.12  
Forecast Busy Day Flights and E/D Passengers**

Year	Flights			E/D Passengers		
	Arriving	Departing	Total	Arriving	Departing	Total
2015	39	40	79	2,730	2,730	5,460
2016	39	38	77	2,800	2,768	5,568
2020	45	46	91	3,415	3,310	6,725
2025	52	53	105	4,021	4,002	8,023
2030	58	59	117	4,461	4,442	8,903
2035	64	66	130	4,893	5,031	9,924
2045	76	78	154	5,872	6,038	11,910

## 4.6 AIRCRAFT GATING REQUIREMENTS

The nominal schedules were used to determine the aircraft gating requirements. The ratio method of scaling up current gate requirements based on increases in annual commercial passenger aircraft movements provides an additional simple check, but does not take into account changes in the composition of the fleet and differing growth rates between regions.

### 4.6.1 AIRCRAFT GATE ASSIGNMENT

In assigning aircraft to gates, it was assumed that aircraft at the airport for over a minimum specified time will be moved off the gate if the gate is required by another aircraft. The gate assignments are considered for planning purposes. The following criteria were used in the assignment of aircraft to gates:

- Buffer time between departure and arrival of at least 20 minutes;
- For cases where aircraft are moved from the gate, the maximum time at a gate without being moved varies from 1.5 hours for Code B & C aircraft to 2 hours for Code D & E aircraft; if moved, the aircraft is moved 20-45 minutes after arrival and is moved back 30-60 minutes before departure (low values for Code B, high values for Code E);
- Smaller aircraft can use the gates suitable for larger aircraft (e.g., Code C aircraft use Code D and E gates), but larger aircraft cannot use smaller gates; and



- International flights must use either an international or swing gate on arrival, domestic flights must use either domestic or swing gates on arrival, and while there is no distinction between sectors for departing flights.

Aircraft were classified by ICAO Aerodrome Aircraft Reference Code. To distinguish aircraft that do, or do not use a loading bridge, Code B regional jets are designated as Code B+, while the DHC-8-300 is designated Code C-. The classifications used were as follows:

- B Wingspan < 24m and turboprop (BE1900, Metroliner)
- B+ Wingspan 24 - 28m RJ (CRJ, CR7, CR9, E145) use a loading bridge
- C- Wingspan 24 -36m (DHC-8-300) do not use a loading bridge
- C Wingspan 24 -36m (737, 319, 320, 321, E170, E190, Q400) use a loading bridge
- D Wingspan 36 - 52m (757, 767)
- E Wingspan 52 - 65m (330, 787, 777, 747)

#### **4.6.2 EXISTING GATES**

YLW currently has nine operational aircraft gates, including:

- One Code D gate with a loading bridge (Gate 4);
- Seven Code C gates, four with loading bridges (Gates 6, 7, 8 & 9) and three without loading bridges (Gates 1, 2 & 3); and
- One Code B gate with no loading bridge (Gate 10).

There is currently one non-operational gate, Gate 5, which can handle Code C aircraft up to the size of a Q400. Gate 5 is closed until construction of the baggage room is completed in 2017. Other characteristics of specific gates include::

- Gates 1 and 2 can be occupied by one Code E, but Gates 3 and 4 cannot be occupied while a Code E enters or exits the Gates 1 and 2 area.
- Gate 4 is a Code D swing gate, but limited to no larger than B767-300ERW. An MD-11 or a B767-400 would not fit at this gate; and
- Gate 10 is a Code B gate, but limited to no larger than Beech 1900D (used by Central Mountain Air).

In total, five gates have loading bridges: one Code D and four Code C gates. Two of the Code C gates with loading bridges can be used for DHC-8-300 aircraft. The DHC-8-300s can also use the three walkout Code C gates. All gates can be used for either domestic or international flight, although Gates 3 and 4 are specifically designated for international use (but Gate 3 does not have a loading bridge).

Plans are for Gate 3 to be equipped with a loading bridge by 2017 or 2018. Also, Gate 10 could become a Q400 non-bridged stand, but with restrictions depending on the size of aircraft parked at Gate 9.

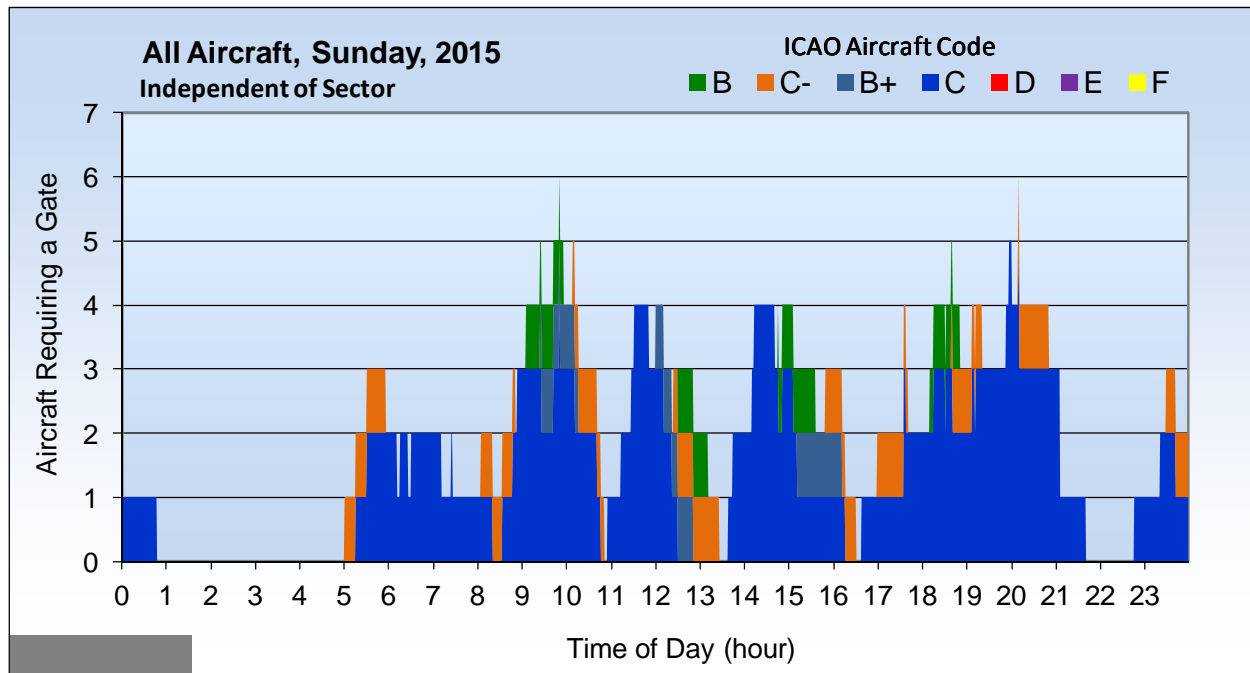


#### 4.6.3 MINIMUM CURRENT AND FORECAST REQUIRED GATES

The minimum number of gates required to gate aircraft for each of the nominal schedules was determined considering the numbers of aircraft requiring a gate over the day and creating gate charts with aircraft assigned to particular gates, in each case allowing for the buffer times and removal from the gate if minimum removal times are exceeded. Note that the number of aircraft requiring a gate may be less than the number of gates required to gate these aircraft as it is assumed aircraft are not moved between gates which are empty for short times to reduce the total gates required. The numbers of aircraft requiring a gate does, however, provide a very good indication of the demand levels and typically the number of gates required is roughly 10% greater.

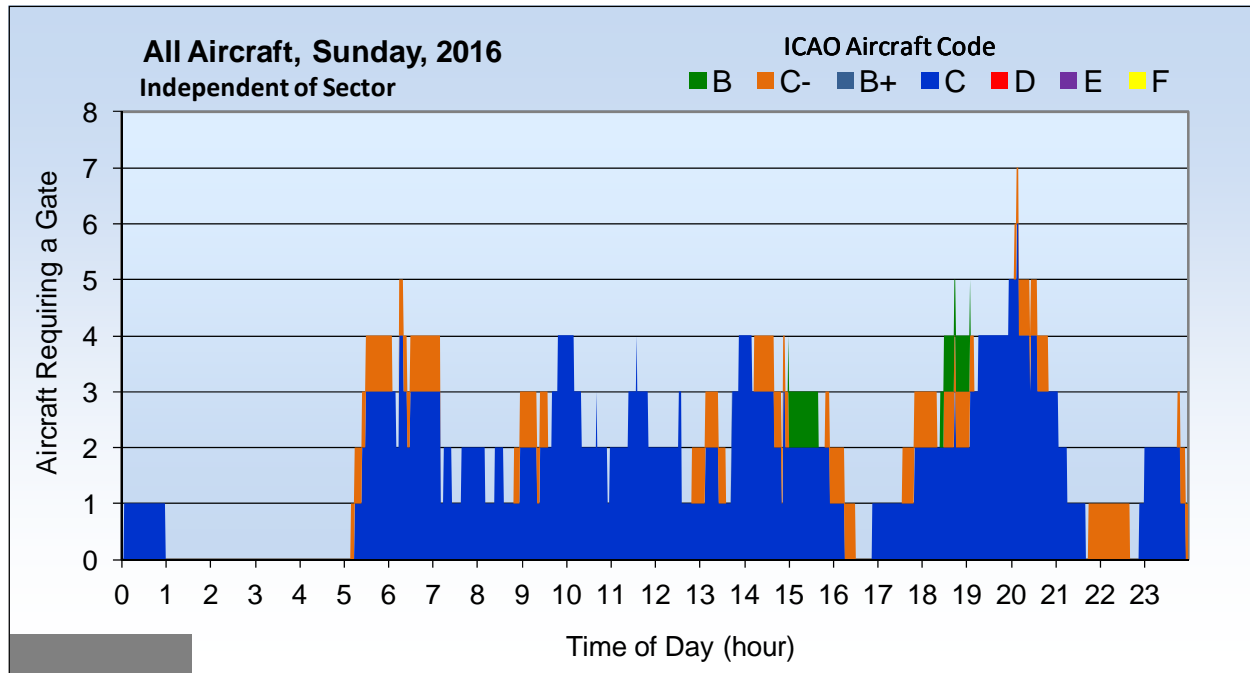
The numbers of aircraft requiring a gate were examined for each day of the Busy Week using the nominal schedules and Sunday was found to be the day when the most gates are required in each year of the forecast years. The numbers of aircraft requiring a gate, independent of sector, on the Sunday of the Busy Week in 2015, 2016, 2020, 2025, 2030 and 2035 are presented in Exhibits 4.13 to 4.18. Note that if all international gates are swing gates, as is presently the case, accounting for sector of the flights will not increase the total number of gates required. The gate requirements become very peaked in 2016 due to the change in flight times of the Air North flight which operates once per week.

