Los Angeles International Airport – Preferential Runway Use Policy

Report on LAWA's Implementation of the Preferential Runway Use Policy

LAX

Los Angeles World Airports

Environmental Services Division
Noise Management Section

April 11, 2014

Table of Contents

List of Tables

List of Figures

List of Appendices

Introduction

Los Angeles World Airports (LAWA), as owner and operator of LAX, must file quarterly noise reports with Caltrans that demonstrate LAWA's efforts to reduce noise impacts on surrounding communities pursuant to State Department of Transportation, Los Angeles County, Division of Aeronautics' (Caltrans) Noise Standards (Title 21, Chapter 2.5, Subchapter 6[1]). In addition, LAWA is required to develop and implement programs to reduce the noise impact area associated with LAX operations over a reasonable period of time, and in the interim, LAWA must apply for a variance from the State's Noise Standards.

The last variance for LAX was issued to LAWA on January 14, 2011 and went into effect on February 13, 2011. Order 7 of the variance imposes the following condition:

> "LAX shall undertake an analysis of the existing Preferential Runway Use Policy to determine conditions related to compliance with the policy, how the policy is implemented, and means for improving compliance. LAX will consult with operators, the FAA, and the LAX/Community Noise Roundtable as necessary in performing this analysis, and will draft a report which will include any recommendations for actions that may lead to better compliance and/or implementation."

The LAX Preferential Runway Use Policy (Policy) was adopted in 1972 by LAWA's Board of Airport Commissioners (BOAC) under Resolution No. 7467. The purpose of the Policy is to reduce noise impacts from LAX operations on the communities surrounding the Airport, and LAWA holds that without this Policy in place, aircraft noise levels in the communities closest to LAX would, in fact, be higher. Historically, the loudest operations at the airport are from departing aircraft. Therefore, the Policy includes a preference for using the inboard runways (06R/24L and 07L/25R), or those runways furthest from the communities directly north and south of the airport, for departures at all times. During the more noise sensitive nighttime hours, between 10 p.m. and 7 a.m., the preferential use of the inboard runways is further expanded to include both departures and arrivals. Finally, during the late night hours between midnight and 6:30 am, the Policy utilizes a contra-flow operation, also known as the Over-Ocean Operations policy, which directs both arrival and departure operations over the ocean rather than over the communities east of the airport. The Over-Ocean Policy alone provides a substantial noise benefit to the communities east of the airport.

LAWA has been monitoring the implementation of this Policy as a routine part of its noise management program for decades, and during that time, overall adherence with the Preferential Runway Use Policy is very high – well over 90% of all operations use the preferred runways. LAWA also works very closely with the FAA Air Traffic Control (ATC) staff to ensure that they implement the Policy to the maximum extent possible, understanding that there are certain operational and safety considerations that make full observance infeasible.

[1] California Department of Transportation, Division of Aeronautics, Title 21, "Subchapter 6. Noise Standards", March 10, 1990.

The purpose of this report is to satisfy the requirements of Order 7 of the LAX Variance and evaluate the Policy. This report includes a description of existing operational and land use conditions at LAX; defines the Policy, how it's implemented, past efforts to improve implementation and adherence, quantify its effectiveness; and lastly, identifies additional measures that may be utilized to improve adherence rates.

Los Angeles International Airport

Location and Facilities

LAX is a primary commercial service airport located in Southern California. The Airport is located within the city limits of the City of Los Angeles and is bound by the community of Westchester (City of Los Angeles) to the north, the cities of Inglewood and Hawthorne to the northeast and southeast, respectively, the City of El Segundo to the south, and the Pacific Ocean to the west (see Figure 1). Generalized land uses in the immediate vicinity of LAX include residential and commercial uses to the north; commercial, industrial, and residential uses to the east; and residential, business office, light industrial, and mixed uses to the south.

LAX's airside facilities are separated into two distinct areas: the North Airfield Complex and the South Airfield Complex. The North Airfield Complex is comprised of two parallel runways 8,925 feet (06L/24R) and 10,285 feet (06R/24L) in length, one parallel taxiway (TWY E), and several exit taxiways. The South Airfield Complex consists of two parallel runways 12,091 feet (Runway 07L/25R) and 11,095 feet (Runway 07R/25L) in length, four parallel taxiways (TWYs A, B, C, and H), and numerous exit taxiways (see Figure 2). The two airfield complexes are generally separated by a variety of landside facilities, including vehicle access roads, parking lots, passenger terminals and gates, hangars, fuel storage facilities, and office buildings. A number of cargo facilities and fixed-base operators (FBOs) are also located south of Runway 07R/25L. Taxiing aircraft can gain access to either complex via crossfield taxiways (TWYs S, R, and AA).

Operations

With 63.68 million annual passengers (MAP), LAX was the sixth busiest airport in the world and the third busiest in the United States for passenger traffic in 2012. Commercial aircraft operations[2] at LAX increased by approximately 0.33 percent in 2012 to 597,944, which included approximately 74 percent of all the passenger traffic in the region.[3] LAX also handled 1.96 million tons of cargo in 2012.[4]

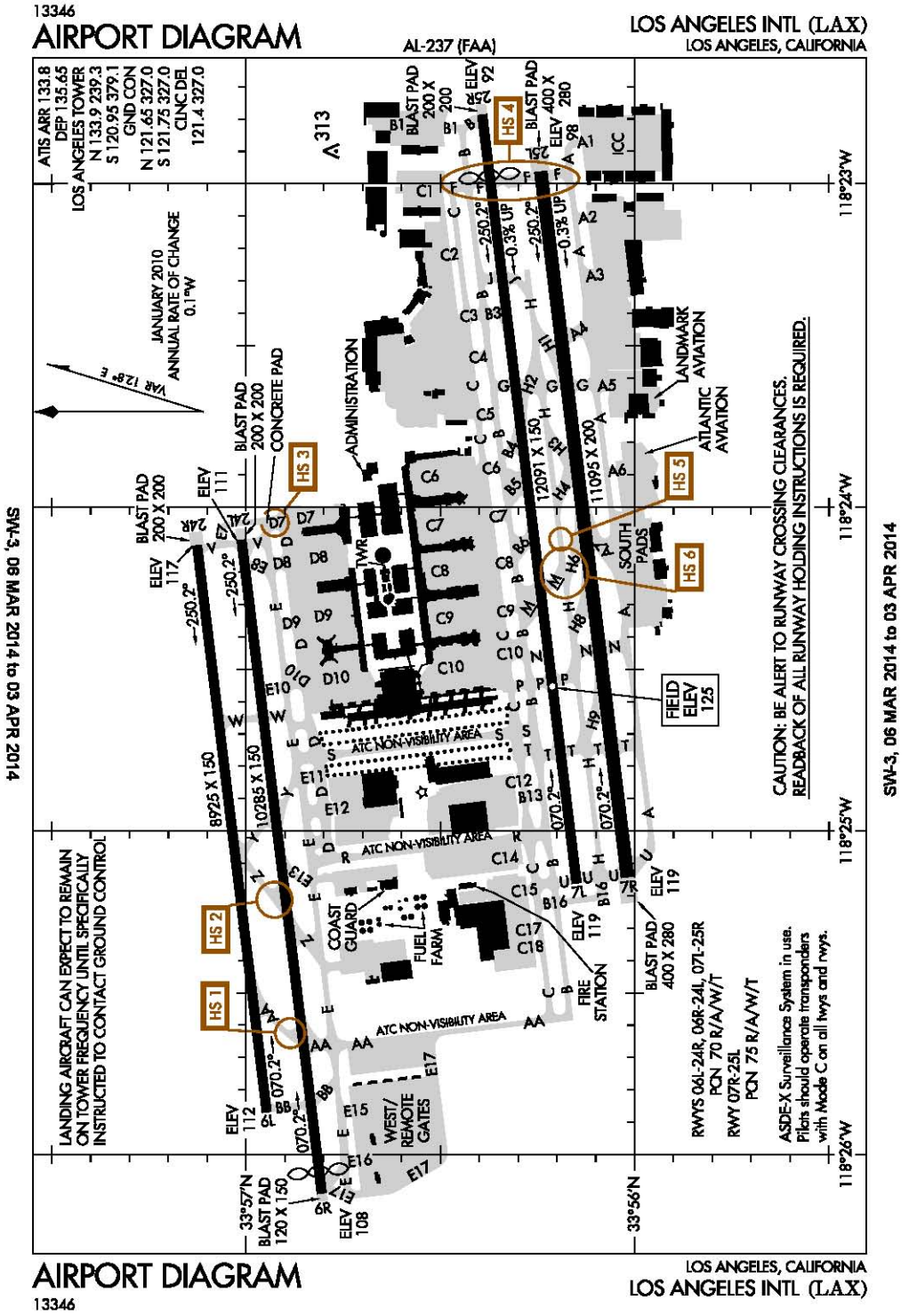
[2] An operation is a takeoff or a landing.
[3] The Southern California region includes five other primary commercial airports, including Bob Hope, John Wayne, Long Beach, Ontario, and Palm Springs.
[4] Los Angeles World Airports, LAX Specific Plan Aviation Activity Analysis Report CY 2012, April 2013.

SOURCE: Thomas Guide; ESA

Los Angeles International Airport – Preferential Runway Use Policy

Figure 1

Los Angeles International Airport and Surrounding Environs



SOURCE: airnav.com, 2014.

Los Angeles International Airport – Preferential Runway Use Policy

Figure 2
Airport Diagram

Air Traffic Flows

The following sections describe standard air traffic patterns at LAX.

Westerly Operations

Westerly Operations is the normal traffic pattern used at LAX during the daytime (6:30 am to midnight) throughout the year. Aircraft approach the airport from the east and depart the Airport to the west due to the prevailing westerly wind. This procedure routes louder departing aircraft to the west over the ocean, while arriving aircraft fly from the east to the west over the communities on the eastside of LAX, including the Cities of Los Angeles, and Inglewood, and the communities of Athens and Lennox (see Figure 3).

Over-Ocean Operations

During the more noise-sensitive nighttime period between midnight and 6:30 am, aircraft normally operate in accordance with the Over-Ocean Operations procedure. In this procedure, aircraft depart over the ocean to the west, as in normal Westerly Operations, but arrive from the west over the ocean. This reduces the aircraft noise exposure on communities to the east of the Airport during the most noise-sensitive hours. Over-Ocean Operations may be canceled and Westerly Operations reinstituted if the Federal Aviation Administration's (FAA's) airport traffic control tower (ATCT) determines that conditions are unsafe for these procedures. Such conditions may include fog and low clouds at the shoreline, winds from the east, runway maintenance and repairs, FAA equipment outages, and air traffic considerations (see Figure 3).

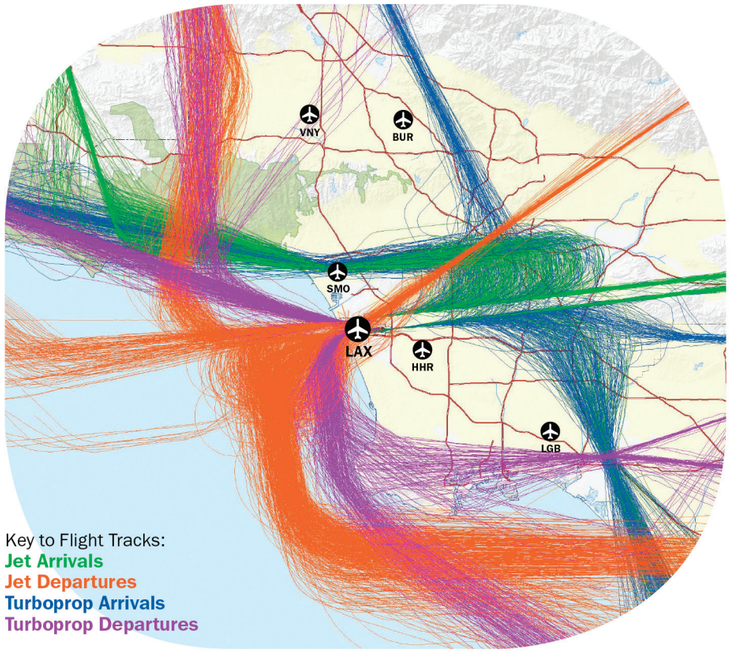
Easterly Operations

Easterly operations are implemented when wind conditions (generally during rainstorms and Santa Ana winds) require reversing the traffic flow of the Airport, so that aircraft arrive from the west and depart to the east. This routes the departing aircraft over the communities to the east, as well as areas to the north and south depending on an aircraft's destination. These operations are employed only when necessary for aviation safety considerations (see Figure 3).

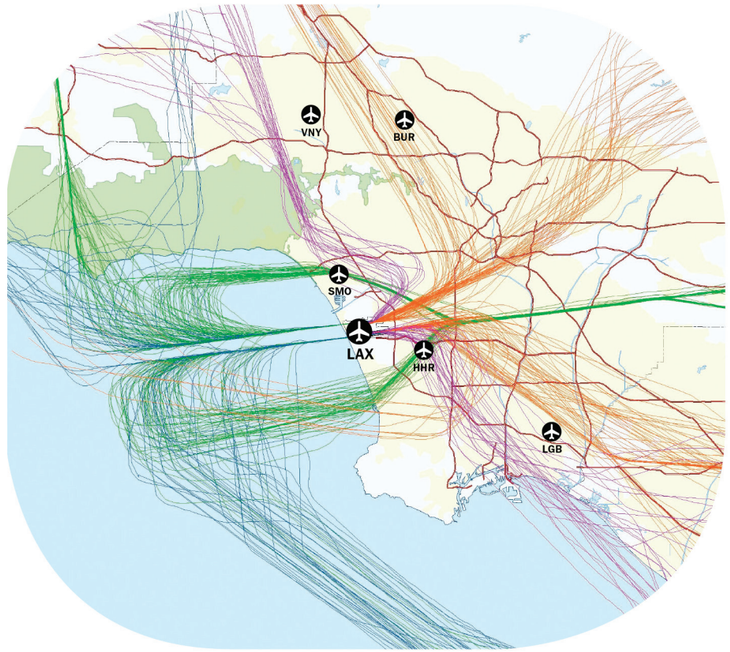
Preferential Runway Use Policy

As described in the introduction to this report, LAWA's BOAC adopted the Policy in 1972. It went into effect on April 29, 1973 and was codified in Section 05 (Noise Abatement) of the LAX Rules and Regulations Manual. Rules relevant to the implementation of the Policy are as follows:

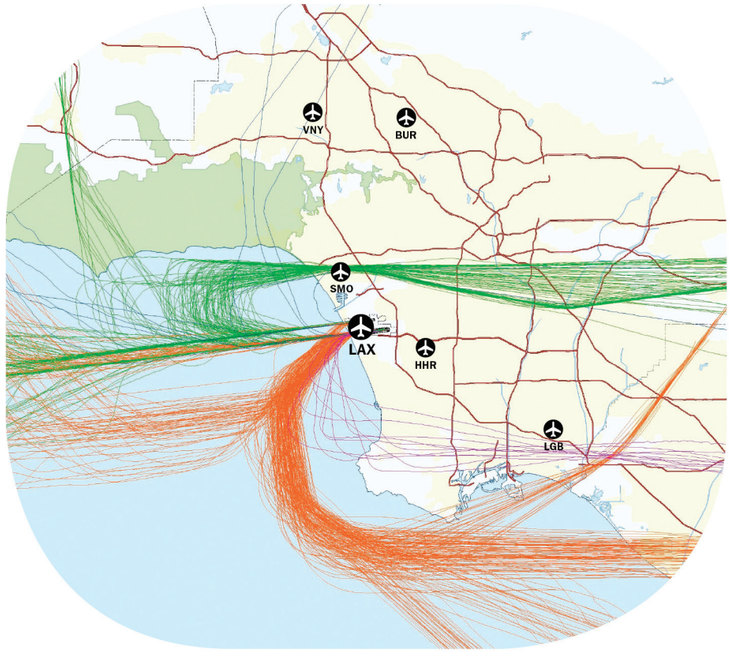
WESTERLY OPERATIONS



EASTERLY OPERATIONS



OVER-OCEAN OPERATIONS



SOURCE: Los Angeles World Airports, 2014

Figure 3
LAX Air Traffic Flows

1. Operational Responsibilities
    a. ATC shall employ the noise abatement preferential runway and taxiway use procedures specified herein, recognizing that under certain conditions it may be necessary to prescribe deviations because of aircraft emergencies, adverse weather, or field construction and maintenance work. Nothing in these procedures shall limit the discretion of either ATC or the pilot with respect to the full utilization of the airport facilities in an unusual situation.
3. Runway Use Procedures
    a. Preferential Runway Use. During the noise sensitive hours of 2200 to 0700, ATC shall maximize use of inboard Runways 06R/24L and 07L/25R and Taxiways C and E. At all times, the inboard runways shall be preferred to the outboard runways for departures. Over-Ocean Operation procedures shall be in effect between the hours of 0000 and 0630 as provided in Subsection 4.