**Exhibit 4.13  
Numbers of Aircraft Requiring a Gate by ICAO Code, Busiest Day of Busy Week, 2015**

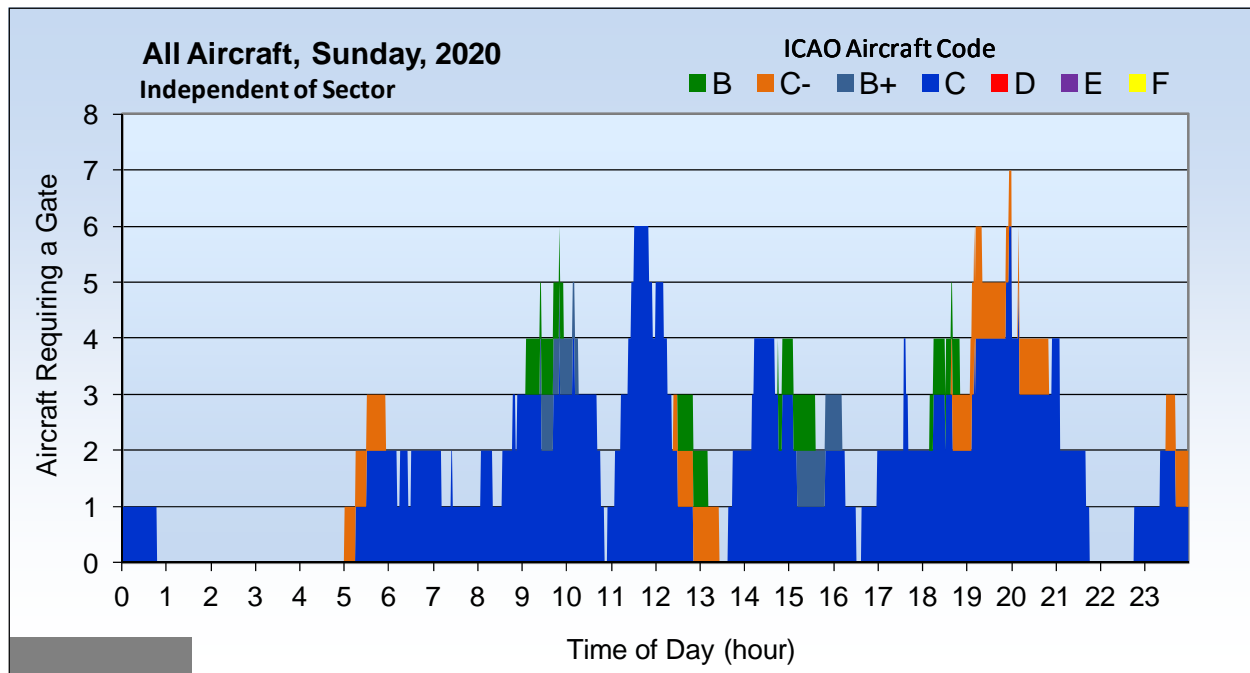




**Exhibit 4.14**  
**Numbers of Aircraft Requiring a Gate by ICAO Code, Busiest Day of Busy Week, 2016**

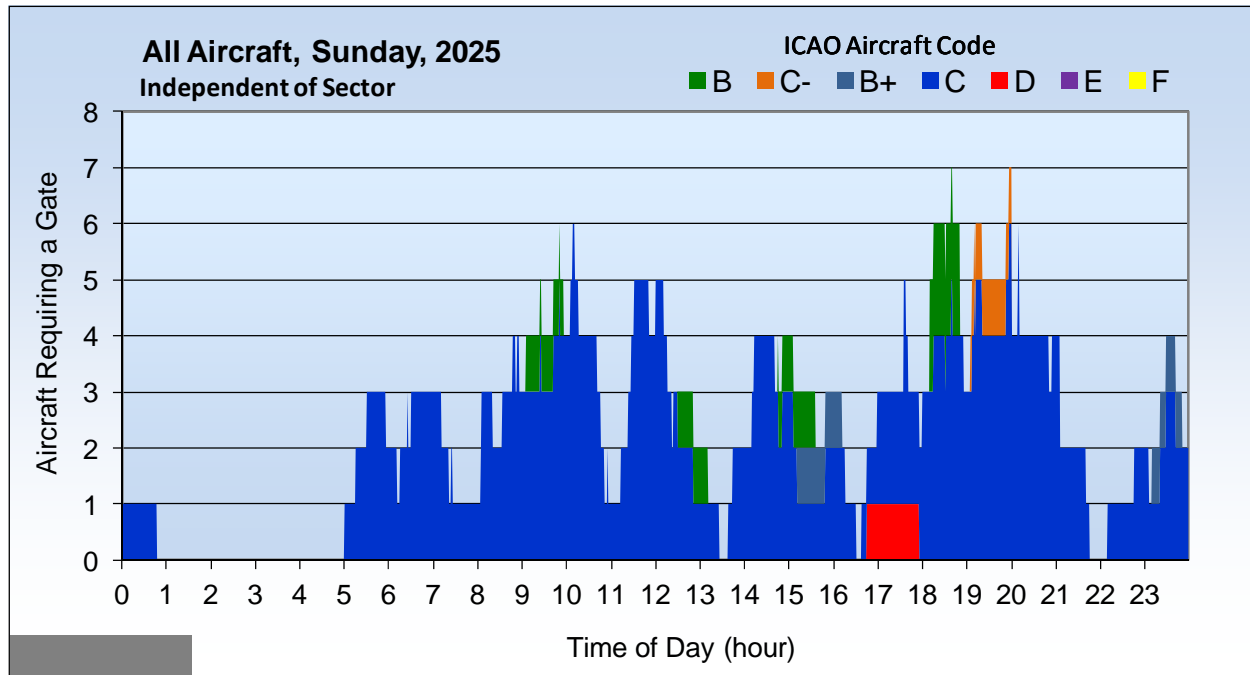


**Exhibit 4.15**  
**Numbers of Aircraft Requiring a Gate by ICAO Code, Busiest Day of Busy Week, 2020**

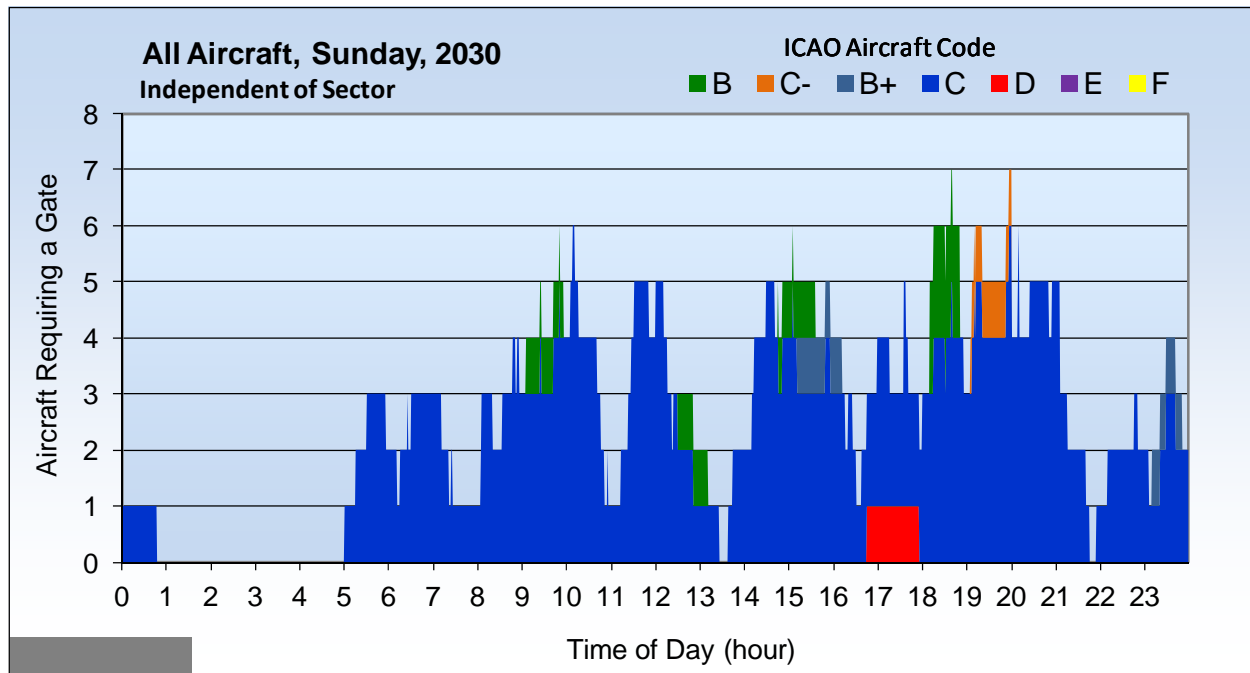




**Exhibit 4.16**  
**Numbers of Aircraft Requiring a Gate by ICAO Code, Busiest Day of Busy Week, 2025**

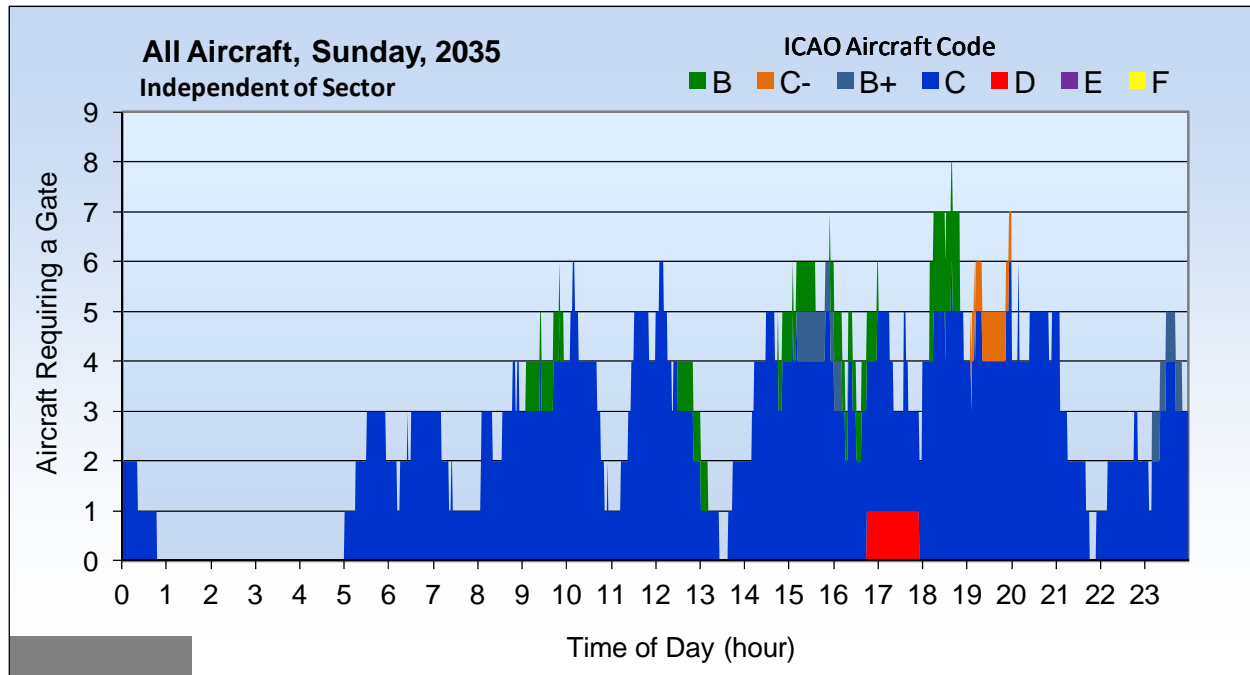


**Exhibit 4.17**  
**Numbers of Aircraft Requiring a Gate by ICAO Code, Busiest Day of Busy Week, 2030**





**Exhibit 4.18**  
**Numbers of Aircraft Requiring a Gate by ICAO Code, Busiest Day of Busy Week, 2035**



The peak periods for aircraft requiring a gate, assuming they can be transferred to a remote stand if not requiring a gate at that time, is around 9:40 and again at 20:15 in 2015, and is around 20:15 in 2016. Four Code C or B+ aircraft require a loading bridge in 2015 and five in 2016, and two Code B or C- aircraft requiring a walkout gate (or loading bridge for DHC-8-300s) in both years. In later years Sunday evening remains the period of greatest demand for gates.

In the above exhibits, aircraft are assumed to be removed from the gate so as to indicate the minimum numbers of aircraft requiring a gate. The exhibits therefore do not show the overnighting aircraft, nor those aircraft on the remote stand. Exhibit 4.19 shows the numbers of aircraft requiring a **gate or stand** by ICAO Code and time of day for the busiest day for overnighting aircraft, Thursday, for each of the planning years. These charts provide an indication of the minimum total gates and remote stands required.

Gating charts were developed for each of the nominal schedule years, 2015, 2020, 2025, 2030 and 2035. The gating chart for the 2020 schedule is presented in Exhibit 4.20 and charts for all five years, including remote stand requirements, are included in Appendix A. Gate number and types given on the chart match existing gates at YLW. The gates are colour coded by sector (domestic, international or swing on arrival), as are the sectors of each aircraft on arrival and departure. Domestic charter flights are coloured separately.

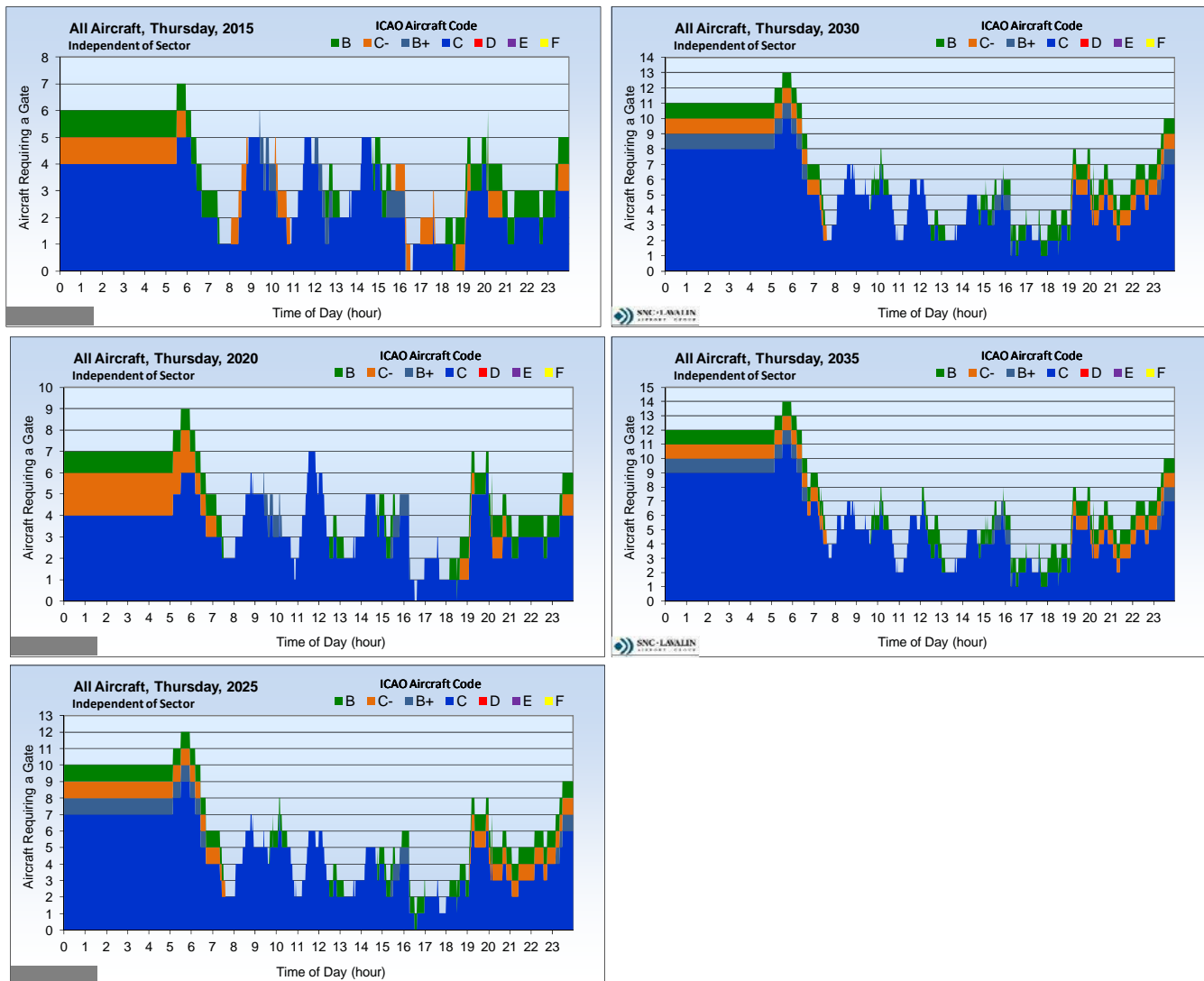
The exhibit shows that the existing eight gates plus one remote stand will be required in 2020. Two of the Code C (or D) gates must be swing gates able to handle international arrivals. However, on a less busy day for gate demand overall, Thursday, three swing gates are required. Note that it is possible to reduce the number of gates required by moving aircraft to another gate between arrival and departure, but for aircraft with short-to-medium turn times of less than 60 minutes, this is far from optimal. Only in one case is this done in the 2035 schedule where the turn-time was almost 2 hours and was done to



reduce the number of swing gates required.

### Exhibit 4.19

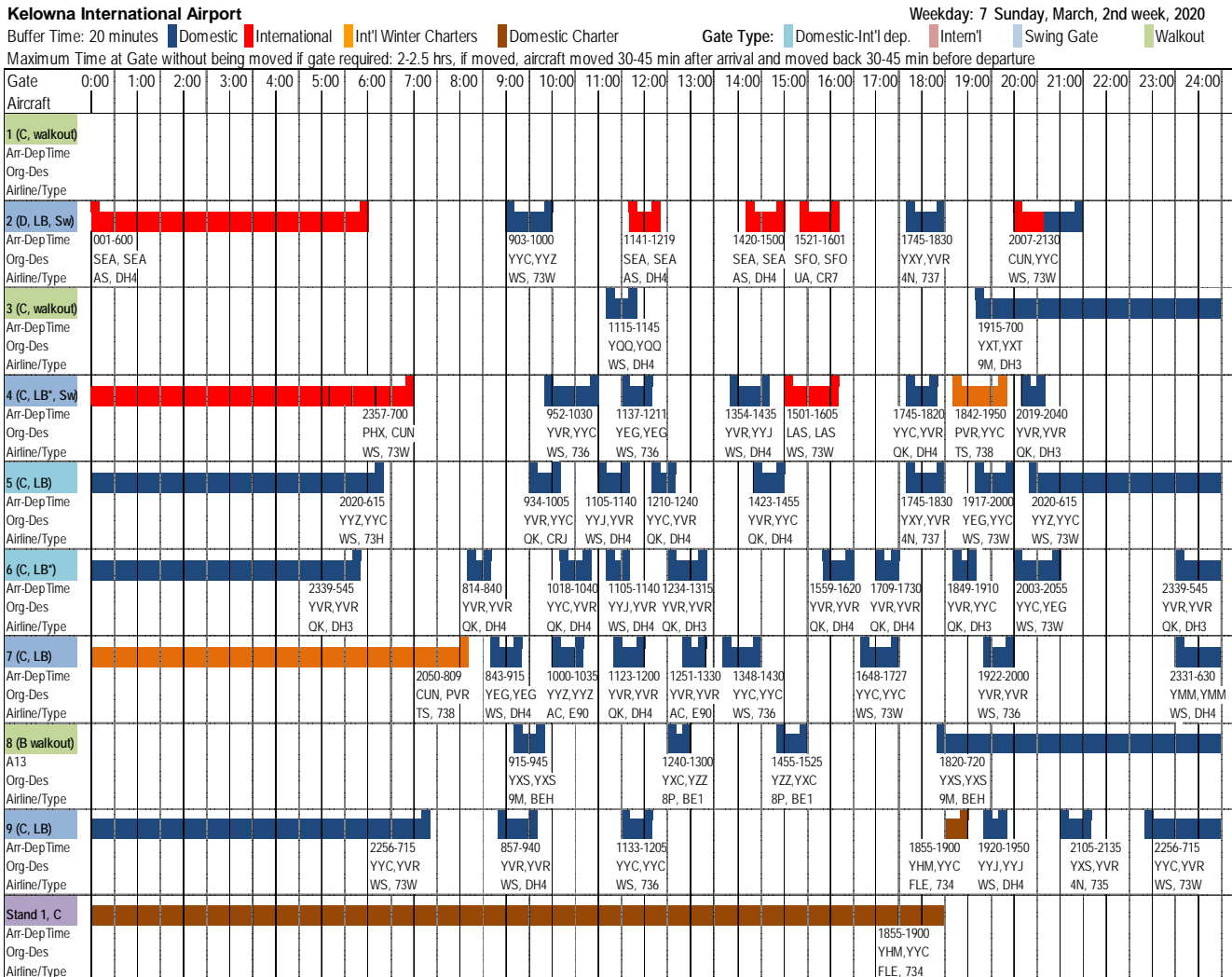
#### Aircraft Requiring a Gate or Stand by ICAO Code and Time of Day for the Busiest Day of Busy Week for Overnighting Aircraft, Thursday, for Each Planning Year





## Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

### Exhibit 4.20 Aircraft Gating Chart for Busiest Day of Busy Week, 2020



The minimum numbers of required gates by ICAO Code and number which must be swing gates and the number of remote stands by forecast year based on nominal schedules are presented in Exhibit 4.21. Note that it is assumed that Code B turboprops (e.g., B1900D) do not use Code C gates with loading bridges as walkout gates. The number of remote stands required is forecast to increase as more flights have late evening arrivals and early morning departures. These flights often don't operate on Saturday evening-Sunday morning and the number of remote stands required is therefore less on the Sunday for which the gate charts are provided. The total minimum required number of gates based on the forecast schedules increases at slightly less than the minimum number based on growth in commercial passenger aircraft movements. However, the total gate and remote stand required, shown at the bottom of Exhibit 4.21, increase at slightly more than the growth in commercial passenger aircraft movements.



**Exhibit 4.21  
Minimum Gates Required by ICAO Code Based on Nominal Schedules**

Type of Gate / Stand	ICAO Size Code	ATB (2016)	2015	2016	2020	2025	2030	2035	2040	2045
No Loading Bridge	B	1	1	1	1	1	1	1	1	1
	C	3 (+1*)	1	1	1	1	1	1	1	1
Req. Loading Bridge	B+	0	0	0	0	0	0	0	0	0
	C	4^	5	6	6	6	6	7	8	8
	D (E)	1	0	0	0	1	1	1 (E)	1 (E)	1 (E)
All	Total	9 (+1*)	7	8	8	9	9	10	11	11
L/B gates which must be Swing**		2	2	2	3	3	3	3	3	4
Off-gate Parking Stands Code C			0	0	1	3	4	4	4	5
Total Gates + Stands		9 (+1*)	7	8	9	12	13	14	15	16

\* One Code C up to size of Q400 is closed to 2017

\*\* Able to handle arriving international flights

^ Three Code C bridged gates can also handle walkout loading of aircraft

Note: B+ aircraft are ICAO Code B aircraft which use a loading bridge (e.g., CRJ, CR7)

With the currently closed gate becoming operational in 2017, there will be ample gate capacity until after 2020.

The Code D gate would need to be enlarged to accommodate Code E aircraft if the B767-300 aircraft forecast to be used on the European charter service is replaced with a B787. The nominal schedules assume this occurs sometime after 2035.

With the closed Code C gate becoming operational in 2017, no new gates will be required until after 2025. The additional gates required **relative to the gate availability in late 2017** (i.e., with Gate 5 operational) based on the most likely future forecast schedules and current gate time parameters are as follows:

- By 2020: One additional remote stand
- By 2025: Three additional remote stands, and add loading bridge to an existing Code C gate,
- By 2030: Four additional remote stands, and add loading bridge to an existing Code C gate,
- By 2035: One additional Domestic Code C gate, four additional remote stands, and add loading bridge to an existing Code C gate
- By 2040: Two additional Domestic Code C gates, four additional remote stands, and add loading bridge to an existing Code C gate
- By 2045: Three additional Domestic Code C gates, five additional remote stands, and add loading bridge to an existing Code C gate



#### **4.6.5 IMPACTS OF HIGHER TRAFFIC GROWTH**

The ratio method was used to estimate the total additional number of gates required under the High Case scenario and it was assumed the ultra-low cost carrier, NewLeaf, would operate at YWL, initially using the scheduled proposed in January 2015. The additional gates under the High Case scenarios above those required under the Medium Case scenario are as follows:

- In 2020 1
- In 2025 1
- In 2030 1
- In 2035 2
- In 2040 2-3
- In 2045 3

## **APPENDIX A**

### **Aircraft Gating Charts for Busiest Day of Busy Week in 2015, 2020, 2025, 2030 and 2035**

**Notes:**

Charts are for the Busiest Day using the current (2015) and forecast nominal schedules.