Figure 4 depicts the preferential runway use at LAX.

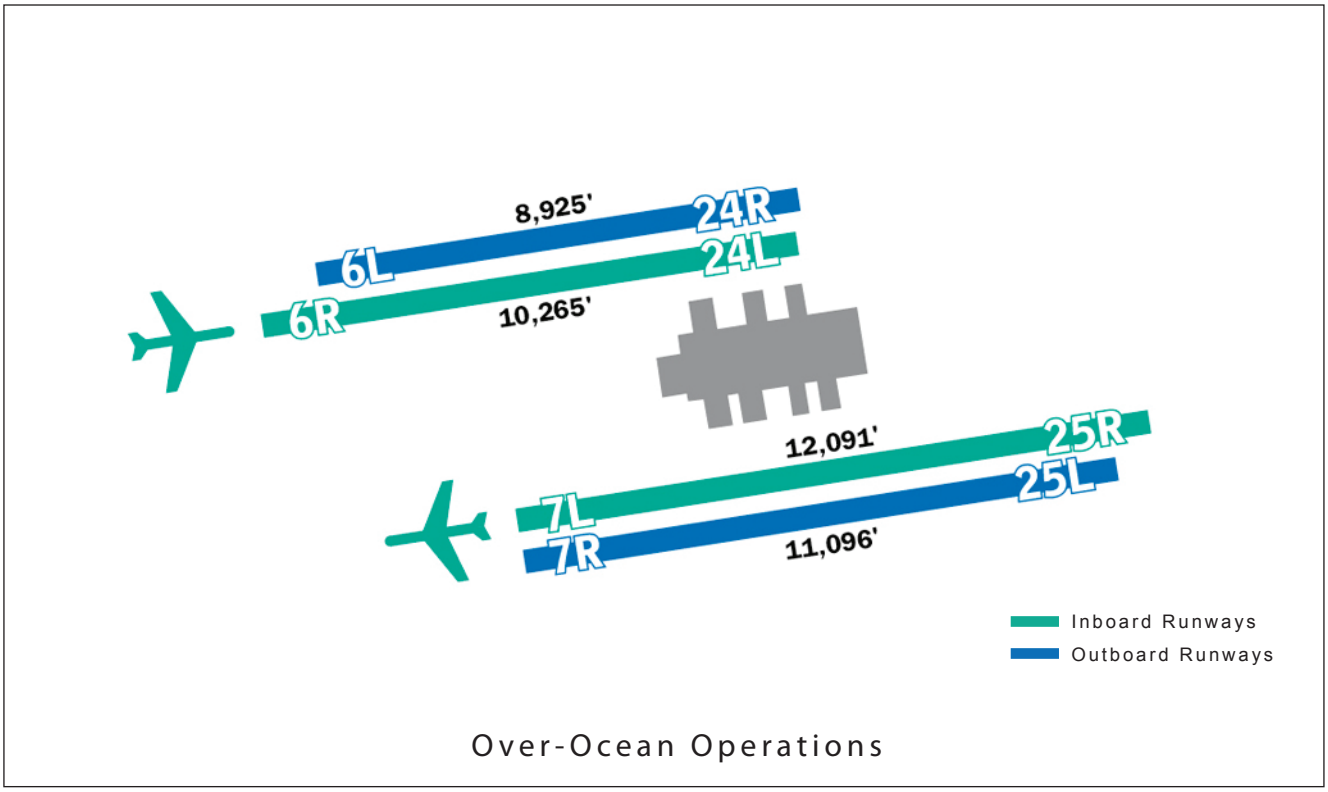
Implementation of the Preferential Runway Use Policy

Implementation of the Policy involves three primary tasks: 1) informing/implementing, 2) tracking, and 3) reporting. The principal method of implementing the Policy is through coordination with FAA ATC personnel. While the Policy is an Airport regulation set forth in LAX's standard operating procedures, FAA ATC personnel are responsible for assigning runways to aircraft departing and arriving at LAX. Therefore, LAWA works closely with FAA to ensure that ATC's runway assignments adhere to the Policy whenever possible. However, pursuant to federal law, ATC personnel have discretion to utilize all four runways as they deem necessary for the purposes of safety and air traffic efficiency. To ensure that ATC implements the Policy to the greatest extent feasible, LAWA will communicate with them on an as-needed basis including interacting with ATC personnel at regular meetings of the LAX Community Noise Roundtable (Roundtable).[5] The Policy is incorporated into the ATC standard operating procedures for LAX.

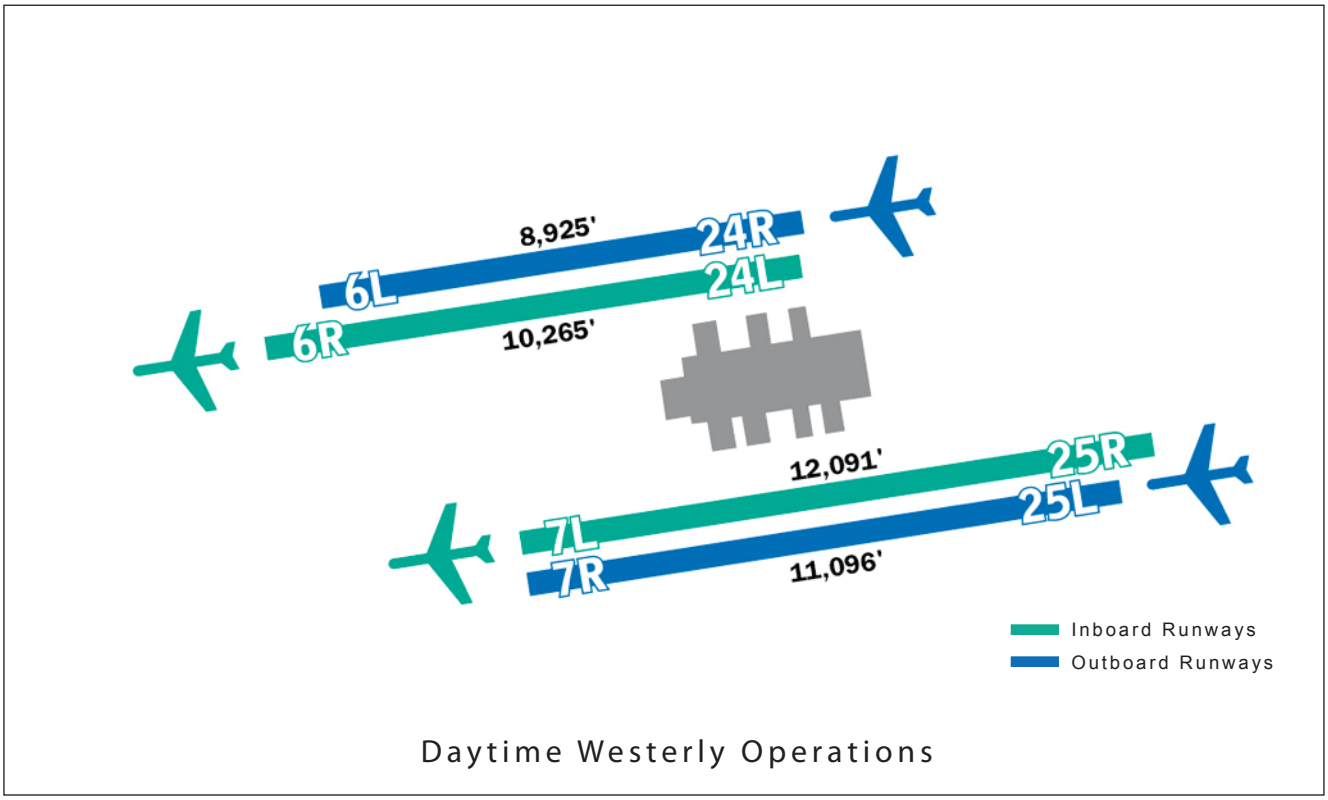
LAWA tracks the implementation of the Policy as a routine part of its noise management program. The primary tool used to gather operational data at LAX is the Airport Noise and Operations Management System (ANOMS). ANOMS gathers information about each operation that occurs at LAX, and allows LAWA staff to query specific operations and filter operations data by a number of variables (e.g., runway use, time of day, aircraft type, etc.).

Lastly, LAWA reports on operations and runway usage in a quarterly report it prepares pursuant to its Variance. LAWA also prepares a bi-annual report that it presents to the Roundtable, during which time ATC, airlines, LAWA staff, and members of the general public can discuss runway usage at LAX and the effectiveness of LAX's noise abatement programs in an open forum.

[5] The LAX Community Noise Roundtable was created in September 2000 and is intended to reduce and mitigate the adverse noise impacts that the users of LAX create on the surrounding communities and their environs. Membership of the Roundtable consists of local elected officials and staff, representatives of congressional offices, members of recognized community groups, the FAA, the airlines, and LAWA management.



Over-Ocean Operations



Daytime Westerly Operations

SOURCE: Los Angeles World Airports, 2014

Los Angeles International Airport – Preferential Runway Use Policy

Figure 4
Preferential Runway Use at LAX

Effectiveness of the Preferential Runway Use Policy

Overall adherence with the Policy is very high, with well over 90 percent of all operations using the preferred runways. Tables 1 and 2 provide a breakdown of runway use percentages by quarter in 2013 for the North and South complexes, respectively.

TABLE 1. 2013 OPERATIONS BY QUARTER – NORTH COMPLEX				
ARRIVALS				
	Q1	**Q2**	**Q3**	**Q4**
Total Operations	34,327	37,488	39,032	37,110
Inboard	8%	9%	7%	8%
Outboard	92%	91%	93%	92%
DEPARTURES				
	Q1	**Q2**	**Q3**	**Q4**
Total Operations	28,965	31,326	34,173	30,770
Inboard	97%	97%	97%	96%
Outboard	3%	3%	3%	4%
Source: LAWA, 2014				

TABLE 2. 2013 OPERATIONS BY QUARTER – SOUTH COMPLEX				
ARRIVALS				
	Q1	**Q2**	**Q3**	**Q4**
Total Operations	36,070	38,853	41,571	39,804
Inboard	6%	5%	6%	8%
Outboard	94%	95%	94%	92%
DEPARTURES				
	Q1	**Q2**	**Q3**	**Q4**
Total Operations	41,474	45,207	46,607	46,283
Inboard	87%	92%	94%	93%
Outboard	13%	8%	6%	7%
Source: LAWA, 2014				

Adherence to the Policy has been historically high. As shown in Table 3, over the past four years departures occurred on the inboard runways (06R/24L and 07L/25R) 97 percent of the time on the North complex and 93 percent of the time on the South complex. Similarly, arrivals occurred on the outboard runways 93 percent of the time on the North complex and 94 percent of the time on the South complex (also see Appendices A – E). As shown in Tables 1 and 2, with the exception of departures on the South complex in the first quarter of 2013, adherence to the Policy was very high last year; never dropping below 90 percent.

TABLE 3. 2010 – 2013 RUNWAY UTILIZATION – NORTH AND SOUTH COMPLEXES				
	Departures		Arrivals	
Calendar Year	Inboard	Outboard	Inboard	Outboard
NORTH COMPLEX				
2013	97%	3%	8%	92%
2012	96%	4%	8%	92%
2011	97%	3%	6%	94%
2010*	97%	3%	6%	94%
Four Year Average	**97%**	3%	7%	**93%**
SOUTH COMPLEX				
2013	91%	9%	6%	94%
2012	93%	7%	7%	93%
2011	94%	6%	7%	93%
2010*	94%	6%	6%	94%
Four Year Average	**93%**	7%	6%	**94%**
***Calendar Year 2010 – based on Q2 – Q4 data** **Source: LAWA, 2014**				

LAX accommodates a variety of operation types, including commercial, air cargo, general aviation, and military operations. LAX also accommodates other types of operations such as medical flights and helicopter operations. Of the four primary operation types, commercial, air cargo, and general aviation operations are the most common. Table 4 identifies historic runway use for commercial and air cargo operations by North and South complexes.

TABLE 4. 2010 – 2013 COMMERCIAL / AIR CARGO OPERATIONS – NORTH AND SOUTH COMPLEXES				
	Departures		Arrivals	
Calendar Year	Inboard	Outboard	Inboard	Outboard
NORTH COMPLEX				
2013	**97%**	3%	8%	**92%**
2012	**96%**	4%	8%	**92%**
2011	**97%**	3%	6%	**94%**
2010*	**97%**	3%	5%	**95%**
SOUTH COMPLEX				
2013	**93%**	7%	6%	**94%**
2012	**94%**	6%	7%	**93%**
2011	**96%**	4%	7%	**93%**
2010*	**95%**	5%	6%	**94%**
***Calendar Year 2010 – based on Q2 – Q4 data** **Source: LAWA, 2014**				

As shown in the table above, over 90 percent of all commercial and air cargo operations were adherent with the Policy between 2010 and 2013. Outboard departures occurred with slightly higher frequency on the South complex than the North.

Table 5 identifies historic runway use for general aviation operations by North and South complexes.

TABLE 5. 2010 – 2013 GENERAL AVIATION OPERATIONS – NORTH AND SOUTH COMPLEXES				
	Departures		Arrivals	
Calendar Year	Inboard	Outboard	Inboard	Outboard
NORTH COMPLEX				
2013	**91%**	9%	8%	**92%**
2012	**90%**	10%	8%	**92%**
2011	**88%**	12%	7%	**93%**
2010*	**92%**	8%	7%	**93%**
SOUTH COMPLEX				
2013	**66%**	34%	3%	**97%**
2012	**70%**	30%	3%	**97%**
2011	**70%**	30%	2%	**98%**
2010*	**71%**	29%	2%	**98%**
***Calendar Year 2010 – based on Q2 – Q4 data** **Source: LAWA, 2014**				

As shown in Table 5, approximately 90 percent of all general aviation operations out of the North complex have adhered to the Policy over the last four years. In contrast only 69 percent of general aviation operations out of the South complex have adhered to the Policy during this same period. An examination of both Tables 4 and 5 shows that adherence to the Policy on the North complex has historically been strong. Meanwhile adherence rates on the South complex dip slightly for commercial and air cargo operations and are noticeably lower for general operations. This difference in adherence rates between the North and South complexes may be the result of several factors, which include ATC concern for safety, runway closures and routine maintenance, and ATC overall management given traffic volume and aircraft design.

As described previously in this report, given their direct contact with aircraft operators, ATC is primarily responsible for ensuring adherence to LAX's standard operating procedures, and as data in Tables 1 through 3 indicate, they are very effective at implementing the Policy. With the exception of safety and air traffic efficiency, few reasons, in fact, exist for why ATC personnel would direct aircraft in a manner other than what is specified by standard operating procedures. These variables, however, will influence ATC's decision making process. For example, given the greater number of passenger gates, air cargo facilities, and FBOs on the South complex side of LAX, Runways 07L/25R and 07R/25L generally experience a greater number of operations than the North complex (see Table 6).

TABLE 6. 2010 – 2013 TOTAL OPERATIONS BY COMPLEX						
	South Complex			North Complex		
Year	Departures	Arrivals	Total Ops	Departures	Arrivals	Total Ops
2013	179,571	156,298	335,869	125,234	147,957	273,191
2012	172,055	156,358	328,413	112,834	139,942	252,776
2011	182,313	156,579	338,892	116,648	137,960	254,608
2010	129,394	113,635	243,029	86,093	99,284	185,377
*Calendar Year 2010 – based on Q2 – Q4 data Source: LAWA, 2014						

Because of the larger number of operations on the South complex, during high air traffic periods ATC personnel may choose to instruct the aircraft to depart from the outboard (07R/25L) runway, rather than have them cross two active runways to taxi to an inboard runway for departure, per LAX's standard operating procedures. Such decisions are usually the result of concerns over safety and efficiency, and are most likely to occur during the daytime when air traffic volumes are greatest.

During the daytime, arrivals typically occur on the outboard runways (see Table 7 below), although the inboard runways may also be used at the discretion of ATC and as air traffic permits (e.g. during periods of high air traffic volumes). During nighttime hours (10 p.m. to 7 a.m.), the Policy calls for maximizing the use of the inboard runways for both arrivals and departures. During conditions when LAX is experiencing higher traffic volume, arrival operations may continue on the outboard runways between 10 p.m. and midnight, and then again from 6:30 a.m. to 7:00 a.m., at which point the daytime period commences. During Over-Ocean Operations (midnight to 6:30 a.m.) when traffic volumes are lower, adherence to the Policy is expected to be high. However, as shown in Table 7, the percent of arrivals and departures on the inboard runways during this period is lower than anticipated, which introduces another variable that often causes non-adherence with the Policy: runway closures.