Aircraft are removed from the gate if at the airport for more than 1.5-2 hours and gate is required by another aircraft. Also, aircraft may, if necessary, be moved between gates of different sectors if at airport more than 60 minutes. Buffer time between flights is 20 minutes.

The DHC-8-Q400 is denoted by DH4 in the gate charts



# Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

## Kelowna International Airport

Buffer Time: 20 minutes

Domestic International Int'l Winter Charters Domestic Charter

Gate Type: Domestic-Int'l dep. Intern'l Swing Gate Walkout

Weekday: 7 Sunday, March, 2nd week, 2015

Maximum Time at Gate without being moved if gate required: 2-2.5 hrs, if moved, aircraft moved 30-45 min after arrival and moved back 30-45 min before departure

Gate	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
Aircraft																									
1 (C, walkout)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
2 (C, LB, Sw)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
3 (C, walkout)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
4 (C, LB, Sw)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
5 (C, LB)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
6 (C, LB)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
7 (C, LB)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
8 (B walkout)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
Stand 1, C																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
Stand 2, C																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									



# Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

## Kelowna International Airport

Buffer Time: 20 minutes Domestic International Int'l Winter Charters Domestic Charter

Weekday: 7 Sunday, March, 2nd week, 2020

Gate Type: Domestic-Int'l dep. Intern'l Swing Gate Walkout

Maximum Time at Gate without being moved if gate required: 2-2.5 hrs, if moved, aircraft moved 30-45 min after arrival and moved back 30-45 min before departure

Gate	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
Aircraft																									
1 (C, walkout)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
2 (D, LB, Sw)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
3 (C, walkout)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
4 (C, LB*, Sw)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
5 (C, LB)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
6 (C, LB*)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
7 (C, LB)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
8 (B walkout)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
9 (C, LB)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
Stand 1, C																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									



# Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

## Kelowna International Airport

Buffer Time: 20 minutes Domestic International Int'l Winter Charters Domestic Charter

Weekday: 7 Sunday, March, 2nd week, 2025  
Gate Type: Domestic-Int'l dep. Intern'l Swing Gate Dom. Walkout

Maximum Time at Gate without being moved if gate required: 2-2.5 hrs, if moved, aircraft moved 30-45 min after arrival and moved back 30-45 min before departure

Gate	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	
Aircraft																										
1 (C, walkout)																										
Arr-DepTime																										
Org-Des																										
Airline/Type																										
2 (D, LB, Sw)																										
Arr-DepTime	001-600									903-1000			1141-1219		1420-1500		1605-1745				2007-2130				2320-630	
Org-Des	SEA, SEA									YYC, YYZ			SEA, SEA		SEA, SEA		FRA, FRA				CUN, YYC				MSP, MSP	
Airline/Type	AS, DH4									WS, 73W			AS, DH4		AS, DH4		DE, 763				WS, 73W				DL, CR7	
3 (C, walkout)																										
Arr-DepTime											1015-1045								1820-1840		1915-725					
Org-Des											YQO, YQO								YXS, YXS		YXT, YXT					
Airline/Type											WS, DH4								9M, BEH		9M, DH3					
4 (C, LB, Sw)																										
Arr-DepTime											952-1030		1137-1211						1745-1820		1842-1950				2220-710	
Org-Des											YVR, YYC		YEG, YEG		1354-1435	1501-1605		YYC, YVR		PVR, YYC					YEG, YEG	
Airline/Type											WS, 736		WS, 73W		WS, DH4	WS, 73W		OK, DH4		TS, 738					WS, DH4	
5 (C, LB, Sw)																										
Arr-DepTime											815-845		934-1005		1105-1140	1210-1240		1423-1455	1521-1601		1745-1830	1917-2000	2020-615			
Org-Des											YYC, YVR		YVR, YYC		YYJ, YVR	YYC, YVR		YVR, YYC	SFO, SFO		YXY, YVR	YEG, YYC	YYZ, YYC			
Airline/Type											OK, DH4		OK, DH4		WS, DH4	OK, DH4		OK, DH4	UA, CR7		4N, 737	WS, 73W	WS, 73W			
6 (C, LB*)																										
Arr-DepTime																										
Org-Des											814-840		1018-1040		1105-1140	1234-1315		1559-1620	1709-1730		1849-1910	2003-2055			2339-545	
Airline/Type											YVR, YVR		YYC, YVR		YYJ, YVR	YVR, YVR		YVR, YVR	YVR, YVR		YVR, YYC	YYC, YEG			YVR, YVR	
7 (C, LB)																										
Arr-DepTime																										
Org-Des											843-915		1000-1035		1123-1200	1251-1330	1348-1430									2331-630
Airline/Type											YEG, YEC	YYZ, YYZ	WS, DH4	AC, E90	YVR, YVR	YVR, YVR	YYC, YYC									YMM, YMM
8 (B walkout)																										
A13																										
Org-Des											915-945				1240-1300		1455-1525									
Airline/Type											YXS, YXS				YXC, YZZ		YZZ, YXC									
9 (C, LB)																										
Arr-DepTime																										
Org-Des																										
Airline/Type																										
10 (C, LB)																										
Arr-DepTime																										
Org-Des																										
Airline/Type																										
Stand 1, C																										
Arr-DepTime																										
Org-Des																										
Airline/Type																										
Stand 2, C																										
Arr-DepTime																										
Org-Des																										
Airline/Type																										
Stand 3, C																										
Arr-DepTime																										
Org-Des																										
Airline/Type																										



# Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

## Kelowna International Airport

Buffer Time: 20 minutes Domestic International Int'l Winter Charters Domestic Charter

Weekday: 7 Sunday, March, 2nd week, 2030

Gate Type: Domestic-Int'l dep. Intern'l Swing Gate Dom. Walkout

Maximum Time at Gate without being moved if gate required: 2-2.5 hrs, if moved, aircraft moved 30-45 min after arrival and moved back 30-45 min before departure

Gate	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
Aircraft																									
1 (C, walkout)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
2 (D, LB, Sw)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
3 (C, walkout)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
4 (C, LB, Sw)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
5 (C, LB, Sw)																									
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Arr-DepTime																									
Org-Des																									
Airline/Type																									
7 (C, LB)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
8 (B walkout)																									
A13																									
Arr-DepTime																									
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9 (C, LB)																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
10 (C, LB)																									
Arr-DepTime																									
Org-Des																									
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Stand 1, C																									
Arr-DepTime																									
Org-Des																									
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Stand 2, C																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									
Stand 3, C																									
Arr-DepTime																									
Org-Des																									
Airline/Type																									



Weekday: 7 Sunday, March, 2nd week, 2035

Gate Type: Domestic-Int'l dep. Intern'l Swing Gate Dom. Walkout

Maximum Time at Gate without being moved if gate required: 2-2.5 hrs, if moved, aircraft moved 30-45 min after arrival and moved back 30-45 min before departure

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
Aircraft																									
1 (C, walkout)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
2 (D, LB, Sw)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
3 (C, walkout)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
4 (C, LB, Sw)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
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Arr-Dep Time																									
Org-Des																									
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Arr-Dep Time																									
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Airline/Type																									
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Arr-Dep Time																									
Org-Des																									
Airline/Type																									
8 (B walkout)																									
A13																									
Org-Des																									
Airline/Type																									
9 (C, LB)																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
10 (C, LB)																									
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Stand 1, C																									
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Org-Des																									
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Stand 2, C																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									
Stand 3, C																									
Arr-Dep Time																									
Org-Des																									
Airline/Type																									

## **APPENDIX B**

### **Busy Week Flight Schedule for 2020, 2025, 2030 and 2035**



## Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

### Nominal Schedule for Kelowna International Airport, Busy Week 2020

Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
.	D		615	YYC	D	WS	73W	136	0	0	0	0	0	0	0	89%	0%	0	0	0	0	1	0	0	0	All
YEG	D	843	915	YEG	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YEG	D	1137	1211	YEG	D	WS	736	119	1	1	1	1	1	0	1	89%	0%	106	1	1	1	1	1	0	1	All
YEG	D	1917	2000	YYC	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	121	1	1	1	1	1	1	1	All
YMM	D	2331	630	YMM	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	1	0	All
YVR	D	1915	1955	YXY	D	4N	737	122	0	0	0	1	0	0	0	71%	0%	87	0	0	0	1	0	0	0	All
YVR	D	1251	1330	YVR	D	AC	E90	97	1	1	1	1	1	0	0	89%	0%	87	1	1	1	1	1	0	0	All
YVR	D	804	840	YVR	D	QK	DH4	74	0	0	0	0	0	1	0	85%	0%	63	0	0	0	0	0	1	0	All
YVR	D	814	840	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	85%	0%	63	1	1	1	1	1	0	1	All
YVR	D	934	1005	YYC	D	QK	CRJ	50	1	1	1	1	1	0	1	85%	0%	43	1	1	1	1	1	0	1	All
YVR	D	934	1240	YVR	D	QK	CRJ	50	0	0	0	0	0	1	0	85%	0%	43	0	0	0	0	0	1	0	All
YVR	D	1123	1200	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	85%	0%	63	1	1	1	1	1	1	1	All
YVR	D	1234	1315	YVR	D	QK	DH3	50	0	0	0	0	0	1	1	85%	0%	43	0	0	0	0	0	1	1	All
YVR	D	1423	1455	YYC	D	QK	DH4	74	1	1	1	1	1	1	1	85%	0%	63	1	1	1	1	1	1	1	All
YVR	D	1559	1620	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	85%	0%	63	1	1	1	1	1	1	1	All
YVR	D	1709	1730	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	85%	0%	63	1	1	1	1	1	1	1	All
YVR	D	1849	1910	YYC	D	QK	DH3	50	1	1	1	1	1	1	1	85%	0%	43	1	1	1	1	1	1	1	All
YVR	D	2019	2040	YVR	D	QK	DH3	50	1	1	1	1	1	1	1	85%	0%	43	1	1	1	1	1	1	1	All
YVR	D	2339	545	YVR	D	QK	DH3	50	1	1	1	1	1	1	1	85%	0%	43	1	1	1	1	1	1	1	All
YVR	D	518	843	CUN	I	TS	738	189	0	0	0	1	0	1	0	0%	0%	0	0	0	0	1	0	1	0	Winter
YVR	D	835	925	ZIH	I	WG	738	189	0	0	0	1	0	0	0	0%	0%	0	0	0	0	1	0	0	0	Winter
YVR	D	857	940	YVR	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YVR	D	952	1030	YYC	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YVR	D	1354	1435	YYJ	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	0	1	All
YVR	D	1404	1445	YYJ	D	WS	DH4	78	0	0	0	0	0	1	0	89%	0%	70	0	0	0	0	0	1	0	All
YVR	D	1922	2000	YVR	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
	D		1510	YVR	D	WS	736		0	0	0	0	0	0	0	89%	0%	0	1	1	1	1	1	1	1	All
YVR	D	1747			D	WS	736		1	1	1	1	1	1	1	89%	0%	0	0	0	0	0	0	0	0	All
YXC	D	1240	1300	YZZ	D	8P	BE1	19	1	1	1	1	1	0	1	71%	0%	14	1	1	1	1	1	0	1	All



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Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
YQQ	D	1115	1145	YQQ	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YXS	D	915	945	YXS	D	9M	BEH	19	0	0	0	0	0	0	1	71%	0%	14	0	0	0	0	0	0	1	All
YXS	D	1650	720	YXS	D	9M	BEH	19	1	0	0	0	0	0	0	71%	0%	14	0	1	0	0	0	0	0	All
YXS	D	1820	945	YXS	D	9M	BEH	19	0	0	0	1	0	0	0	71%	0%	14	0	0	0	0	1	0	0	All
YXS	D	1820	1840	YXS	D	9M	BEH	19	0	0	0	0	1	0	0	71%	0%	14	0	0	0	0	1	0	0	All
YXS	D	1820	720	YXS	D	9M	BEH	19	0	1	1	0	0	0	1	71%	0%	14	1	0	1	1	0	0	0	All
YXY	D	1745	1830	YVR	D	4N	737	122	0	0	0	0	0	0	1	71%	0%	87	0	0	0	0	0	0	1	All
YXT	D	1915	700	YXT	D	9M	DH3	50	1	1	1	0	0	0	1	71%	0%	36	1	0	1	1	0	0	0	All
YYC	D	1018	1040	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	85%	0%	63	1	1	1	1	1	1	1	All
YYC	D	1210	1240	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	85%	0%	63	1	1	1	1	1	0	1	All
YYC	D	1745	1820	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	85%	0%	63	1	1	1	1	1	1	1	All
YYC	D	903	1000	YYZ	D	WS	73H	174	0	0	0	0	0	0	1	89%	0%	155	0	0	0	0	0	0	1	All
YYC	D	903	1000	YYZ	D	WS	73H	174	0	1	0	1	0	1	0	89%	0%	155	0	1	0	1	0	1	0	All
YYC	D	903	1020	CUN	I	WS	73H	174	0	0	1	0	0	0	0	89%	0%	155	0	0	1	0	0	0	0	Winter
YYC	D	903	1020	PVR	I	WS	73H	174	0	0	0	0	1	0	0	89%	0%	155	0	0	0	0	1	0	0	Winter
YYC	D	903	1045	PHX	T	WS	73H	174	1	0	0	0	0	0	0	89%	0%	155	1	0	0	0	0	0	0	All
YYC	D	1348	1430	YYC	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YYC	D	1648	1727	YYC	D	WS	736	119	0	0	0	0	0	1	0	89%	0%	106	0	0	0	0	0	1	0	All
YYC	D	1648	1727	YYC	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	121	1	1	1	1	1	0	1	All
YYC	D	2003	2055	YEG	D	WS	736	119	0	0	0	0	0	1	0	89%	0%	106	0	0	0	0	0	1	0	All
YYC	D	2003	2055	YEG	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	121	1	1	1	1	1	0	1	All
YYC	D	2113	600	SJD	I	WS	73W	136	0	0	0	0	1	0	0	89%	0%	121	0	0	0	0	0	1	0	All
YYC	D	2256	715	YVR	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	121	1	1	1	1	1	1	1	All
YYJ	D	1105	1140	YVR	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YYJ	D	1920	1950	YYJ	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YYZ	D	1000	1035	YYZ	D	AC	E90	97	1	0	1	0	0	1	1	89%	0%	87	1	0	1	0	0	1	1	All
YYZ	D	2020	615	YYC	D	WS	73H	174	0	0	0	0	0	1	1	89%	0%	155	1	0	0	0	0	0	1	All
YYZ	D	2020	615	YYC	D	WS	73W	136	0	1	0	1	1	0	0	89%	0%	121	0	0	1	0	1	0	0	All
YZZ	D	1455	1525	YXC	D	8P	BE1	19	1	1	1	1	1	0	1	71%	0%	14	1	1	1	1	1	0	1	All
CUN	I	2050	809	PVR	I	TS	738	189	0	0	0	1	0	1	0	93%	0%	175	0	0	0	0	1	0	1	Winter
CUN	I	2007	2130	YYC	D	WS	73H	174	0	0	0	0	0	0	1	90%	0%	157	0	0	0	0	0	0	1	Winter



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## Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

### Nominal Schedule for Kelowna International Airport, Busy Week 2025

Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
.	D		615	YYC	D	WS	73W	136	0	0	0	0	0	0	0	89%	0%	0	0	0	0	1	0	0	0	All
YEG	D	2220	710	YEG	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	0	1	All
YEG	D	843	915	YEG	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YEG	D	1137	1211	YEG	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	122	1	1	1	1	1	0	1	All
YEG	D	1917	2000	YYC	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YMM	D	2331	630	YMM	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	1	0	All
YQF	D	1215	1245	YQF	D	J3	J31	19	1	0	1	0	1	0	0	66%	0%	12	1	0	1	0	1	0	0	All
YVR	D	1915	1955	YXY	D	4N	737	122	0	0	0	1	0	0	0	72%	0%	88	0	0	0	1	0	0	0	All
YVR	D	1251	1330	YVR	D	AC	E90	97	1	1	1	1	1	0	0	89%	0%	87	1	1	1	1	1	0	0	All
YVR	D	804	840	YVR	D	QK	DH4	74	0	0	0	0	0	1	0	86%	0%	64	0	0	0	0	0	1	0	All
YVR	D	814	840	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YVR	D	934	1005	YYC	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YVR	D	934	1240	YVR	D	QK	DH4	74	0	0	0	0	0	1	0	86%	0%	64	0	0	0	0	0	1	0	All
YVR	D	1123	1200	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1234	1315	YVR	D	QK	DH4	74	0	0	0	0	0	1	1	86%	0%	64	0	0	0	0	0	1	1	All
YVR	D	1423	1455	YYC	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1559	1620	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1709	1730	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1849	1910	YYC	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	2019	2040	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	2339	545	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	518	843	CUN	I	TS	738	189	0	0	0	1	0	1	0	0%	0%	0	0	0	0	1	0	1	0	Winter
YVR	D	835	925	ZIH	I	WG	738	189	0	0	0	1	0	0	0	0%	0%	0	0	0	0	1	0	0	0	Winter
YVR	D	857	940	YVR	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YVR	D	952	1030	YYC	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YVR	D	1354	1435	YYJ	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	0	1	All
YVR	D	1404	1445	YYJ	D	WS	DH4	78	0	0	0	0	0	1	0	89%	0%	70	0	0	0	0	0	1	0	All
YVR	D	1922	2000	YVR	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All



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Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
YXC	D	1240	1300	YZZ	D	8P	BE1	19	1	1	1	1	1	0	1	72%	0%	14	1	1	1	1	1	0	1	All
YQQ	D	1015	1045	YQQ	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YXS	D	915	945	YXS	D	9M	BEH	19	0	0	0	0	0	0	1	72%	0%	14	0	0	0	0	0	0	1	All
YXS	D	1650	720	YXS	D	9M	BEH	19	1	0	0	0	0	0	0	72%	0%	14	0	1	0	0	0	0	0	All
YXS	D	1820	945	YXS	D	9M	BEH	19	0	0	0	1	0	0	0	72%	0%	14	0	0	0	0	1	0	0	All
YXS	D	1820	1840	YXS	D	9M	BEH	19	0	0	0	0	1	0	1	72%	0%	14	0	0	0	0	1	0	1	All
YXS	D	1820	720	YXS	D	9M	BEH	19	0	1	1	0	0	0	1	72%	0%	14	1	0	1	1	0	0	0	All
YXS	D	1605	1650	YXS	D	9M	BEH	19	1	1	1	1	0	0	0	72%	0%	14	1	1	1	1	0	0	0	All
YXY	D	1745	1830	YVR	D	4N	737	122	0	0	0	0	0	0	1	72%	0%	88	0	0	0	0	0	0	1	All
YXT	D	1915	725	YXT	D	9M	DH3	50	1	1	1	1	1	0	1	72%	0%	36	1	0	1	1	1	1	0	All
YXJ	D	950	1020	YXJ	D	9M	BEH	19	1	1	1	1	1	0	0	72%	0%	14	1	1	1	1	1	0	0	All
YYC	D	815	845	YYC	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YYC	D	1018	1040	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YYC	D	1210	1240	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YYC	D	1745	1820	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YYC	D	903	1000	YYZ	D	WS	73H	174	0	0	0	0	0	0	1	89%	0%	156	0	0	0	0	0	0	1	All
YYC	D	903	1000	YYZ	D	WS	73H	174	0	1	0	1	0	1	0	89%	0%	156	0	1	0	1	0	1	0	All
YYC	D	903	1020	CUN	I	WS	73H	174	0	0	1	0	0	0	0	89%	0%	156	0	0	1	0	0	0	0	Winter
YYC	D	903	1020	PVR	I	WS	73H	174	0	0	0	0	1	0	0	89%	0%	156	0	0	0	0	1	0	0	Winter
YYC	D	903	1045	PHX	T	WS	73H	174	1	0	0	0	0	0	0	89%	0%	156	1	0	0	0	0	0	0	All
YYC	D	1348	1430	YYC	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YYC	D	1648	1727	YYC	D	WS	736	119	0	0	0	0	0	1	0	89%	0%	106	0	0	0	0	0	1	0	All
YYC	D	1648	1727	YYC	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YYC	D	1810	1845	YYC	D	WS	736	119	1	1	1	1	1	0	1	89%	0%	106	1	1	1	1	1	0	1	All
YYC	D	2003	2055	YEG	D	WS	736	119	0	0	0	0	0	1	0	89%	0%	106	0	0	0	0	0	1	0	All
YYC	D	2003	2055	YEG	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	122	1	1	1	1	1	0	1	All
YYC	D	2113	600	SJD	I	WS	73W	136	0	0	0	0	1	0	0	89%	0%	122	0	0	0	0	0	1	0	All
YYC	D	2256	715	YVR	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YYJ	D	1105	1140	YVR	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YYJ	D	1920	1950	YYJ	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All