TABLE 7. 2013 RUNWAY UTILIZATION BY TIME OF DAY – NORTH AND SOUTH COMPLEXES				
	Arrivals		Departures	
Period	Inboard	Outboard	Inboard	Outboard
NORTH COMPLEX				
24 Hours	8%	92%	97%	3%
Day (7 a.m. - 10 p.m.)	4%	96%	97%	3%
Night (10 p.m. - 7 a.m.)	33%	67%	95%	5%
Over Ocean (Midnight - 6:30 a.m.)	73%	27%	90%	10%
SOUTH COMPLEX				
24 Hours	6%	94%	91%	9%
Day (7 a.m. - 10 p.m.)	5%	95%	93%	7%
Night (10 p.m. - 7 a.m.)	18%	82%	85%	15%
Over Ocean (Midnight - 6:30 a.m.)	46%	54%	79%	21%
Source: LAWA, 2014				

Runway closures can occur for a variety of reasons, including routine maintenance activities (e.g., rubber removal, runway painting, lighting and electrical work), pavement testing, and aircraft mechanical problems. In 2013, both the North and South complexes experienced a total of 862 runway closures for periods of time ranging from one minute to 24 hours. Long-term runway projects can have an effect on adherence to the Policy. For example, from January 26, 2013 to February 3, 2013, inboard Runway 07L/25R experienced extended periods of closure as its lighting system underwent improvements. This closure, in part, contributed to a spike in outboard departures in the first quarter of 2013, as shown in Table 2.

The most common reason for runway closures, however, is routine maintenance, which must be performed at night when aircraft operations are low. While maintenance activities are generally short in duration, given the fact that they typically occur during the night and Over-Ocean Operation hours, when average daily operations are in low number, their effect on overall compliance rates is compounded.

As shown in Table 8, while the number of average daily departures off the outboard runways was at its lowest during the Over-Ocean Operation period, because total operations are vastly lower during this time frame the effect this has on Policy adherence rates between midnight and 6:30 a.m. is pronounced. The significance of outboard departures from midnight to 6:30 a.m. should not be understated; aircraft noise is generally more noticeable during this period due to the decrease in other background noise sources. It should also be noted, however, that the FAA will continue with Over-Ocean operations even when an inboard or outboard runway is closed, which substantially lessens aircraft noise exposure on communities to the east of LAX.

TABLE 8. 2013 DAILY AVERAGE TIME OF DAY RUNWAY UTILIZATION – NORTH AND SOUTH COMPLEXES

	Average Daily Arrivals		Average Daily Departures	
Period	**Inboard**	**Outboard**	**Inboard**	**Outboard**
NORTH COMPLEX				
24 Hours	33	372	332	11
Day (7 a.m. - 10 p.m.)	13	331	290	9
Night (10 p.m. - 7 a.m.)	20	41	42	2
Over Ocean (Midnight - 6:30 a.m.)	19	7	11	1
SOUTH COMPLEX				
24 Hours	27	401	450	42
Day (7 a.m. - 10 p.m.)	17	353	350	25
Night (10 p.m. - 7 a.m.)	10	48	100	18
Over Ocean (Midnight - 6:30 a.m.)	9	11	47	12

Source: LAWA, 2014

In addition to issues related to air traffic volumes, safety, and runway closures, aircraft design will also influence ATC's decision about how best to manage runway usage. For example, Airplane Design Group (Group) VI aircraft, particularly the B747-800 and the A380 that have an expanded wing span, cannot depart from Runway 25R due to insufficient spacing between Runway 25R and Taxiway B. As a result, when Group VI aircraft are assigned to the south airfield complex for departure, these aircraft are (regularly) required to depart from Runway 25L.

Group VI aircraft can and do depart from the north airfield complex on Runway 24L, which is available due to adequate spacing between Runway 24L and Runway 24R, and between Runway 24L and Taxiway E.

Despite the challenges in implementing the Policy described above, it's worth noting again that overall adherence to the Policy is very high. As shown in Tables 1 through 3, ATC has been very effective in implementing LAX's standard operating procedures, including the Policy. Regardless of this success, however, LAWA has made a concerted effort to find ways to improve adherence to the Policy, as described below.

Past Efforts to Improve the Preferential Runway Use Policy

As described in the previous section, historical adherence to the Policy at LAX has been very high. With increased dialogue and support from the FAA, who formally implements the Policy, further improvements have been made to raise adherence rates. In particular, focused efforts to reduce the number of nighttime departures from the southernmost runway (07R/25L) have been implemented as described in greater detail in the subsection below.

Both LAWA and the FAA have taken numerous actions to improve conformance with the LAX Policy. It is essential that LAWA and FAA maintain these efforts in order to assure continued conformance, and to make any possible improvements in the future.

Ongoing Actions:

- Minimize duration of Runway 25R closures by consolidating all maintenance work during a planned closure.
- Schedule routine maintenance for Runway 25R during the lowest traffic period whenever practicable.
- Assign as many south complex cargo and GA aircraft departures to the inboard runway as safety and workload allows.
- Continue to encourage and coordinate with cargo operators who are familiar with the airport to routinely request inboard runways for departure.
- Continue monitoring implementation of the Policy and provide periodic updates to the Roundtable related to implementation of the Policy; post runway utilization reports to the LAX Roundtable website.
- Conduct outboard runway departures between midnight and 6:30 a.m. only when absolutely necessary (e.g., when inboard runways or key taxiways are closed).

South Airfield Complex

Departures using either of the two outboard runways (06L/24R and 07R/25L), and in particular nighttime operations on those outboard runways, represent potential annoyances to communities north and south of LAX. There are, however, several factors that lead to greater use of the outboard runway on the South airfield complex (07R/25L). In general, the basic configuration of the runways, the location of cargo facilities and FBOs, and the higher number of airline gates on the south side of the Airport lead to a larger number of operations occurring on the South complex than the North complex (as seen in Tables 1 and 2). Therefore, a focus of

LAWA's recent efforts has been on reducing departures that occur on the South airfield complex's outboard runway (07R/25L). One such effort has been to actively engage the City of El Segundo.

In 2010, LAWA staff and representatives from the City of El Segundo participated in meetings with the LAX ATC Manager, Sherry Avery, and her staff at the LAX FAA Control Tower, to discuss El Segundo's issues of concern related to the Policy and other operations or procedures that affect El Segundo. Through this and other discussions with El Segundo, LAWA came to better understand that El Segundo residents are primarily concerned with departures occurring on the south outboard runway (25L), in particular, during the nighttime period. LAWA has provided a brief report of the number of days when Runway 25R was closed, and days when it was not closed, to determine the potential causes for aircraft to depart from Runway 25L during nighttime hours. This report is attached in Appendix F and clearly shows that nearly all of the Runway 25L nighttime departures occurred during closures of Runway 25R. There were a very small number of departures on Runway 25L that occurred when Runway 25R was open at night, and those were either Group VI aircraft or aircraft originating from facilities south of Runway 25L.

To respond directly to the City of El Segundo's requests, LAWA has worked to minimize closures of Runway 25R as a way to reduce Runway 25L departures during more noise-sensitive periods between midnight and 6:30 a.m. In an effort to improve the existing practice of minimizing closures, LAWA has consolidated all required maintenance work during a planned runway closure. Several routine maintenance functions, including runway painting, concrete repair, lighting and electrical work, and rubber removal are all scheduled at the same time during the closure to minimize the frequency and the duration of the closure of this runway. Runway 25R closures are also scheduled to commence at 2:00 a.m., rather than midnight, which is the standard for the other three runways, in order to reduce the need for departures on the outboard runway that would otherwise occur in the early morning hours (midnight to 2 a.m.) when there are several international carriers with scheduled departures using heavy aircraft. All of these efforts help to reduce the total closure time on Runway 25R to a maximum of four hours per occurrence rather than six hours, which is typical for the three other runways.

In November 2012 at the LAX Roundtable meeting, LAWA staff presented statistical information for departures on Runway 25L and solicited possible ways to further minimize these operations. The FAA discussed some of their concerns with both general aviation and cargo operators, whose facilities are located on the south side of Runway 25L, having to cross two active runways in order to line up for departure on Runway 25R. They further explained that general aviation operators are often not as familiar with LAX, which leads to safety concerns when directing them across active runways. Therefore, to avoid the potential for runway incursions, and due to controller workload, ATC personnel will sometimes issue Runway 25L departures to these operators, especially during the daytime and evening hours when traffic volumes are high. Despite this challenge, the FAA assigns general aviation and cargo aircraft more frequently to depart from Runway 25R than Runway 25L, as statistics have shown (see Appendices A, B, and C, on pages 7, 16, and 25 respectively). The FAA indicated that during the Over-Ocean

hours (midnight to 6:30 a.m.), all aircraft are assigned to the inboard runway (25R) for departures, when available.

In May 2013, LAWA engaged FedEx in a discussion at the Roundtable meeting regarding the possibility of having FedEx pilots request Runway 25R for departures as a way to minimize their use of Runway 25L. In November 2013, FedEx reported back to the Roundtable that they have instituted policies whereby all of their pilots are to request Runway 25R for departures, with the understanding that in some instances FAA ATC personnel may not grant the request or the inboard runway may not be available at that time, and they may be directed to depart on Runway 25L.

Between May 2010 and November 2013, LAWA monitored the implementation of the Policy and provided periodic updates to the Roundtable specifically regarding the usage of Runways 25L and 25R. These briefings were given during the May 12, 2010, November 10, 2010, May 11, 2011, November 9, 2011, November 14, 2012 and the November 13, 2013 meetings. LAWA continues to provide these briefings on an annual basis, or more frequently, as needed. Runway Utilization Reports are included as a standard attachment to the LAX Quarterly Reports that are submitted to the County and the State. These reports, and all presentations given to the LAX/Community Noise Roundtable, are posted on LAWA's website at http://www.lawa.org/LAXNoiseRoundTable.aspx. The relevant slides from these presentations are also attached to this report in the Appendices.

Conclusions and Recommendations

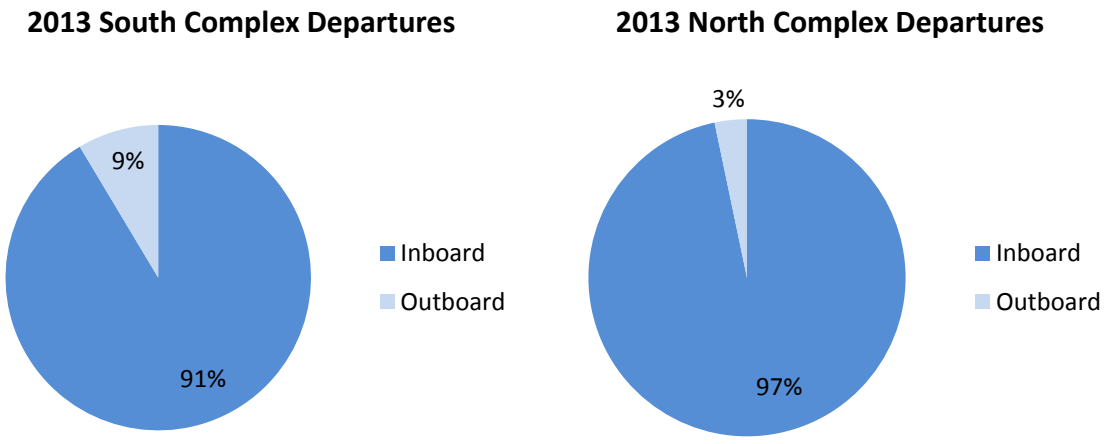
Overall adherence to the LAX Policy remains high and, in the opinion of LAWA, provides the communities surrounding LAX with significant and measurable relief from aircraft noise. Despite the success of the Policy several challenges remain. Issues related to air traffic volumes, safety considerations, and runway closures for required maintenance will continue to influence how and when ATC personnel implement the Policy. As described in this report, departures on outboard runways during the daytime, though a small percent of total operations, are predominately the result of periods of high air traffic volumes. Conversely, during the nighttime hours, the overall number of operations decrease, but use of the outboard runways for departures increases (as a percentage of total operations during this time period), primarily due to closures associated with routine runway maintenance activities.

To a certain degree, these issues will remain a constant at LAX. ATC personnel must direct air traffic in a manner that is both safe and efficient, which sometimes requires use of the outboard runways for departures. Similarly, runway maintenance activities will continue to occur during the nighttime hours when the volume of aircraft operations is lower. These operational realities, however, will not deter LAWA from seeking ways to further improve Policy adherence rates. As outlined in the previous section, LAWA has already taken a number of steps to improve how the Policy is implemented. In addition to these efforts, LAWA has also sought to engage the communities around LAX to keep them informed and solicit valuable feedback.

In order to continue improving upon the already high adherence rate to LAX's standard operating procedures, LAWA is examining a variety of ways in which to better inform, track, respond, and report on operations that are both adherent and non-adherent with the Policy. There are, however, a number of variables that must be considered when pursuing methods for improving adherence with the Policy. First, LAWA is only one half of the team responsible for implementing the Policy. The Policy along with the rest of LAX's standard operating procedures were established by LAWA, but they are implemented by FAA ATC personnel. As such, LAWA will continue to coordinate with ATC to ensure that aircraft are directed in a manner consistent with the Policy to the greatest extent feasible. Any suggested improvements must consider ATC's role in implementing the Policy. Furthermore, LAWA must weigh the cost of implementing a recommendation against the potential improvements that it seeks to make. For example, as illustrated in the graphic below (and explained in more detail in Tables 1 and 2 above), LAX's South complex experienced more departures on its outboard runway in 2013 than the North complex. As discussed in this report, there are a variety of reasons for this differential. Given the number of outboard departures on the South complex, the best use of LAWA's time and resources may be to focus more of its efforts on improving Policy adherence on the South complex.

One current effort that may yield potential improvements to the Policy is the LAWA study of a possible westward shift of Runway 25R to determine whether it would have an effect on airplane noise in El Segundo and whether it would result in any operational impacts to the LAX south airfield including runway use and airfield balance. LAWA is actively engaged with nearby communities to identify means for enhancing Policy implementation and results of this study are anticipated in late 2014 or early 2015.

In summary, these results offer both proof that the Policy is effective in its purpose and intent, and that there are still areas that can be improved upon.



Efforts to Improve Implementation

There are various means by which to try to achieve improved implementation of the Policy. These could include efforts to better inform, respond, and report on adherence with the Policy through education and outreach. Other improvements could be realized through coordination efforts between LAWA and its ATC partner. The following are recommendations that LAWA is considering for improving adherence to the Policy.

1. Develop pamphlets and/or flyers that can be posted in pilots' lounges/ready rooms that educate pilots on the purpose and importance of adherence with the Policy.
2. Develop a brochure that is sent out to airlines and general aviation aircraft owners and operators that have large numbers of non-adherent operations in any quarter, educating them as to the purpose, intent, and need for adherence with the Policy. Consider other potential recipients of the brochure besides just non-adherent aircraft owners/operators.
3. Engage stakeholders to solicit suggestions for improving Policy implementation.
4. Post maintenance schedules on the LAX Aircraft Noise website in order to notify communities around LAX when operations on outboard runways may increase.
5. Maintain adequate staffing dedicated to the noise program to provide for outreach and timely adherence monitoring.
6. Increase effort to monitor Policy implementation for any abnormal increases in non-adherent operations.
7. Use ANOMS to automate, to the greatest extent possible, the process of identifying and investigating abnormal increases in non-adherent operations.
8. Focus efforts on tracking and investigating non-adherent operations that occur during the nighttime hours and on the south runway complex.
9. Request that ATC assign Group VI aircraft, particularly the B747-8 and A380, to depart the north complex inboard runway (24L), especially during the more noise-sensitive period between 10 p.m. and 7 a.m.
10. Increase effort to coordinate and work with FAA ATC to maximize implementation of the Policy to the greatest extent practicable.
11. Determine if results from the south runway Shift Study affect operational impacts to the south airfield runway use by allowing more aircraft located on the south side to depart more easily from the inboard runway.

LAWA recognizes that even small improvements to LAWA operations can yield dividends to its neighbors and will continue to work with the FAA and aircraft operators to implement the Policy to the greatest extent feasible.

Appendices

Los Angeles World Airports

Statistical Update on Aircraft Operations

November 13, 2013

LAX/Community Noise Roundtable

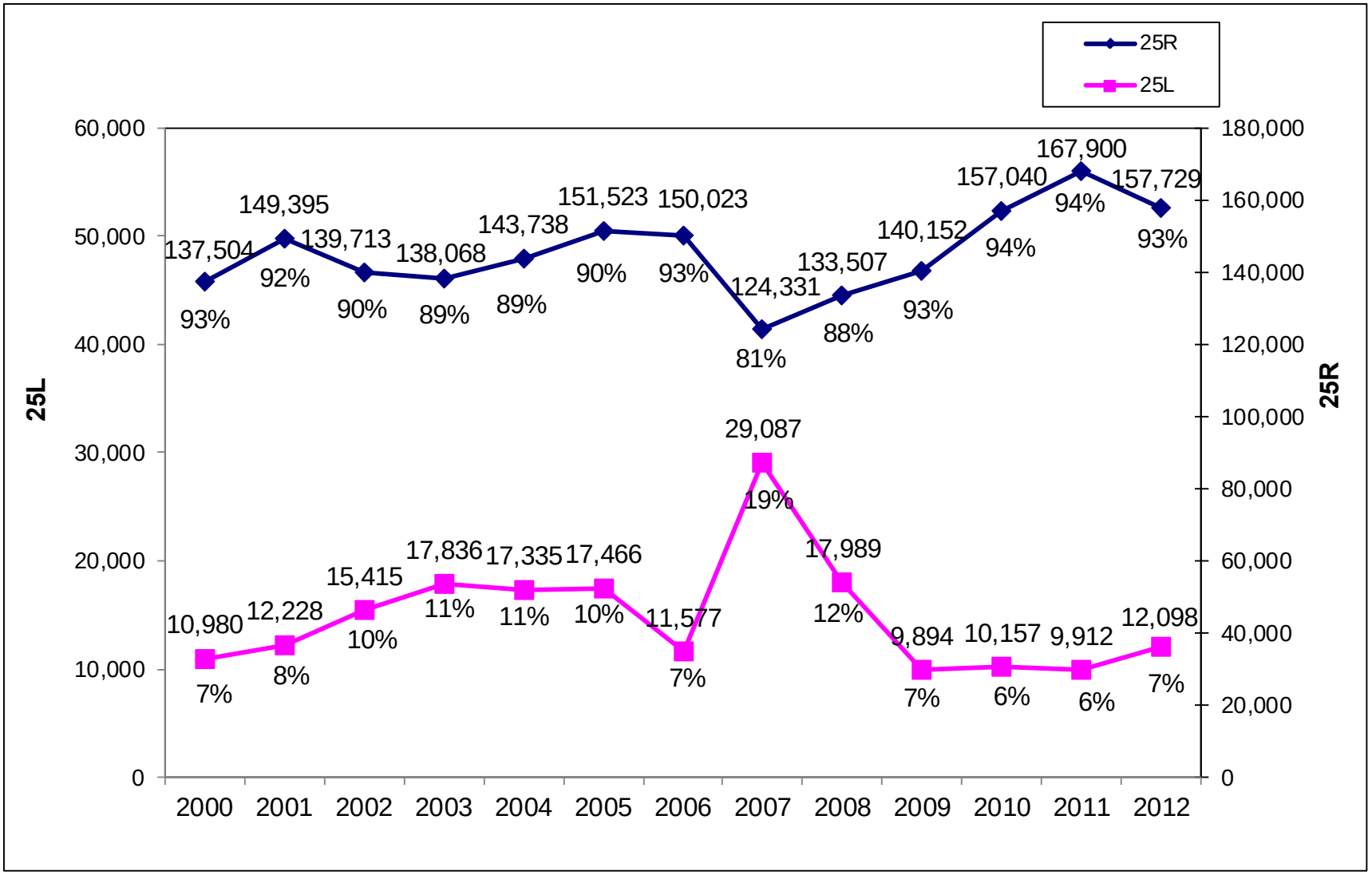
Overview

Statistical information on the following operations:

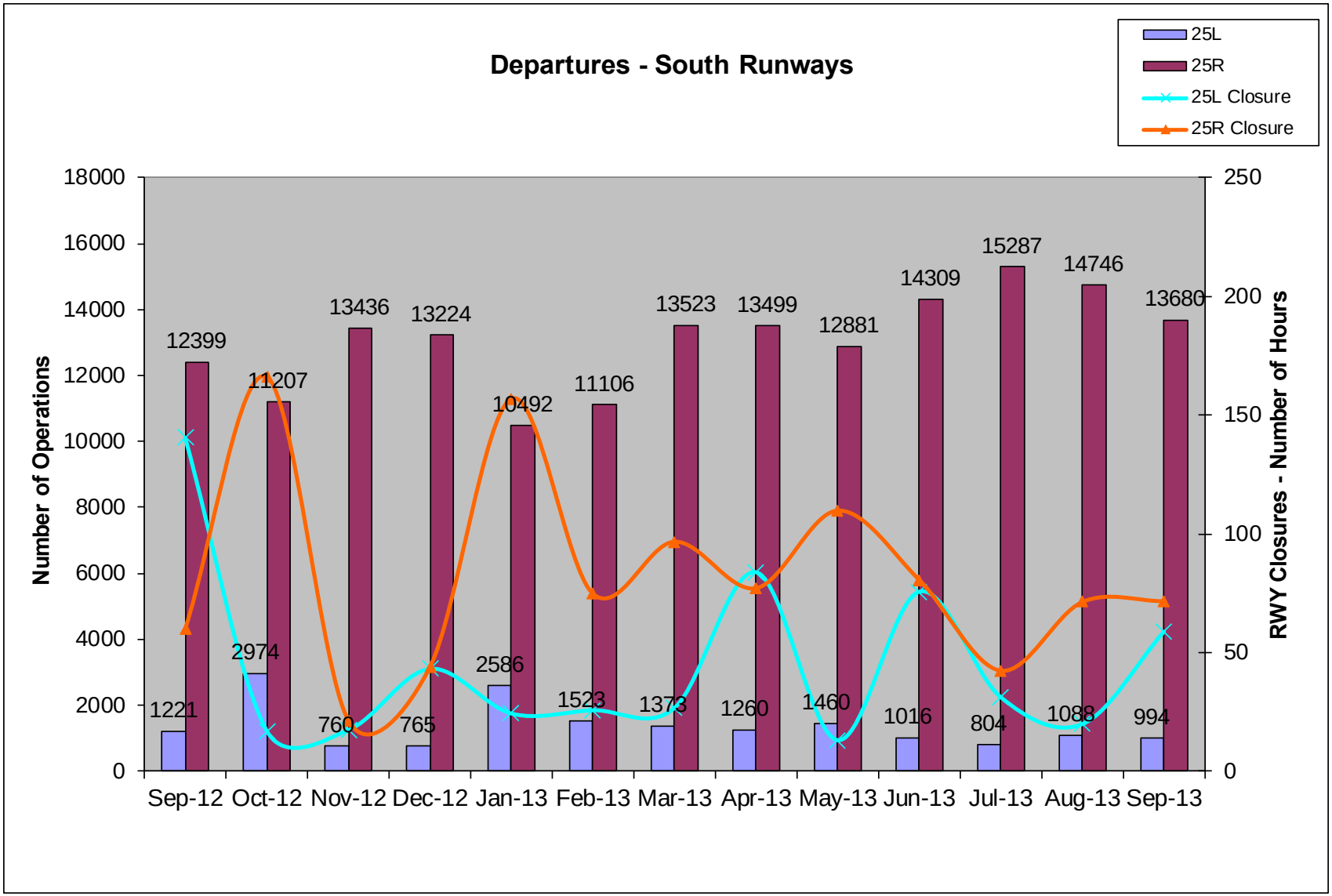
- 25L Departures
- Palos Verdes Overflights