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Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
YYZ	D	1000	1035	YYZ	D	AC	E90	97	1	1	1	1	1	1	1	89%	0%	87	1	1	1	1	1	1	1	All
YYZ	D	2020	615	YYC	D	WS	73H	174	0	0	0	0	0	1	1	89%	0%	156	1	0	0	0	0	0	1	All
YYZ	D	2020	615	YYC	D	WS	73W	136	1	1	1	1	1	0	0	89%	0%	122	0	1	1	1	1	0	0	All
YZZ	D	1455	1525	YXC	D	8P	BE1	19	1	1	1	1	1	0	1	72%	0%	14	1	1	1	1	1	0	1	All
CUN	I	2050	809	PVR	I	TS	738	189	0	1	0	1	0	1	0	93%	0%	175	0	0	1	0	1	0	1	Winter
CUN	I	2007	2130	YYC	D	WS	73H	174	0	0	0	0	0	0	1	90%	0%	157	0	0	0	0	0	0	1	Winter
CUN	I	2332	1605	LAS	T	WS	73H	174	0	0	1	0	0	0	0	90%	0%	157	0	0	0	1	0	0	0	Winter
PVR	I	1842	1950	YYC	D	TS	738	189	0	0	0	1	0	0	1	93%	0%	175	0	0	0	1	0	0	1	Winter
PVR	I	26	615	YYC	D	WS	73H	174	0	0	0	0	0	1	0	90%	0%	157	0	0	0	0	0	1	0	Winter
SJD	I	1439	1615	PHX	T	WS	73H	174	0	0	1	0	0	1	0	90%	0%	157	0	0	1	0	0	1	0	All
ZIH	I	2135	2225	YVR	D	WG	738	189	0	0	0	1	0	1	0	98%	45%	102	0	0	0	1	0	1	0	Winter
LAS	T	1501	1605	LAS	T	WS	73H	174	0	1	0	1	0	1	1	90%	0%	156	0	1	0	1	0	1	1	All
PHX	T	1827	615	YYC	D	WS	73H	174	1	0	0	0	0	0	0	90%	0%	156	0	1	0	0	0	0	0	All
PHX	T	2357	700	CUN	I	WS	73H	174	0	1	0	0	0	1	0	90%	0%	156	0	0	1	0	0	0	1	All
SEA	T	1	600	SEA	T	AS	DH4	76	1	1	1	1	1	1	1	82%	0%	63	1	1	1	1	1	1	1	All
SEA	T	1141	1219	SEA	T	AS	DH4	76	1	1	1	1	1	1	1	82%	0%	63	1	1	1	1	1	1	1	All
SEA	T	1420	1500	SEA	T	AS	DH4	76	1	1	1	1	1	0	1	82%	0%	63	1	1	1	1	1	0	1	All
SFO	T	1521	1601	SFO	T	UA	CR7	70	0	0	0	0	0	1	1	82%	0%	58	0	0	0	0	0	1	1	All
SFO	T	1533	1608	SFO	T	UA	CR7	70	1	1	1	1	1	0	0	82%	0%	58	1	1	1	1	1	0	0	All
MSP	T	2320	630	MSP	T	DL	CR7	70	1	1	1	1	1	0	1	82%	0%	58	1	1	1	1	1	1	0	All
YXS	D	2105	2135	YVR	D	4N	735	122	0	0	0	0	0	0	1	72%	0%	88	0	0	0	0	0	0	1	All
YYC	D	1550	1620	JHL	D	JSN	CRJ	50	0	0	0	0	1	0	0	86%	0%	43	0	0	0	0	1	0	0	All
JHL	D	2020	2050	YYC	D	JSN	CRJ	50	0	0	0	0	1	0	0	86%	0%	43	0	0	0	0	1	0	0	All
YYC	D	1900	900	YHM	D	FLE	734	158	0	0	0	0	1	0	0	86%	0%	136	0	0	0	0	0	1	0	All
YHM	D	1855	1900	YYC	D	FLE	734	158	0	0	0	0	0	1	0	86%	0%	136	0	0	0	0	0	0	1	All
FRA	I	1605	1745	FRA	I	DE	763	245	0	0	0	0	0	1	0	93%	0%	227	0	0	0	0	0	0	1	Winter



## Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

### Nominal Schedule for Kelowna International Airport, Busy Week 2030

Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
.	D		615	YYC	D	WS	73W	136	0	0	0	0	0	0	0	89%	0%	0	0	0	0	1	0	0	0	All
YEG	D	2220	710	YEG	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	0	1	All
YEG	D	843	915	YEG	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YEG	D	1137	1211	YEG	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	122	1	1	1	1	1	0	1	All
YEG	D	1917	2000	YYC	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YEG	D	800	832	YEG	D	QK	DH4	74	1	1	1	1	1	1	0	86%	0%	64	1	1	1	1	1	1	0	All
YEG	D	1630	1705	YEG	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YMM	D	2331	630	YMM	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	1	0	All
YQF	D	1215	1245	YQF	D	J3	J31	19	1	0	1	0	1	0	0	66%	0%	12	1	0	1	0	1	0	0	All
YVR	D	1915	1955	YXY	D	4N	737	122	0	0	0	1	0	0	0	72%	0%	88	0	0	0	1	0	0	0	All
YVR	D	1251	1330	YVR	D	AC	E90	97	1	1	1	1	1	0	0	89%	0%	87	1	1	1	1	1	0	0	All
YVR	D	804	840	YVR	D	QK	DH4	74	0	0	0	0	0	1	0	86%	0%	64	0	0	0	0	0	1	0	All
YVR	D	814	840	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YVR	D	934	1005	YYC	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YVR	D	934	1240	YVR	D	QK	DH4	74	0	0	0	0	0	1	0	86%	0%	64	0	0	0	0	0	1	0	All
YVR	D	1123	1200	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1234	1315	YVR	D	QK	DH4	74	0	0	0	0	0	1	1	86%	0%	64	0	0	0	0	0	1	1	All
YVR	D	1423	1455	YYC	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1559	1620	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1709	1730	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1849	1910	YYC	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	2019	2040	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	2339	545	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	518	843	CUN	I	TS	738	189	0	0	0	1	0	1	0	0%	0%	0	0	0	0	1	0	1	0	Winter
YVR	D	835	925	ZIH	I	WG	738	189	0	0	0	1	0	0	0	0%	0%	0	0	0	0	1	0	0	0	Winter
YVR	D	857	940	YVR	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YVR	D	952	1030	YYC	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YVR	D	1354	1435	YYJ	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	0	1	All
YVR	D	1404	1445	YYJ	D	WS	DH4	78	0	0	0	0	0	1	0	89%	0%	70	0	0	0	0	0	1	0	All



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Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
YVR	D	1922	2000	YVR	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YVR	D	2205	705	YVR	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	1	0	All
YXC	D	1240	1300	YZZ	D	8P	BE1	19	1	1	1	1	1	0	1	72%	0%	14	1	1	1	1	1	0	1	All
YQQ	D	1015	1045	YQQ	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YCD	D	1515	1545	YCD	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YXS	D	915	945	YXS	D	9M	BEH	19	0	0	0	0	0	0	1	72%	0%	14	0	0	0	0	0	0	1	All
YXS	D	1650	720	YXS	D	9M	BEH	19	1	0	0	0	0	0	0	72%	0%	14	0	1	0	0	0	0	0	All
YXS	D	1820	945	YXS	D	9M	BEH	19	0	0	0	1	0	0	0	72%	0%	14	0	0	0	0	1	0	0	All
YXS	D	1820	1840	YXS	D	9M	BEH	19	0	0	0	0	1	0	1	72%	0%	14	0	0	0	0	1	0	1	All
YXS	D	1820	720	YXS	D	9M	BEH	19	0	1	1	0	0	0	1	72%	0%	14	1	0	1	1	0	0	0	All
YXS	D	1605	1650	YXS	D	9M	BEH	19	1	1	1	1	0	0	0	72%	0%	14	1	1	1	1	0	0	0	All
YXY	D	1745	1830	YVR	D	4N	737	122	0	0	0	0	0	0	1	72%	0%	88	0	0	0	0	0	0	1	All
YXT	D	1915	725	YXT	D	9M	DH3	50	1	1	1	1	1	0	1	72%	0%	36	1	0	1	1	1	1	0	All
YXJ	D	950	1020	YXJ	D	9M	BEH	19	1	1	1	1	1	0	0	72%	0%	14	1	1	1	1	1	0	0	All
YXJ	D	1745	1815	YXJ	D	9M	BEH	19	1	1	1	1	1	0	0	72%	0%	14	1	1	1	1	1	0	0	All
YYC	D	815	845	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YYC	D	1018	1040	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YYC	D	1210	1240	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YYC	D	1745	1820	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YYC	D	2035	2105	YYC	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YYC	D	903	1000	YYZ	D	WS	73H	174	0	0	0	0	0	0	1	89%	0%	156	0	0	0	0	0	0	1	All
YYC	D	903	1000	YYZ	D	WS	73H	174	0	1	0	1	0	1	0	89%	0%	156	0	1	0	1	0	1	0	All
YYC	D	903	1020	CUN	I	WS	73H	174	0	0	1	0	0	0	0	89%	0%	156	0	0	1	0	0	0	0	Winter
YYC	D	903	1020	PVR	I	WS	73H	174	0	0	0	0	1	0	0	89%	0%	156	0	0	0	0	1	0	0	Winter
YYC	D	903	1045	PHX	T	WS	73H	174	1	0	0	0	0	0	0	89%	0%	156	1	0	0	0	0	0	0	All
YYC	D	1348	1430	YYC	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YYC	D	1648	1727	YYC	D	WS	736	119	0	0	0	0	0	1	0	89%	0%	106	0	0	0	0	0	1	0	All
YYC	D	1648	1727	YYC	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YYC	D	1810	1845	YYC	D	WS	73H	174	1	1	1	1	1	0	1	89%	0%	156	1	1	1	1	1	0	1	All
YYC	D	2003	2055	YEG	D	WS	736	119	0	0	0	0	0	1	0	89%	0%	106	0	0	0	0	0	1	0	All
YYC	D	2003	2055	YEG	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	122	1	1	1	1	1	0	1	All



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Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
YYC	D	2113	600	SJD	I	WS	73W	136	0	0	0	0	1	0	0	89%	0%	122	0	0	0	0	0	1	0	All
YYC	D	2256	715	YVR	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YYJ	D	1105	1140	YVR	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YYJ	D	1920	1950	YYJ	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YYZ	D	1000	1035	YYZ	D	AC	320	146	1	1	1	1	1	1	1	89%	0%	131	1	1	1	1	1	1	1	All
YYZ	D	2020	615	YYC	D	WS	73H	174	0	0	0	0	0	1	1	89%	0%	156	1	0	0	0	0	0	1	All
YYZ	D	2020	615	YYC	D	WS	73W	136	1	1	1	1	1	0	0	89%	0%	122	0	1	1	1	1	0	0	All
YZZ	D	1455	1525	YXC	D	8P	BE1	19	1	1	1	1	1	0	1	72%	0%	14	1	1	1	1	1	0	1	All
CUN	I	2050	809	PVR	I	TS	738	189	0	1	0	1	0	1	0	93%	0%	175	0	0	1	0	1	0	1	Winter
CUN	I	2007	2130	YYC	D	WS	73H	174	0	0	0	0	0	0	1	90%	0%	157	0	0	0	0	0	0	1	Winter
CUN	I	2332	1605	LAS	T	WS	73H	174	0	0	1	0	0	0	0	90%	0%	157	0	0	0	1	0	0	0	Winter
PVR	I	1842	1950	YYC	D	TS	738	189	0	0	0	1	0	0	1	93%	0%	175	0	0	0	1	0	0	1	Winter
PVR	I	26	615	YYC	D	WS	73H	174	0	0	0	0	0	1	0	90%	0%	157	0	0	0	0	0	1	0	Winter
SJD	I	1439	1615	PHX	T	WS	73H	174	0	0	1	0	0	1	1	90%	0%	157	0	0	1	0	0	1	1	All
ZIH	I	2135	2225	YVR	D	WG	738	189	0	0	0	1	0	1	0	98%	45%	102	0	0	0	1	0	1	0	Winter
LAS	T	1501	1605	LAS	T	WS	73H	174	1	1	0	1	0	1	1	90%	0%	156	1	1	0	1	0	1	1	All
PHX	T	1827	615	YYC	D	WS	73H	174	1	0	0	0	0	0	0	90%	0%	156	0	1	0	0	0	0	0	All
PHX	T	2357	700	CUN	I	WS	73H	174	0	1	0	0	1	1	0	90%	0%	156	0	0	1	0	0	1	1	All
SEA	T	1	600	SEA	T	AS	DH4	76	1	1	1	1	1	1	1	82%	0%	63	1	1	1	1	1	1	1	All
SEA	T	1141	1219	SEA	T	AS	DH4	76	1	1	1	1	1	1	1	82%	0%	63	1	1	1	1	1	1	1	All
SEA	T	1420	1500	SEA	T	AS	DH4	76	1	1	1	1	1	0	1	82%	0%	63	1	1	1	1	1	0	1	All
SFO	T	1521	1601	SFO	T	UA	CR7	70	0	0	0	0	0	1	1	82%	0%	58	0	0	0	0	0	1	1	All
SFO	T	1533	1608	SFO	T	UA	CR7	70	1	1	1	1	1	0	0	82%	0%	58	1	1	1	1	1	0	0	All
LAX	T	1630	1710	LAX	T	WS	73W	136	1	0	1	0	0	1	0	90%	0%	122	1	0	1	0	0	1	0	All
MSP	T	2320	630	MSP	T	DL	CR7	70	1	1	1	1	1	0	1	82%	0%	58	1	1	1	1	1	1	0	All
YXS	D	2105	2135	YVR	D	4N	735	122	0	0	0	0	0	0	1	72%	0%	88	0	0	0	0	0	0	1	All
YYC	D	1550	1620	JHL	D	JSN	CR7	70	0	0	0	0	1	0	0	86%	0%	60	0	0	0	0	1	0	0	All
JHL	D	2020	2050	YYC	D	JSN	CR7	70	0	0	0	0	1	0	0	86%	0%	60	0	0	0	0	1	0	0	All
YYC	D	1900	900	YHM	D	FLE	734	158	0	0	0	0	1	0	0	86%	0%	136	0	0	0	0	0	1	0	All
YHM	D	1855	1900	YYC	D	FLE	734	158	0	0	0	0	0	1	0	86%	0%	136	0	0	0	0	0	0	1	All
FRA	I	1605	1745	FRA	I	DE	763	245	0	0	0	0	0	1	0	93%	0%	227	0	0	0	0	0	0	1	Winter



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### Nominal Schedule for Kelowna International Airport, Busy Week 2035

Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
.	D		615	YYC	D	WS	73W	136	0	0	0	0	0	0	0	89%	0%	0	0	0	0	1	0	0	0	All
YEG	D	2220	710	YEG	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	122	1	1	1	1	1	0	1	All
YEG	D	843	915	YEG	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YEG	D	1137	1211	YEG	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	122	1	1	1	1	1	0	1	All
YEG	D	1540	1605	YEG	D	WS	DH4	78	1	1	1	1	1	0	0	89%	0%	70	1	1	1	1	1	0	0	All
YEG	D	1917	2000	YYC	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YEG	D	800	832	YEG	D	QK	DH4	74	1	1	1	1	1	1	0	86%	0%	64	1	1	1	1	1	1	0	All
YEG	D	1215	1250	YEG	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YEG	D	1630	1705	YEG	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YMM	D	2331	630	YMM	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	1	0	All
YQF	D	1215	1245	YQF	D	J3	J31	19	1	1	1	1	1	0	0	66%	0%	12	1	1	1	1	1	0	0	All
YVR	D	1915	1955	YXY	D	4N	737	122	0	1	0	1	0	0	0	72%	0%	88	0	1	0	1	0	0	0	All
YVR	D	1251	1330	YVR	D	AC	E90	97	1	1	1	1	1	0	0	89%	0%	87	1	1	1	1	1	0	0	All
YVR	D	700	730	YVR	D	QK	DH4	74	1	1	1	1	1	0	0	86%	0%	64	1	1	1	1	1	0	0	All
YVR	D	804	840	YVR	D	QK	DH4	74	0	0	0	0	0	1	0	86%	0%	64	0	0	0	0	0	1	0	All
YVR	D	814	840	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YVR	D	934	1005	YYC	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YVR	D	934	1240	YVR	D	QK	DH4	74	0	0	0	0	0	1	0	86%	0%	64	0	0	0	0	0	1	0	All
YVR	D	1123	1200	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1234	1315	YVR	D	QK	DH4	74	0	0	0	0	0	1	1	86%	0%	64	0	0	0	0	0	1	1	All
YVR	D	1423	1455	YYC	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1559	1620	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1709	1730	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	1849	1910	YYC	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	2019	2040	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	2339	545	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YVR	D	518	843	CUN	I	TS	738	189	0	0	0	1	0	1	0	0%	0%	0	0	0	0	1	0	1	0	Winter
YVR	D	835	925	ZIH	I	WG	738	189	0	0	0	1	0	0	0	0%	0%	0	0	0	0	1	0	0	0	Winter
YVR	D	857	940	YVR	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YVR	D	952	1030	YYC	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All



## Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
YVR	D	1354	1435	YYJ	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	0	1	All
YVR	D	1404	1445	YYJ	D	WS	DH4	78	0	0	0	0	0	1	0	89%	0%	70	0	0	0	0	0	1	0	All
YVR	D	1922	2000	YVR	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YVR	D	2205	705	YVR	D	WS	DH4	78	1	1	1	1	1	0	1	89%	0%	70	1	1	1	1	1	1	0	All
YXC	D	1240	1300	YZZ	D	8P	BE1	19	1	1	1	1	1	0	1	72%	0%	14	1	1	1	1	1	0	1	All
YQQ	D	1015	1045	YQQ	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YQQ	D	1810	1855	YQQ	D	WS	DH4	78	1	0	1	0	1	0	1	89%	0%	70	1	0	1	0	1	0	1	All
YCD	D	1515	1545	YCD	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YXS	D	915	945	YXS	D	9M	BEH	19	0	0	0	0	0	0	1	72%	0%	14	0	0	0	0	0	0	1	All
YXS	D	1650	720	YXS	D	9M	BEH	19	1	0	0	0	0	0	0	72%	0%	14	0	1	0	0	0	0	0	All
YXS	D	1820	945	YXS	D	9M	BEH	19	0	0	0	1	0	0	0	72%	0%	14	0	0	0	0	1	0	0	All
YXS	D	1820	1840	YXS	D	9M	BEH	19	0	0	0	0	1	0	1	72%	0%	14	0	0	0	0	1	0	1	All
YXS	D	1820	720	YXS	D	9M	BEH	19	0	1	1	0	0	0	1	72%	0%	14	1	0	1	1	0	0	0	All
YXS	D	1605	1650	YXS	D	9M	BEH	19	1	1	1	1	1	0	1	72%	0%	14	1	1	1	1	1	0	1	All
YXY	D	1745	1830	YVR	D	4N	737	122	0	0	0	0	0	0	1	72%	0%	88	0	0	0	0	0	0	1	All
YXT	D	1915	725	YXT	D	9M	DH3	50	1	1	1	1	1	0	1	72%	0%	36	1	0	1	1	1	1	0	All
YXT	D	1225	1255	YXT	D	9M	DH3	50	1	0	1	0	1	0	0	72%	0%	36	1	0	1	0	1	0	0	All
YXJ	D	950	1020	YXJ	D	9M	BEH	19	1	1	1	1	1	0	0	72%	0%	14	1	1	1	1	1	0	0	All
YXJ	D	1745	1815	YXJ	D	9M	BEH	19	1	1	1	1	1	0	0	72%	0%	14	1	1	1	1	1	0	0	All
YYC	D	815	845	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YYC	D	1018	1040	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YYC	D	1210	1240	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YYC	D	1520	1550	YVR	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YYC	D	1745	1820	YVR	D	QK	DH4	74	1	1	1	1	1	1	1	86%	0%	64	1	1	1	1	1	1	1	All
YYC	D	2035	2105	YYC	D	QK	DH4	74	1	1	1	1	1	0	1	86%	0%	64	1	1	1	1	1	0	1	All
YYC	D	730	805	YYC	D	WS	736	119	1	1	1	1	1	0	0	89%	0%	106	1	1	1	1	1	0	0	All
YYC	D	903	1000	YYZ	D	WS	73H	174	0	0	0	0	0	0	1	89%	0%	156	0	0	0	0	0	0	1	All
YYC	D	903	1000	YYZ	D	WS	73H	174	0	1	0	1	0	1	0	89%	0%	156	0	1	0	1	0	1	0	All
YYC	D	903	1020	CUN	I	WS	73H	174	0	0	1	0	0	0	0	89%	0%	156	0	0	1	0	0	0	0	Winter
YYC	D	903	1020	PVR	I	WS	73H	174	0	0	0	0	1	0	0	89%	0%	156	0	0	0	0	1	0	0	Winter
YYC	D	903	1045	PHX	T	WS	73H	174	1	0	0	0	0	0	0	89%	0%	156	1	0	0	0	0	0	0	All



## Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
YYC	D	1348	1430	YYC	D	WS	736	119	1	1	1	1	1	1	1	89%	0%	106	1	1	1	1	1	1	1	All
YYC	D	1648	1727	YYC	D	WS	736	119	0	0	0	0	0	1	0	89%	0%	106	0	0	0	0	0	1	0	All
YYC	D	1648	1727	YYC	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YYC	D	1810	1845	YYC	D	WS	73H	174	1	1	1	1	1	0	1	89%	0%	156	1	1	1	1	1	0	1	All
YYC	D	2003	2055	YEG	D	WS	736	119	0	0	0	0	0	1	0	89%	0%	106	0	0	0	0	0	1	0	All
YYC	D	2003	2055	YEG	D	WS	73W	136	1	1	1	1	1	0	1	89%	0%	122	1	1	1	1	1	0	1	All
YYC	D	2113	600	SJD	I	WS	73W	136	0	0	0	0	1	0	0	89%	0%	122	0	0	0	0	0	1	0	All
YYC	D	2256	715	YVR	D	WS	73W	136	1	1	1	1	1	1	1	89%	0%	122	1	1	1	1	1	1	1	All
YYJ	D	1105	1140	YVR	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YYJ	D	1920	1950	YYJ	D	WS	DH4	78	1	1	1	1	1	1	1	89%	0%	70	1	1	1	1	1	1	1	All
YYZ	D	1000	1035	YYZ	D	AC	320	146	1	1	1	1	1	1	1	89%	0%	131	1	1	1	1	1	1	1	All
YYZ	D	2320	10	YYZ	D	AC	E90	97	1	0	1	0	1	0	1	89%	0%	87	1	0	1	0	1	0	1	All
YYZ	D	2020	615	YYC	D	WS	73H	174	0	0	0	0	0	1	1	89%	0%	156	1	0	0	0	0	0	1	All
YYZ	D	2020	615	YYC	D	WS	73W	136	1	1	1	1	1	0	0	89%	0%	122	0	1	1	1	1	0	0	All
YZZ	D	1455	1525	YXC	D	8P	BE1	19	1	1	1	1	1	0	1	72%	0%	14	1	1	1	1	1	0	1	All
CUN	I	2050	809	PVR	I	TS	738	189	0	1	0	1	1	1	0	93%	0%	175	0	0	1	0	1	1	1	Winter
CUN	I	2007	2130	YYC	D	WS	73H	174	0	0	0	0	0	0	1	90%	0%	157	0	0	0	0	0	0	1	Winter
CUN	I	2332	1605	LAS	T	WS	73H	174	0	0	1	0	0	0	0	90%	0%	157	0	0	0	1	0	0	0	Winter
PVR	I	1842	1950	YYC	D	TS	738	189	0	0	0	1	0	0	1	93%	0%	175	0	0	0	1	0	0	1	Winter
PVR	I	26	615	YYC	D	WS	73H	174	0	0	0	0	0	1	0	90%	0%	157	0	0	0	0	0	1	0	Winter
SJD	I	1439	1615	PHX	T	WS	73H	174	0	0	1	0	0	1	1	90%	0%	157	0	0	1	0	0	1	1	All
ZIH	I	2135	2225	YVR	D	WG	738	189	0	0	0	1	0	1	0	98%	45%	102	0	0	0	1	0	1	0	Winter
LAS	T	1501	1605	LAS	T	WS	73H	174	1	1	0	1	1	1	1	90%	0%	156	1	1	0	1	1	1	1	All
PHX	T	1827	615	YYC	D	WS	73H	174	1	0	0	0	0	0	0	90%	0%	156	0	1	0	0	0	0	0	All
PHX	T	2357	700	CUN	I	WS	73H	174	0	1	1	0	1	1	0	90%	0%	156	0	0	1	1	0	1	1	All
SEA	T	1	600	SEA	T	AS	DH4	76	1	1	1	1	1	1	1	82%	0%	63	1	1	1	1	1	1	1	All
SEA	T	1141	1219	SEA	T	AS	DH4	76	1	1	1	1	1	1	1	82%	0%	63	1	1	1	1	1	1	1	All
SEA	T	1420	1500	SEA	T	AS	DH4	76	1	1	1	1	1	0	1	82%	0%	63	1	1	1	1	1	0	1	All
SFO	T	1521	1601	SFO	T	UA	CR7	70	0	0	0	0	0	1	1	82%	0%	58	0	0	0	0	0	1	1	All
SFO	T	1533	1608	SFO	T	UA	CR7	70	1	1	1	1	1	0	0	82%	0%	58	1	1	1	1	1	0	0	All
LAX	T	1630	1710	LAX	T	WS	73W	136	1	0	1	0	1	1	1	90%	0%	122	1	0	1	0	1	1	1	All