Departures – Runways 25L and 25R
Annual Comparison

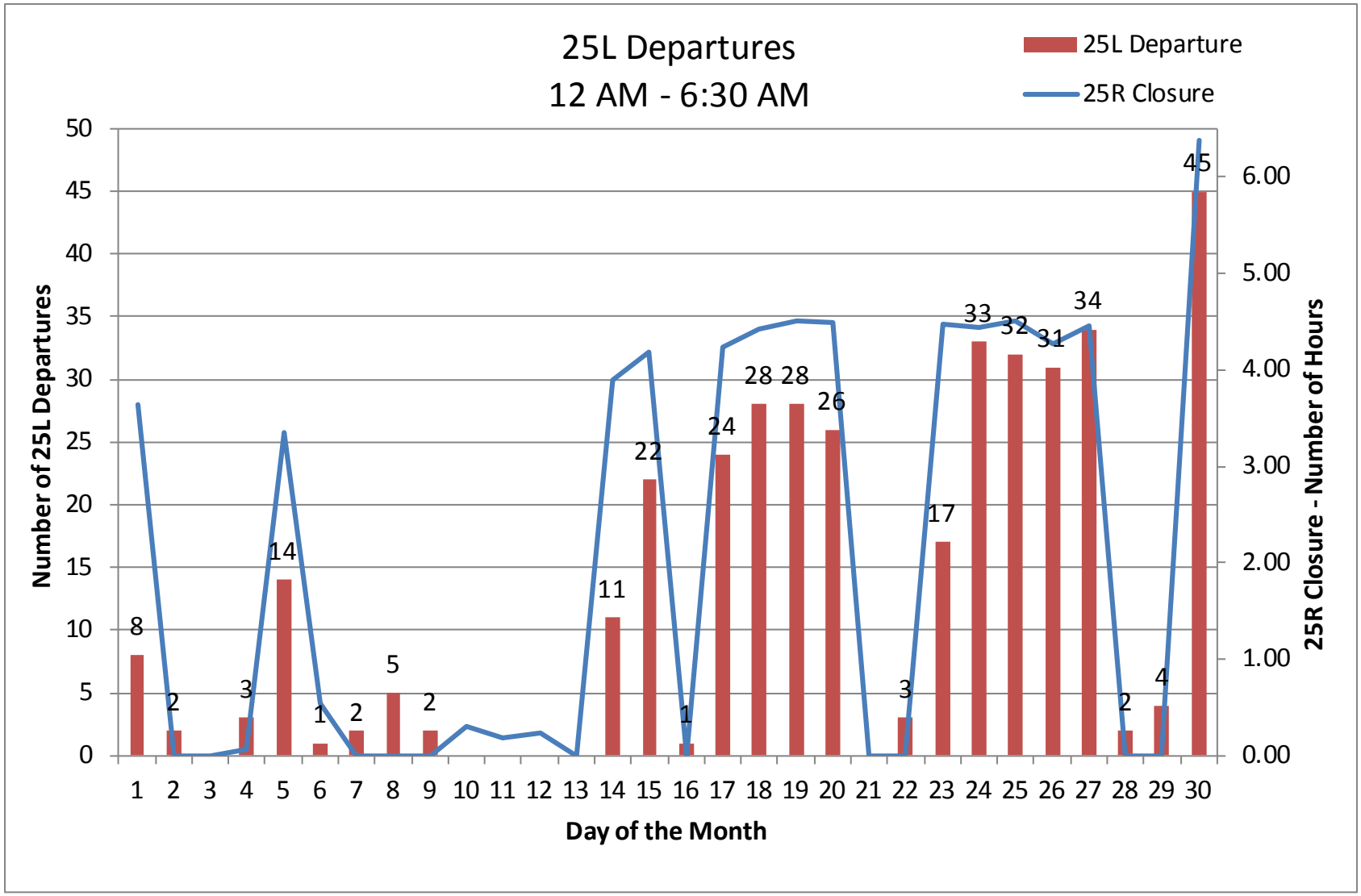
Los Angeles World Airports



Departures – Runways 25L and 25R
13-month period

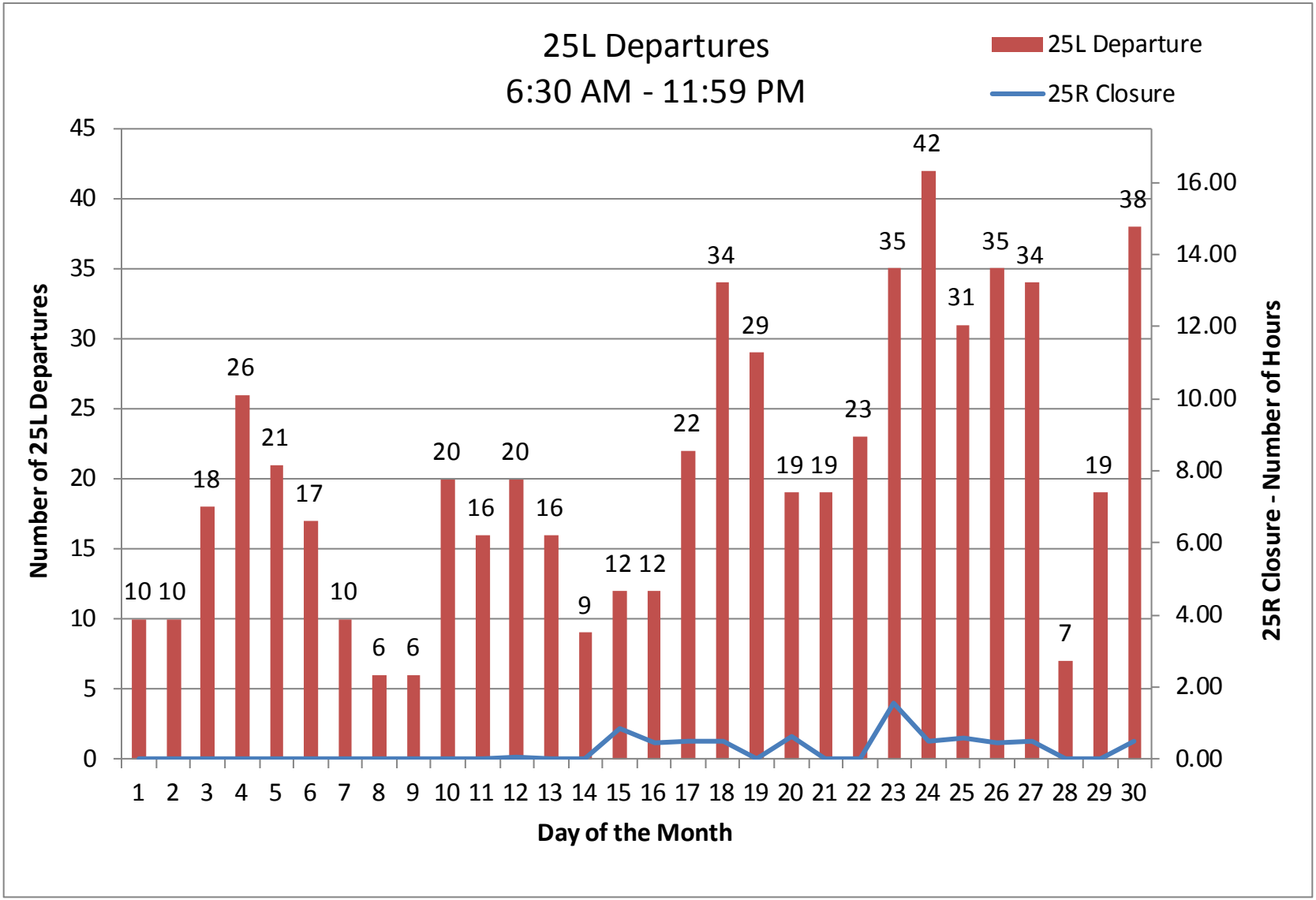


25L Departures
September 2013

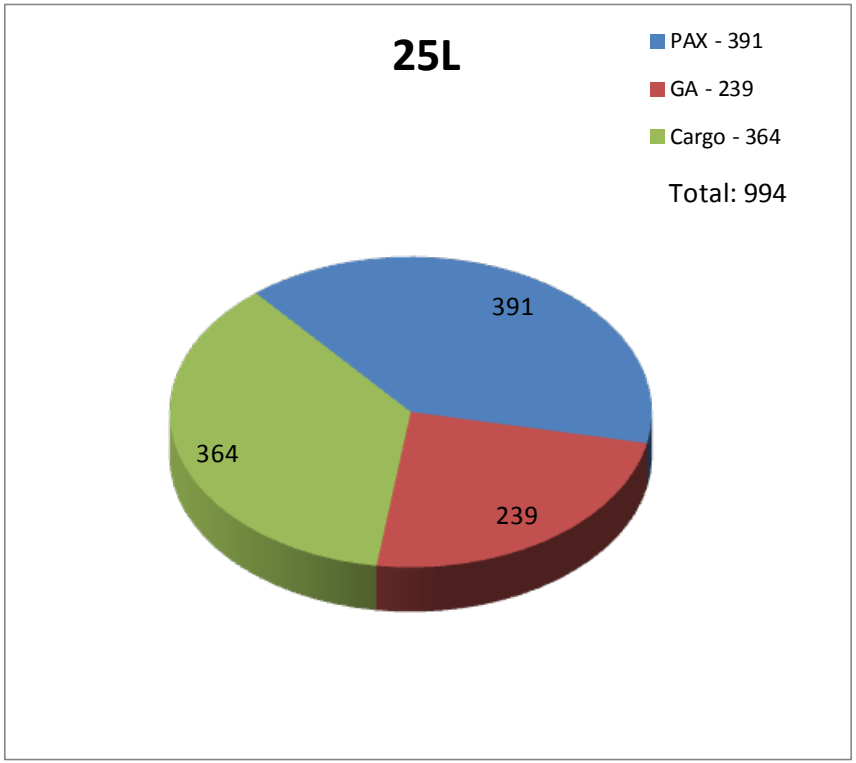


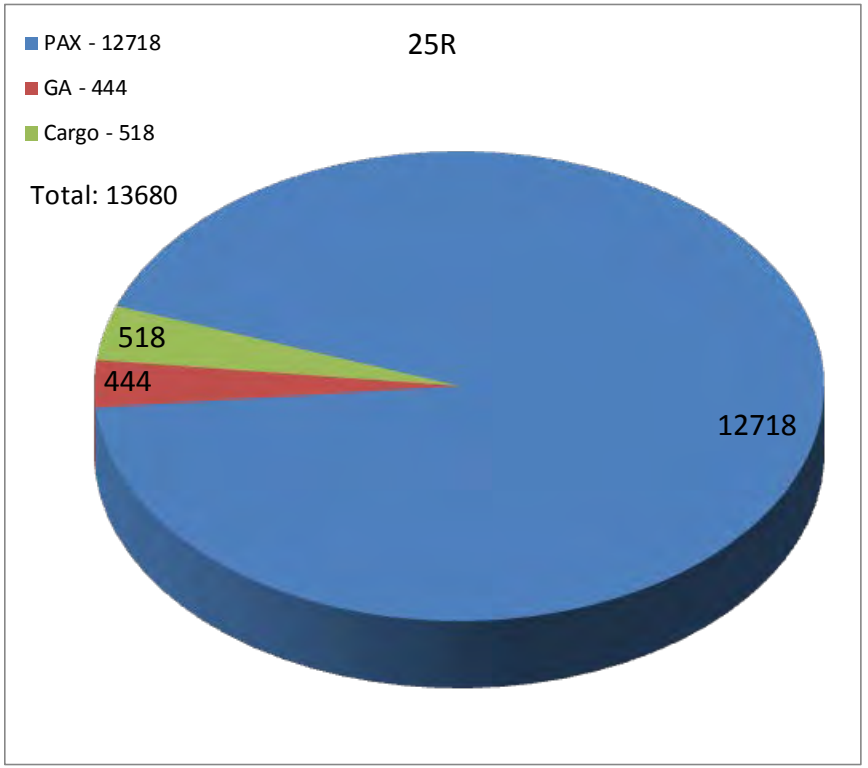
25L Departures
September 2013

Los Angeles World Airports



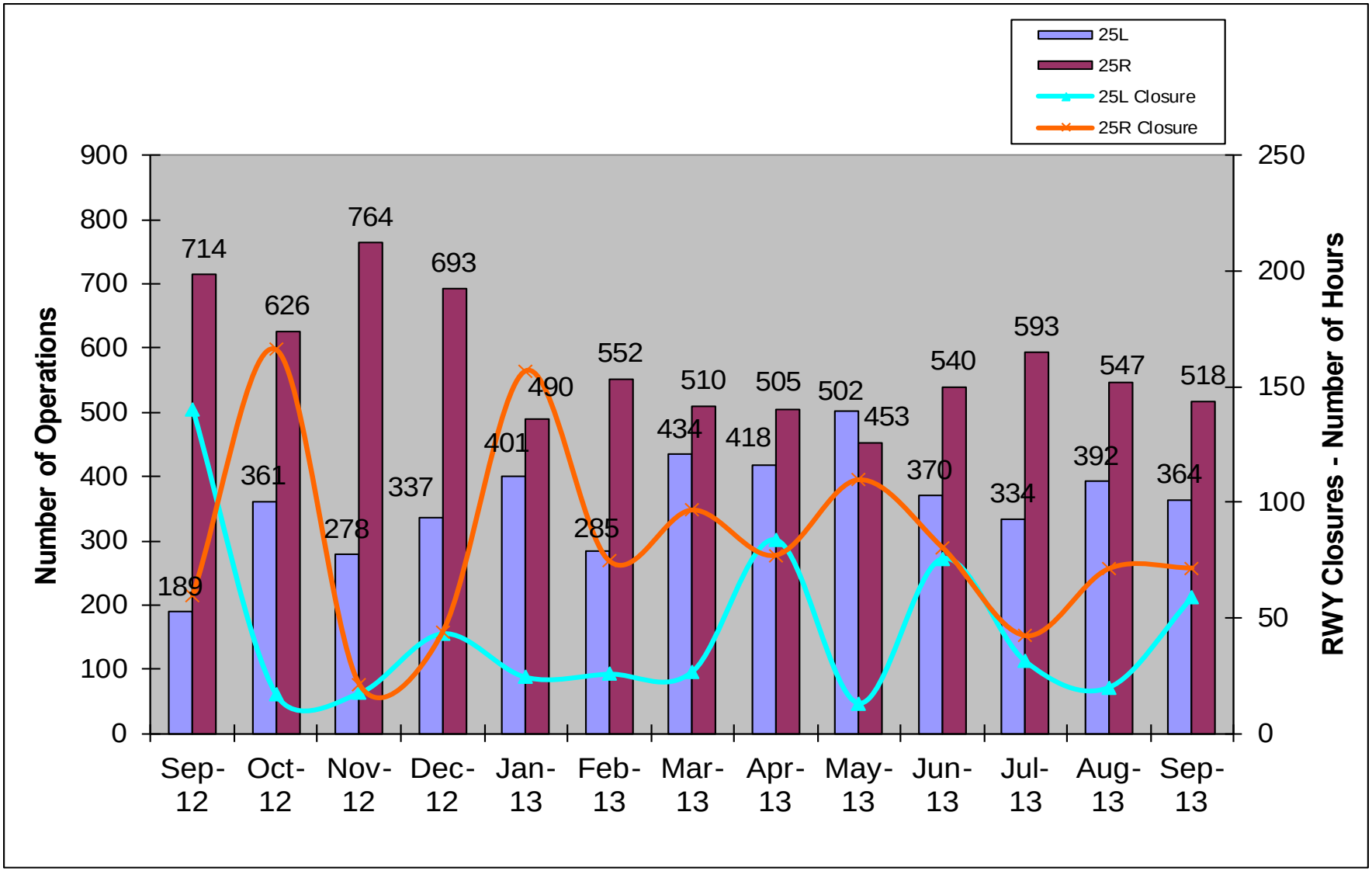
Departure by Operator Type
September 2013



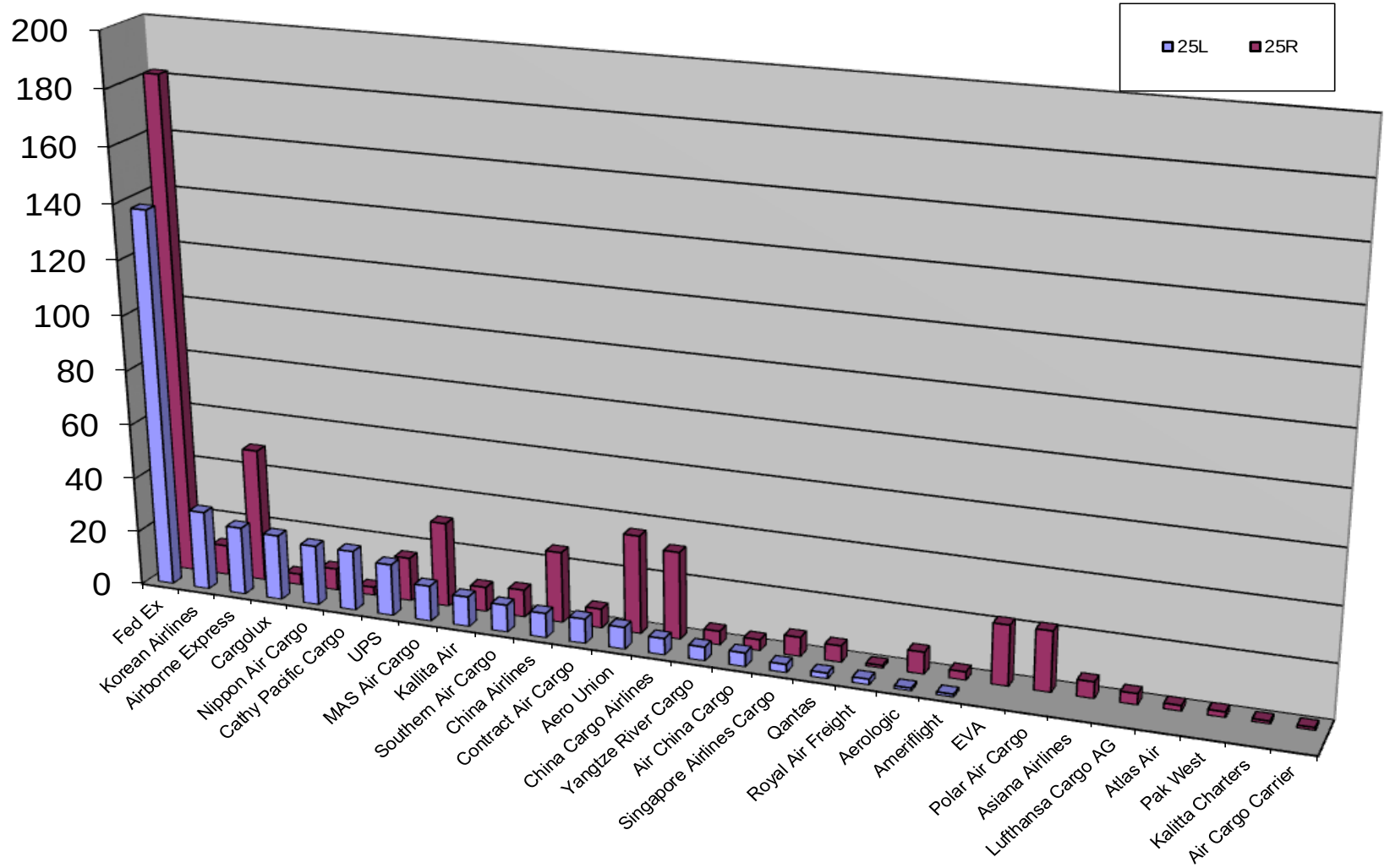


Cargo Departures on 25L & 25R
13-month period

Los Angeles World Airports



Cargo Departures on 25L & 25R by Operator
September 2013



Statistical Update on Aircraft Operations

November 14, 2012

LAX/Community Noise Roundtable

Los Angeles World Airports

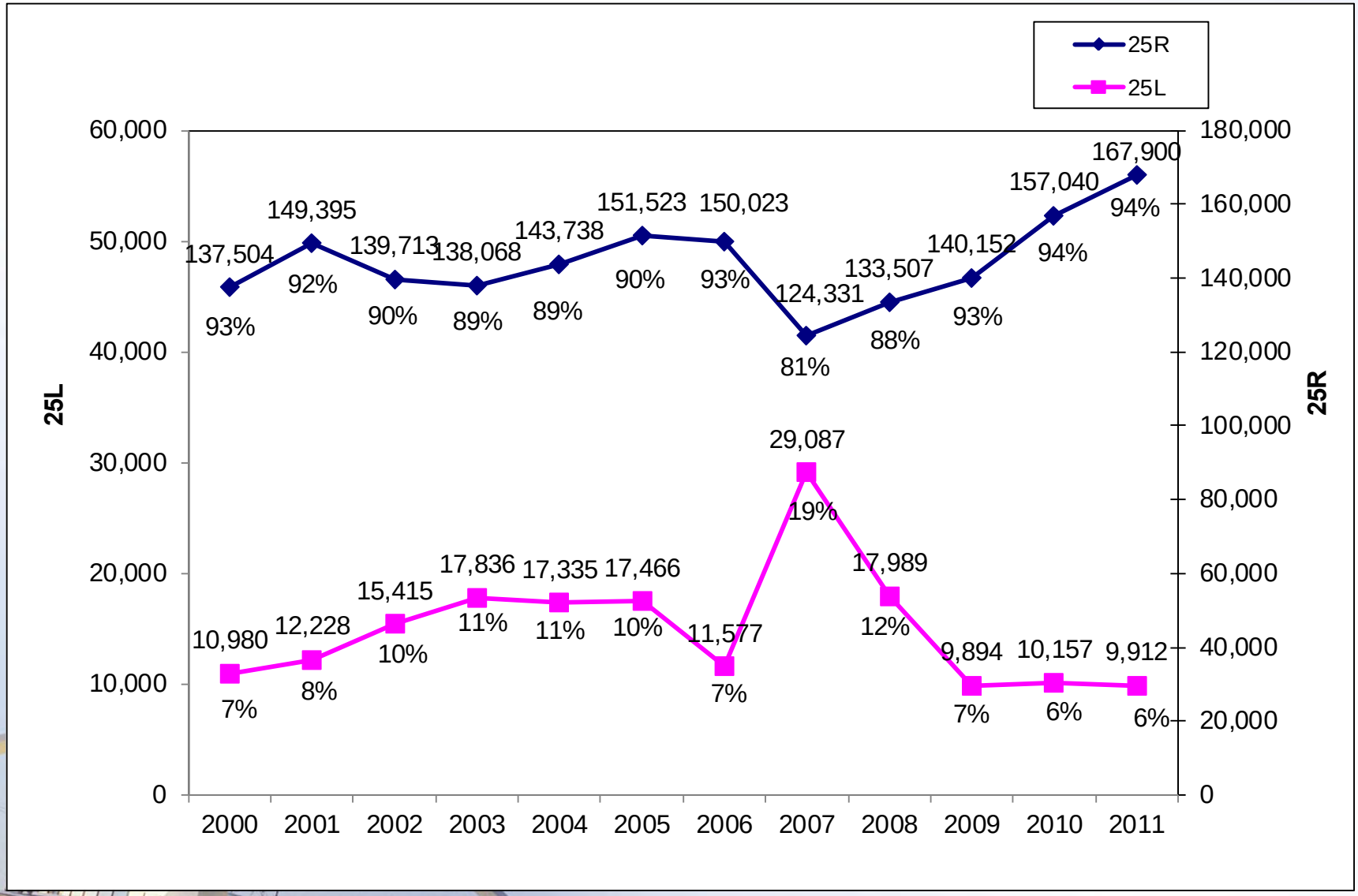
Overview

Statistical information on the following operations:

- 25L Departures
- Palos Verdes Overflights

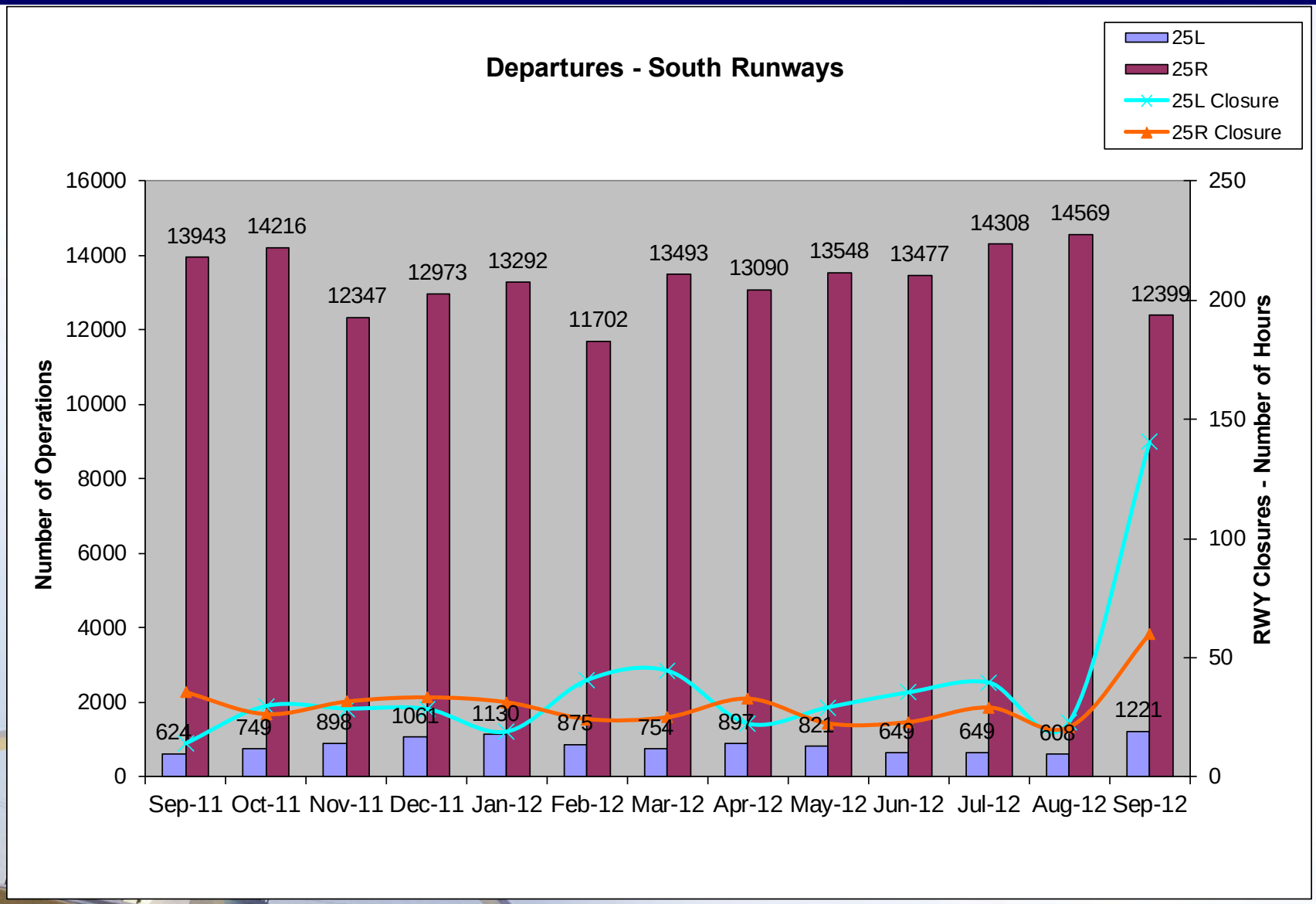
Los Angeles World Airports

Departures – Runways 25L and 25R
Annual Comparison



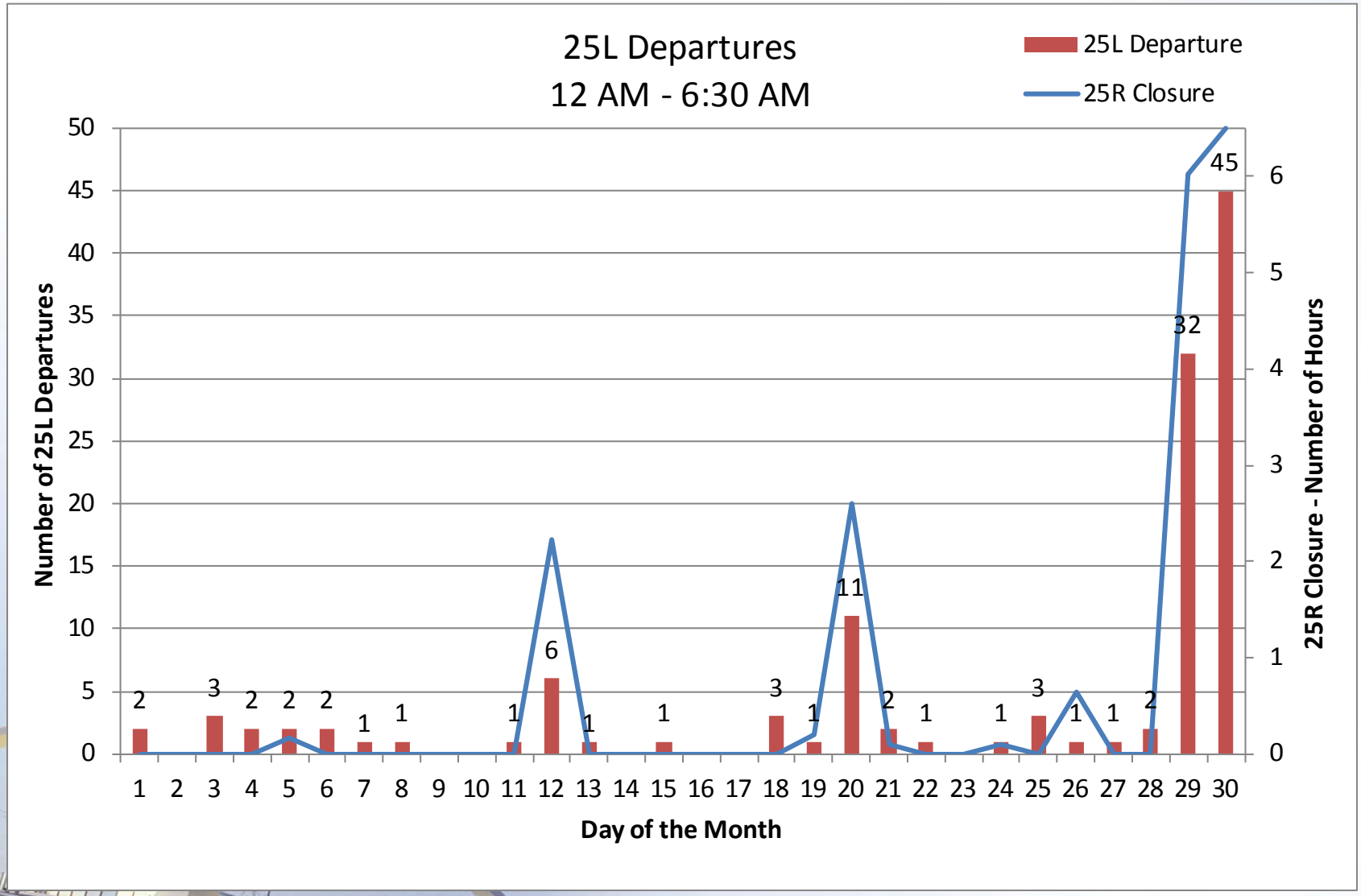
Los Angeles World Airports

Departures – Runways 25L and 25R
13-month period



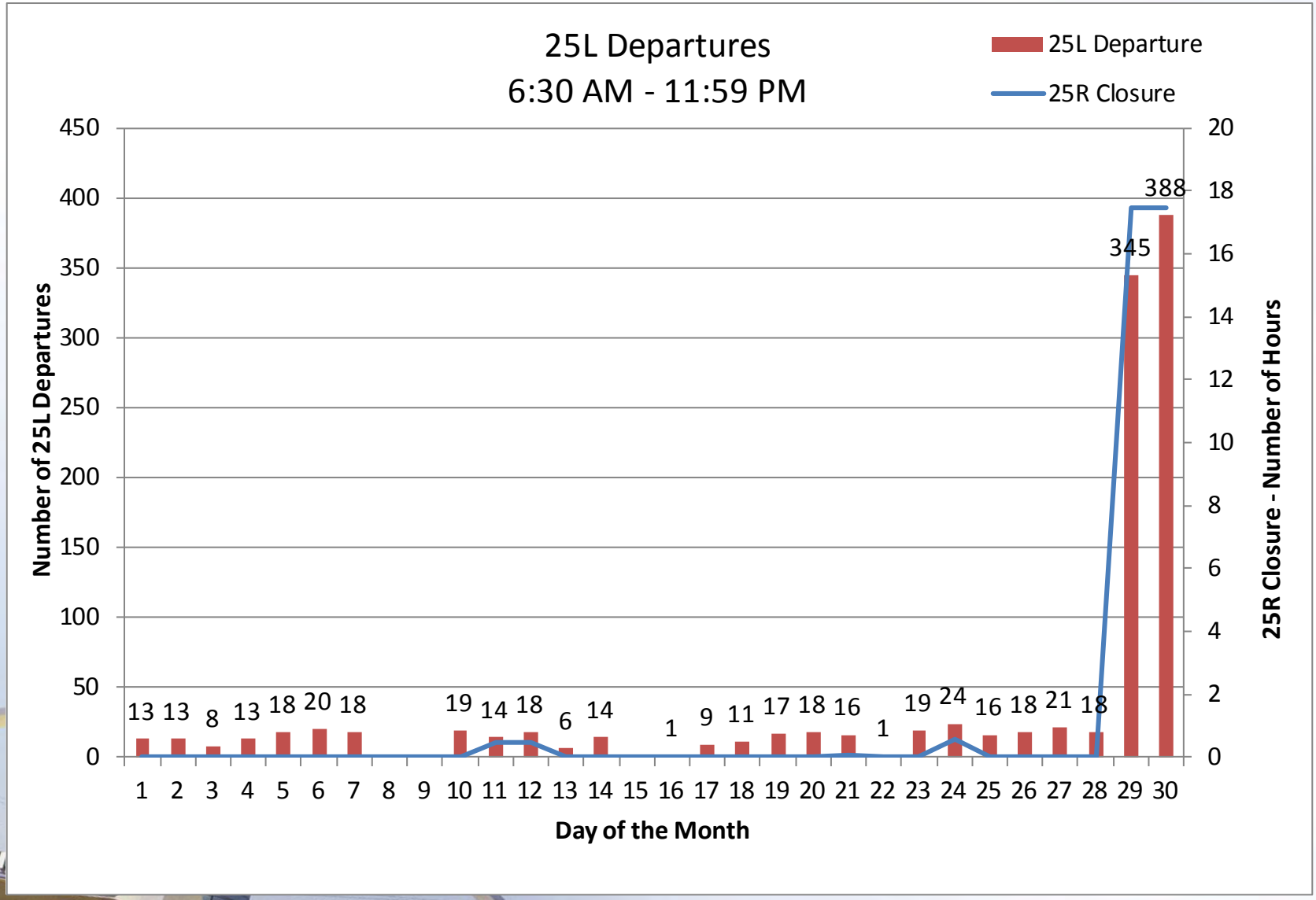
Los Angeles World Airports

25L Departures
September 2012



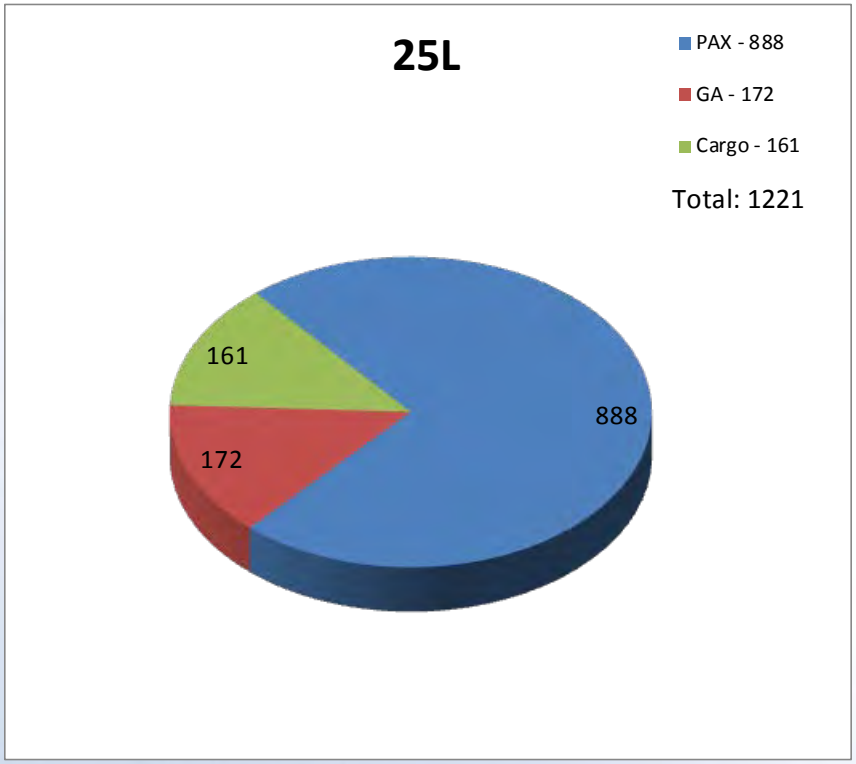
Los Angeles World Airports

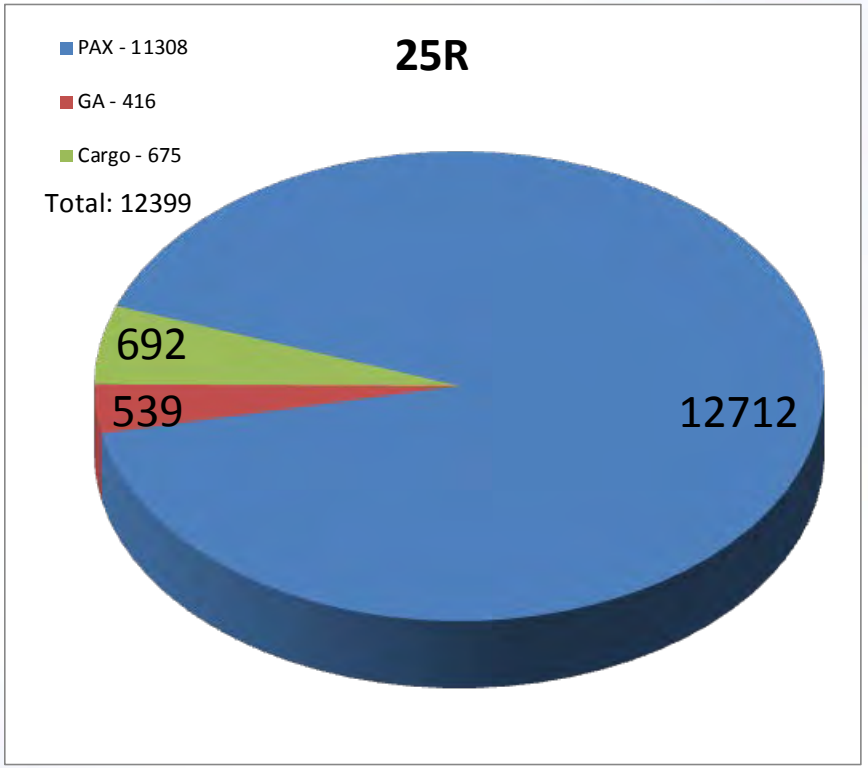
25L Departures
September 2012



Los Angeles World Airports

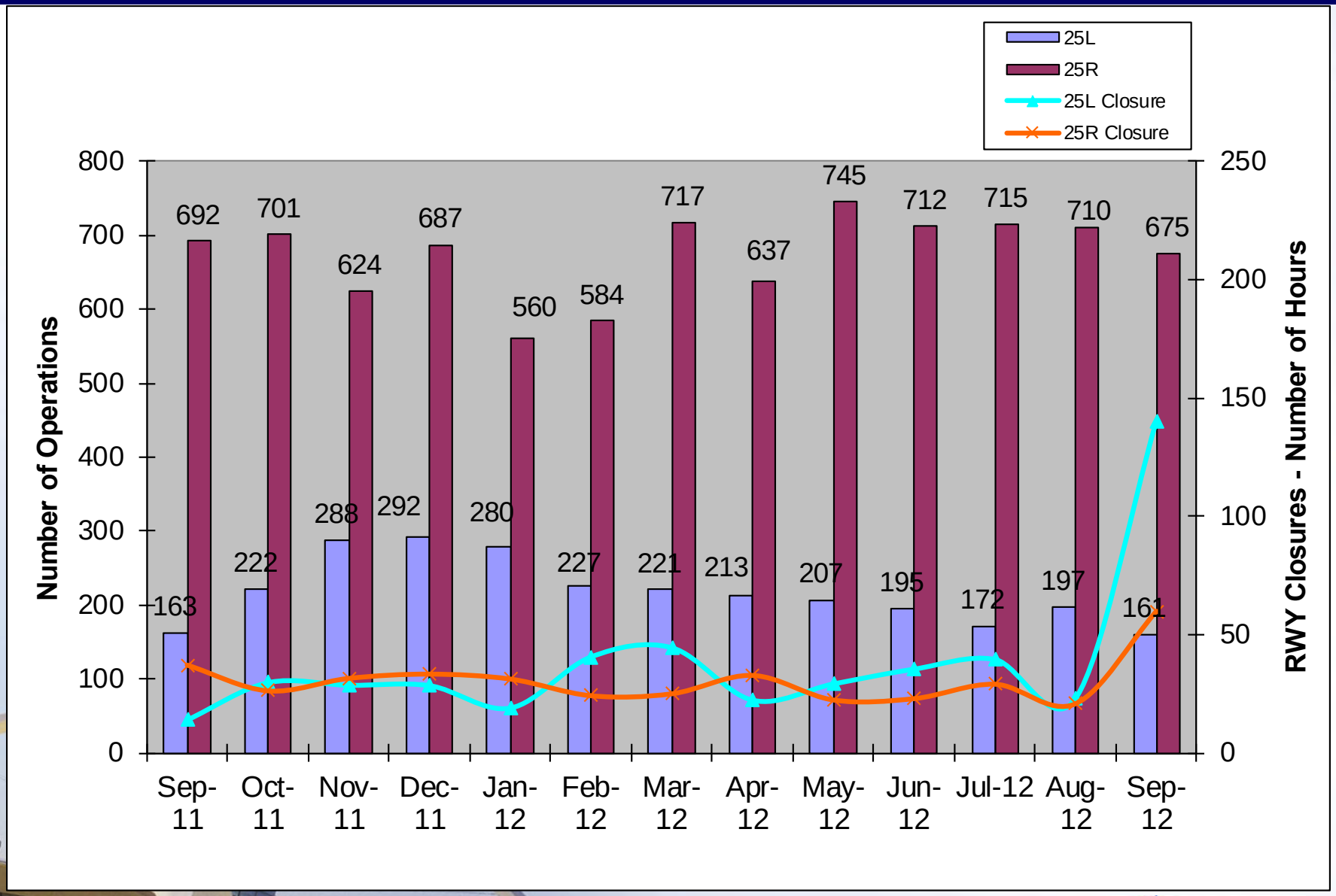
Departure by Operator Type
September 2012