## Kelowna International Airport Master Plan 2045 Technical Report – Air Traffic Forecasts (Draft 4)

Origin		Arr Time	Dep Time	Destination		Air Carrier	Aircraft		Arrival on Day #							Load Factor	% In- Transit	Pax	Depart on Day #							Seasonal
Airport	Sect.			Airport	Sect.		Type	Seats	1	2	3	4	5	6	7				1	2	3	4	5	6	7	
MSP	T	2320	630	MSP	T	DL	CR7	70	1	1	1	1	1	0	1	82%	0%	58	1	1	1	1	1	1	0	All
YXS	D	2105	2135	YVR	D	4N	735	122	0	0	0	0	0	0	1	72%	0%	88	0	0	0	0	0	0	1	All
YYC	D	1550	1620	JHL	D	JSN	CR7	70	0	0	0	0	1	0	0	86%	0%	60	0	0	0	0	1	0	0	All
JHL	D	2020	2050	YYC	D	JSN	CR7	70	0	0	0	0	1	0	0	86%	0%	60	0	0	0	0	1	0	0	All
YYC	D	1900	900	YHM	D	FLE	734	158	0	0	0	0	1	0	0	86%	0%	136	0	0	0	0	0	1	0	All
YHM	D	1855	1900	YYC	D	FLE	734	158	0	0	0	0	0	1	0	86%	0%	136	0	0	0	0	0	0	1	All
FRA	I	1605	1745	FRA	I	DE	763	245	0	0	0	0	0	1	0	93%	0%	227	0	0	0	0	0	0	1	Winter



# Appendix F : Kelowna International Airport Master Plan 2045 Economic Impact Study Update

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## Kelowna International Airport Master Plan 2045 Economic Impact Study Update (Draft 2)

December, 2015





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## EXECUTIVE SUMMARY

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As part of the work leading up to the development of Master Plan 2045, SNC-Lavalin Inc.'s (SLI) Airport and Aviation Group has been engaged to deliver an updated Economic Impact (EI) Study for YLW.

The previous economic impact study conducted for Kelowna International Airport (YLW) was completed in February 2011 using data from calendar year 2010. Since that time, YLW has continued to experience strong growth with passenger traffic increasing by 15%. This study primarily uses data from calendar year 2014 although the study was completed in 2015.

### Employment

There are 46 organizations operating at YLW in 2014 with 1,411 full time equivalent (FTE) direct jobs. Of these, 1,306 FTE jobs were located at the airport and another 105 FTE jobs were attributable to off-site organizations operating at the airport. The 105 jobs represents the portion of the time those employees spend either at the airport or providing services to users of the airport (e.g., flight crew not based at YLW, but operating flights to/from YLW). There were another 10 FTE voluntary workers at the airport (excluded from the 1,411 total FTE jobs given above). The 1,411 FTE jobs represent an increase of 9% from the 1,290 direct jobs at the airport in 2010. Total employment including indirect and induced employment increased 6% from 2,520 to 2,670 FTEs.

***Operations at YLW generate 1,411 direct person years of employment and \$83 million in direct wages***

### Labour Income

It is estimated that activity at YLW directly contributes \$83 million in labour income (including benefits unless otherwise stated). This is an increase of 18% since 2010. Total labour income including indirect and induced effects is \$142 million. On average labour income is \$58,610 per direct FTE at YLW.

***Average wage at YLW is \$59,000 per direct FTE***

### Economic Output

It is estimated that activity at YLW contributes \$336 million in direct output. This is an increase of 12% since 2010. Total output including indirect and induced effects is \$600 million.

### GDP

Gross Domestic Product (GDP) is calculated using Statistics Canada economic multipliers for B.C. applied to direct output. Different multipliers were used for different activity categories. \$336 million in direct output is estimated to produce \$169 million in direct GDP, an increase of 41% from that estimated in



2010. Total GDP including indirect and induced effects is over \$345 million, an increase of 38% from 2010.

### **Recurrent Airport Operations**

Even without airport development, the airport would continue to generate recurrent impacts based on ongoing operations. SNC-Lavalin forecast that in year 2020, a total of 2.02 million passengers will travel through the airport, an increase of 26%; and 2.38 million in 2025 (48% increase).

Assuming a similar relationship between growth in passenger traffic and economic benefits as was found over the past 5 years, by the year 2020 operations at YLW can be expected to generate approximately \$393 million (2014\$) in direct output. This in turn equates to approximately 1,649 FTE workers being directly employed at the airport and \$97 million (2014\$) in direct wages.

***Ongoing operations at YLW contribute a total of 2,670 FTE jobs and \$600 million to the economy of the province***

### **Catalytic Impact**

Tourism is one of the major catalytic impacts associated with the airport. The impacts of visitors to the region travelling by air are significant equating to roughly 70% of the employment impact of the airport and between 26% and 36% of the income, output and GDP impacts of the airport. The economic impacts to the region of visitors travelling by air, excluding the airport component, are summarized below.

#### ***Tourism Economic Impact of Visitors Travelling by Air, Excluding Airport Component, in 2014***

Impact Component	Employment		Wages	GDP	Gross output
	Jobs	Person-yrs	(\$ Million)	(\$ Million)	(\$ Million)
<b>Direct Impacts</b>					
Accommodation	528	372	\$13	\$22	\$37
Net Other Tourism Industries	671	387	\$15	\$36	\$77
Visitor Spending	711	555	\$16	\$25	\$47
<b>Total Direct Excl. Airport Component</b>	<b>1,910</b>	<b>1,314</b>	<b>\$44</b>	<b>\$83</b>	<b>\$161</b>
<b>Net Indirect</b>	493	247	\$3	\$2	\$11
<b>Net Induced</b>	586	311	\$4	\$4	\$17
<b>Total Impact</b>	<b>2,990</b>	<b>1,872</b>	<b>\$51</b>	<b>\$90</b>	<b>\$190</b>

A survey of businesses and organizations in the region indicated that the airport is very important in bringing customers to the region. The second most important impact of YLW was on investment decisions to expand in the region, followed by connecting staff with other businesses/organizations, clients, and other offices of their business/organization. The airport is also important in attracting skilled workers to the region. YLW is therefore very important to economic growth in the Okanagan region.



***Each additional daily B737 service generates up to 38 FTE jobs associated with all passenger-related activities at the airport***

#### **Impact of an Additional Daily B737 Flight**

The 2010 Economic Impact Study included an analysis of the microeconomic impact of additional WestJet short and long haul daily B737-700 services to Calgary and Toronto, respectively. It was determined through this micro analysis that the additional jobs created from the addition of these new direct services would generate 16 new jobs (FTE) for the Calgary daily service and 21 new jobs (FTE) for the longer haul Toronto daily service. A high-level desktop calculation, using more general and broad employment benchmarks, reveals a range of 16 - 38 new jobs would be generated from the addition of a single daily B737 flight. The analysis finds that 16 FTE jobs directly relate to air carrier and supporting services; while the higher range of 38 FTE jobs support all passenger-related activities at the airport, excluding aircraft maintenance, charter and GA activities.

#### **Summary**

With 1,411 FTEs and \$336 million in direct output, YLW is a powerful economic generator for the City of Kelowna and Central Okanagan Region. The airport is a gateway to the Region and plays a major role in supporting industry, tourism and overall quality of life.

#### ***Summary of Economic Impacts at YLW – 2014***

ACTIVITY CATEGORY	ASSOCIATED WITH AIRPORT ACTIVITY				CATALYTIC
	DIRECT	INDIRECT	INDUCED	TOTAL	TOURISM
Employment (Person/yr)	1,411	737	525	2,673	1,872
Wages (million)	\$83	\$37	\$22	\$142	\$51
Output (million)	\$336	\$169	\$94	\$599	\$190
GDP (million)	\$169	\$88	\$88	\$345	\$90



# 1 INTRODUCTION

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## 1.1 BACKGROUND AND CONTEXT

Understanding the economic impact of the Kelowna International Airport (YLW) is important for increasing business and community awareness of the activities taking place at the airport and their contribution to the economic well-being of the Central Okanagan Valley. It is also beneficial towards communicating the linkages between the airport and other aspects of the regional economy.

As part of the work leading up to the development of Master Plan 2045, SNC-Lavalin Inc.'s (SLI) Airport and Aviation Group has been engaged to deliver an updated Economic Impact (EI) Study for YLW. The analysis includes two components:

1. Economic impact of businesses located at the airport; and
2. Economic assessment of the influence of YLW on the surrounding regional economy.

The Economic Impact Study is a valuable tool for garnering support among local government, tenants, residents and other community stakeholders for preservation and enhancement of airport activities; providing input to future business planning exercises; and supporting business cases for capital funding initiatives at the airport.

*The previous economic impact study was completed in 2011. Since that time, the passenger traffic at YLW has increased significantly.*

The last economic impact study conducted for the Airport was completed in 2011 using data from year 2010<sup>1</sup>. The study found that ongoing operations at YLW generated 1,290 direct person years of employment and nearly \$70 million in direct wages. It also found that the airport contributed a total of 2,730 jobs and \$610 million in total economic output to the province. Since that time, the passenger traffic at Kelowna International Airport increased significantly.

## 1.2 WHAT IS ECONOMIC IMPACT?

Economic impact is a measure of the level of economic activity such as employment, personal income, business output and value added associated with a sector of the economy, a specific project or government policy. Economic impact is typically determined using the input-output method which measures three separate effects:

- **Direct Impacts** result from activities carried out by firms and others with a direct involvement in the operation and management of the airport and associated aviation related services. The distinguishing feature of a direct impact is that it is an immediate consequence of airport activities. Most direct impacts are generated on-site.
- **Indirect Impacts** are those attributable to non-aviation industries, largely off-site, that supply or provide services to businesses and other groups operating at the airport; i.e., in support of

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<sup>1</sup> 2010 Kelowna International Airport Economic Impact Study, Final Report, by InterVistas Consulting, Feb. 2011.



direct airport activities. Examples include travel agents, and suppliers to airport-based organizations.

- **Induced Impacts** occur when employees directly or indirectly linked to the airport spend their wages.

Economic impacts can be measured and quantified in several different ways, including the following which are calculated for YLW in this report:

- **Gross output (\$)** – the total gross value of all business revenue – the broadest measure of economic activity and indicates the total sales and transactions triggered by operations;
- **Value-added (\$ GDP)** – the “value added” to the economy or the unduplicated total value of goods and services; includes only final goods to avoid double counting of products and services sold during an accounting period;
- **Employment (jobs / FTE)** – the number of jobs created expressed in full-time equivalent jobs or person-years;
- **Wages / salaries (\$)** – the total value of wages and salaries associated with employment impacts; and
- **Tax Revenue (\$)** – the total amount of tax revenues generated for different levels of government.

The economic impact of an airport is typically measured based on the activity at the airport and the associated indirect and induced benefits. This approach has been used for determining the economic impact of most major airports in Canada, and a recent study of the economic impact of aviation in Canada for the Canadian Airports Council<sup>2</sup>.

### Catalytic Impacts

While these measures provide a measure of the economic impact of operations at the airport, it does not include the economic impact on businesses in the region of air travel to/from the region using YLW, nor other socio-economic benefits to residents. These are commonly referred to as catalytic benefits and can be at least as important to the region as the direct, indirect and induced impacts. The impact of the airport on tourism is a good example of one of the catalytic impacts.

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<sup>2</sup> The Economic Impact of the Air Transportation Industry in Canada, Canadian Airports Council (CAC), April 2013