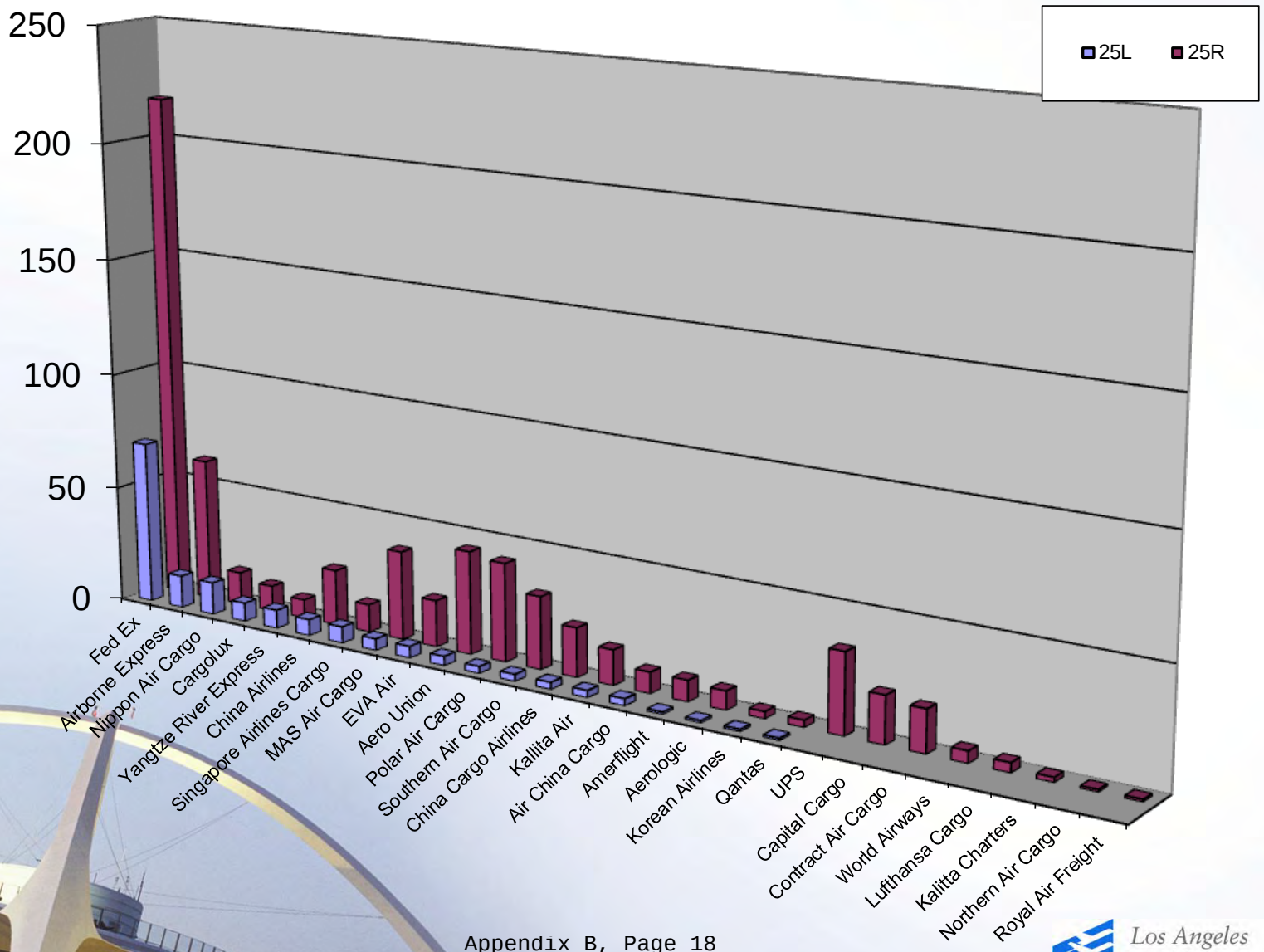
Los Angeles World Airports

Cargo Departures on 25L & 25R
13-month period



Los Angeles World Airports

Cargo Departures on 25L & 25R by Operator
September 2012



Los Angeles World Airports

Statistical Update on Aircraft Operations

November 9, 2011

LAX/Community Noise Roundtable

Los Angeles World Airports

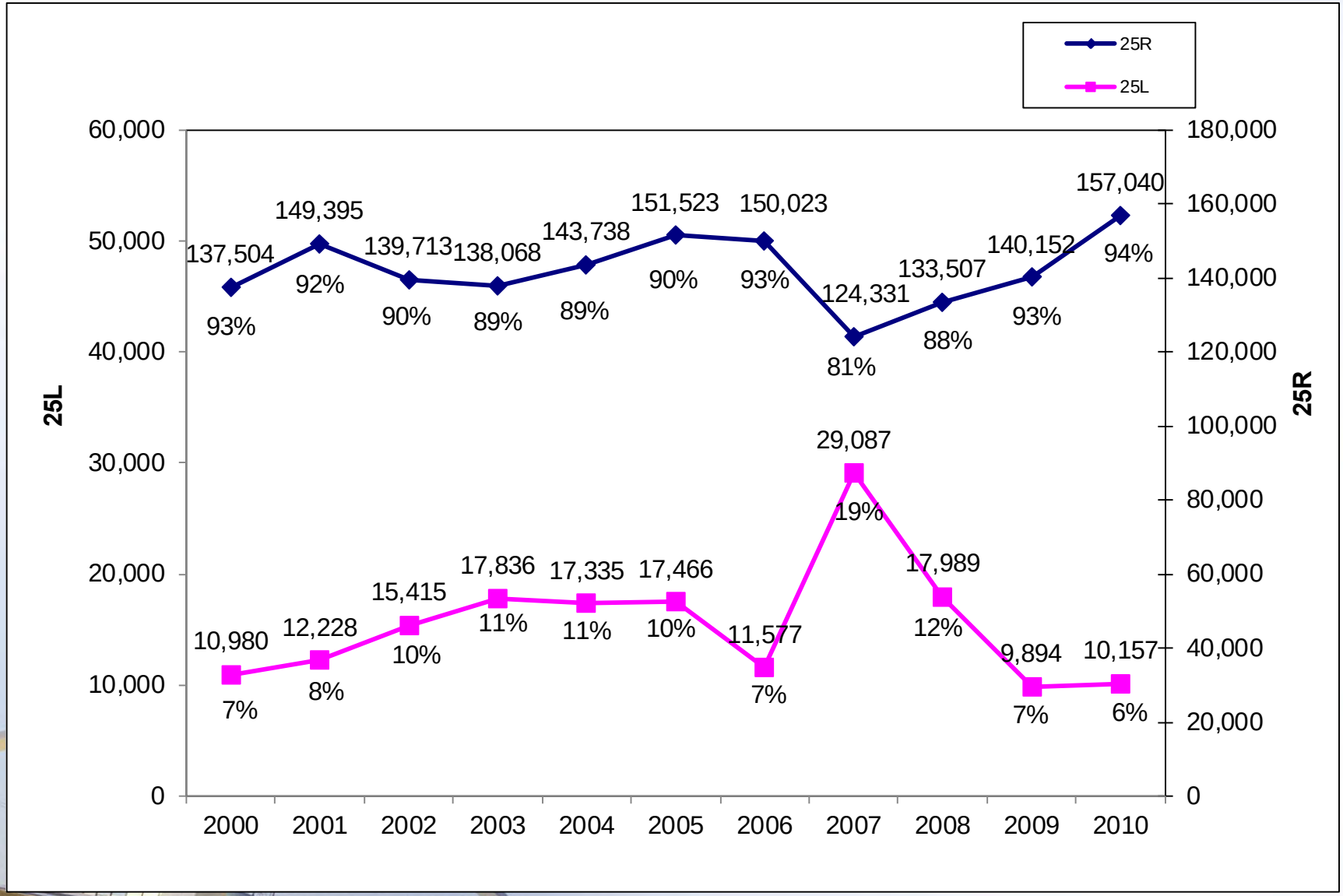
Overview

Statistical information on the following operations:

- 25L Departures
- Palos Verdes Overflights

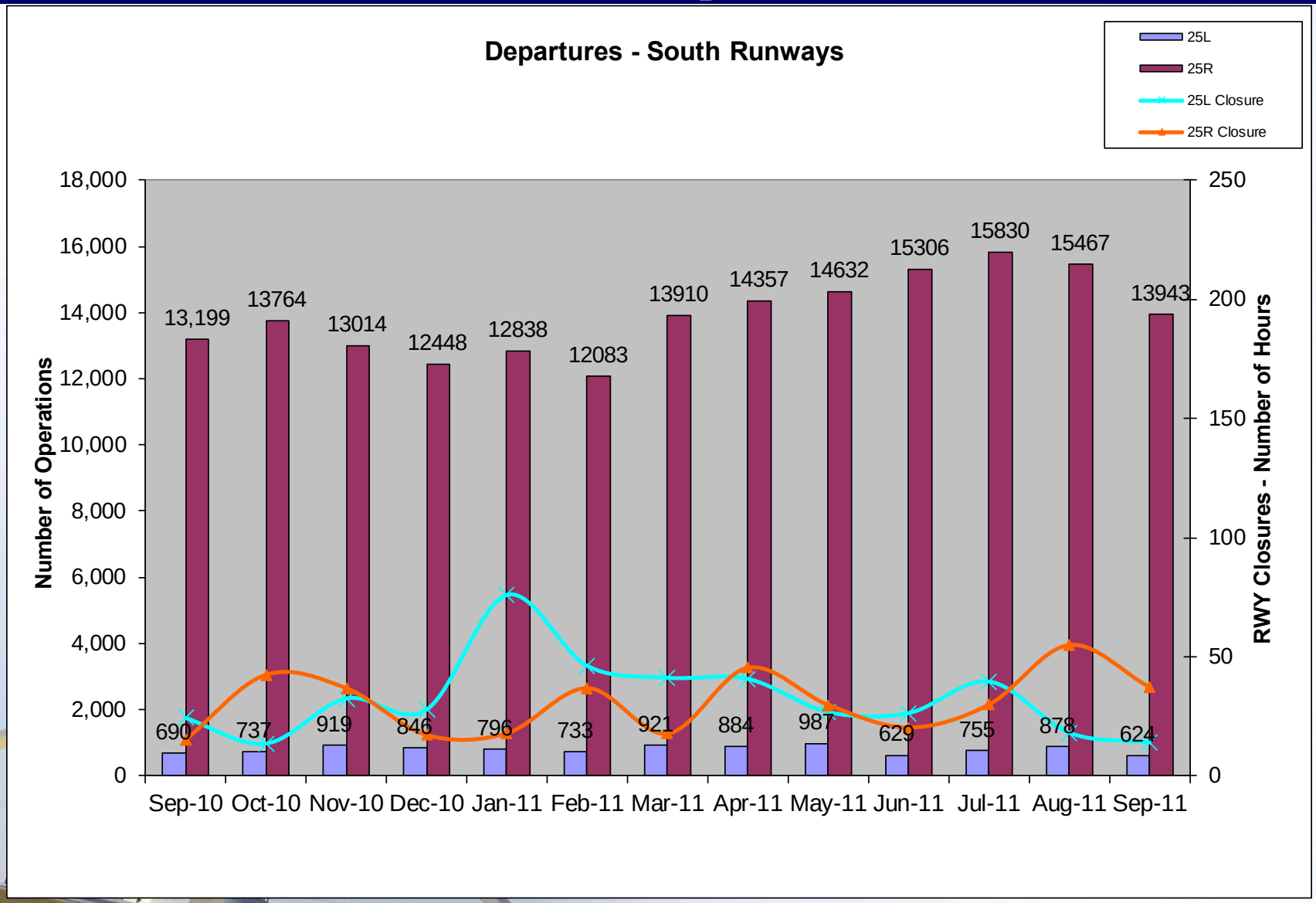
Los Angeles World Airports

Departures – Runways 25L and 25R
Annual Comparison



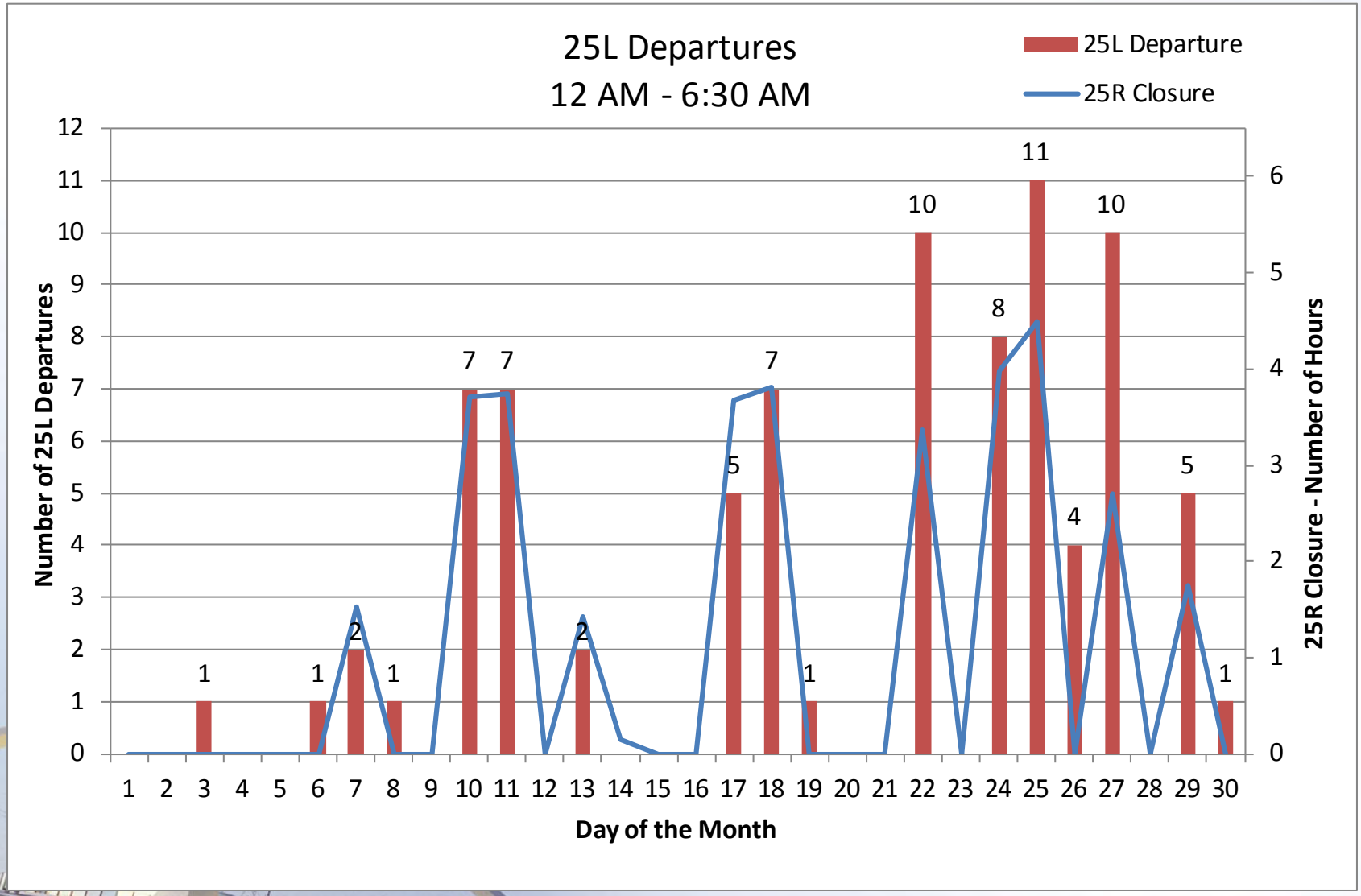
Los Angeles World Airports

Departures – Runways 25L and 25R
13-month period



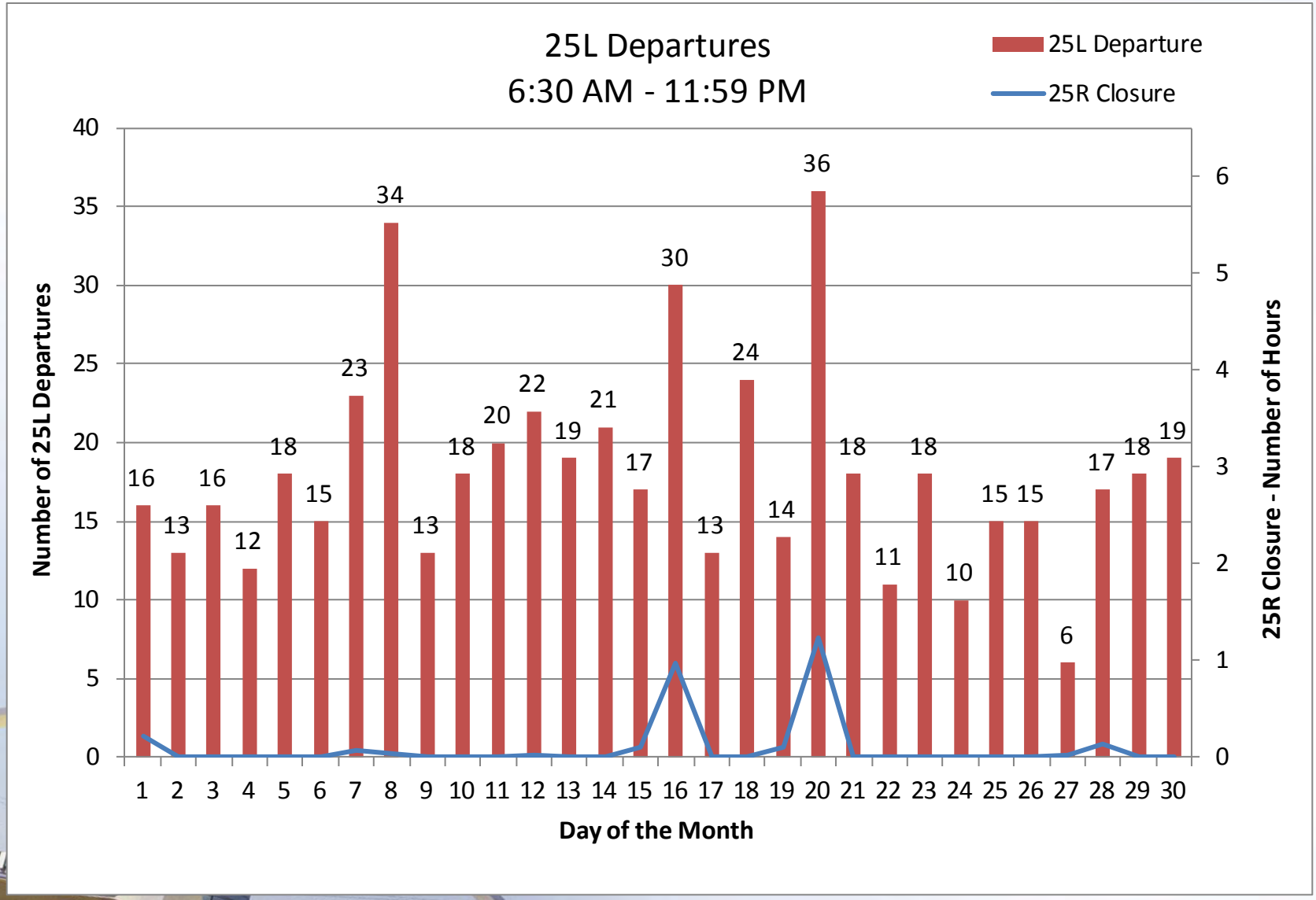
Los Angeles World Airports

25L Departures
September 2011



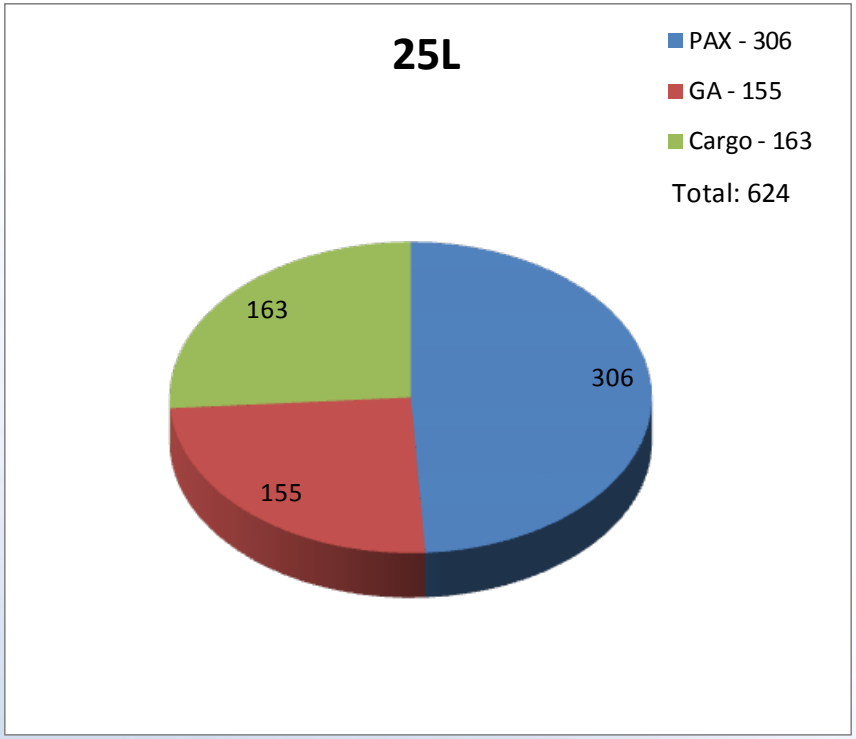
Los Angeles World Airports

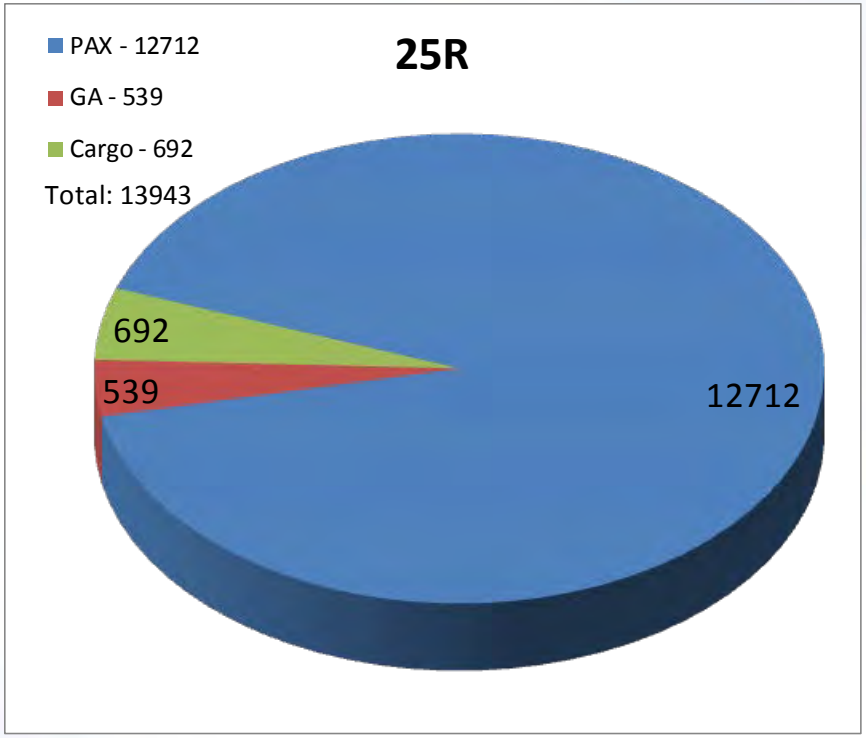
25L Departures
September 2011



Los Angeles World Airports

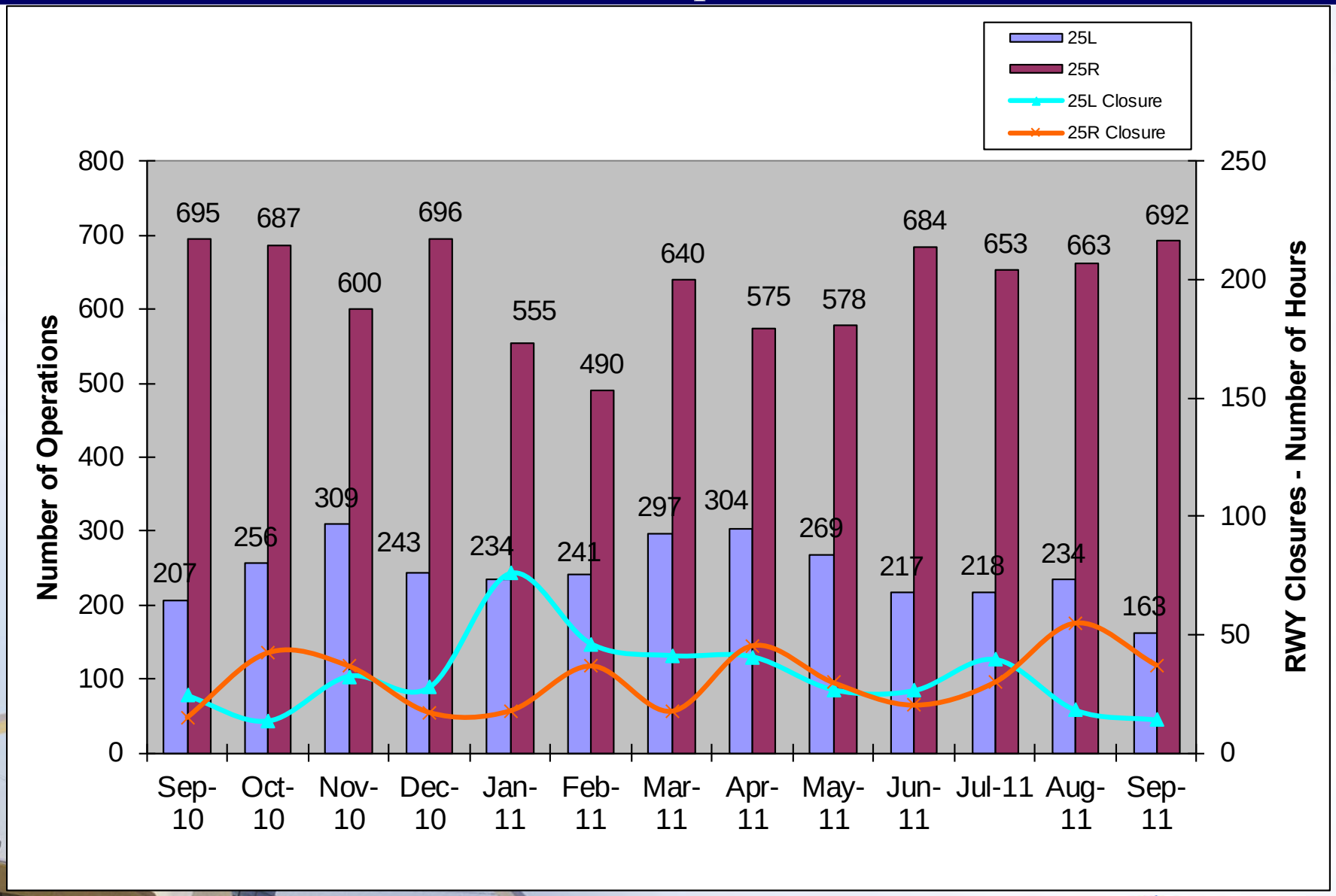
Departure by Operator Type
September 2011





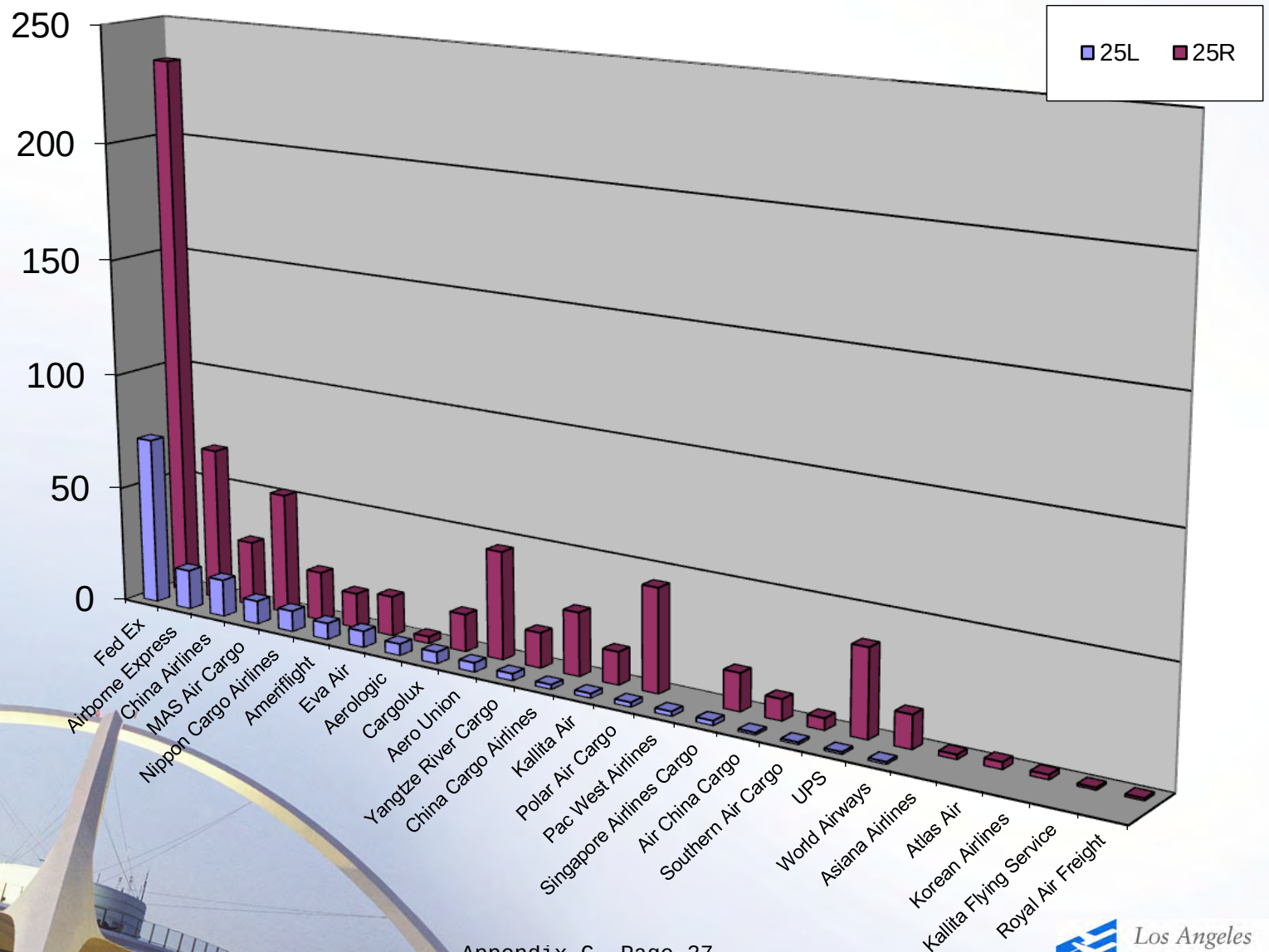
Los Angeles World Airports

Cargo Departures on 25L & 25R
13-month period



Los Angeles World Airports

Cargo Departures on 25L & 25R by Operator
September 2011



Los Angeles World Airports

Statistical Update on LAX Aircraft Operations

May 11, 2011

LAX/Community Noise Roundtable

Los Angeles World Airports

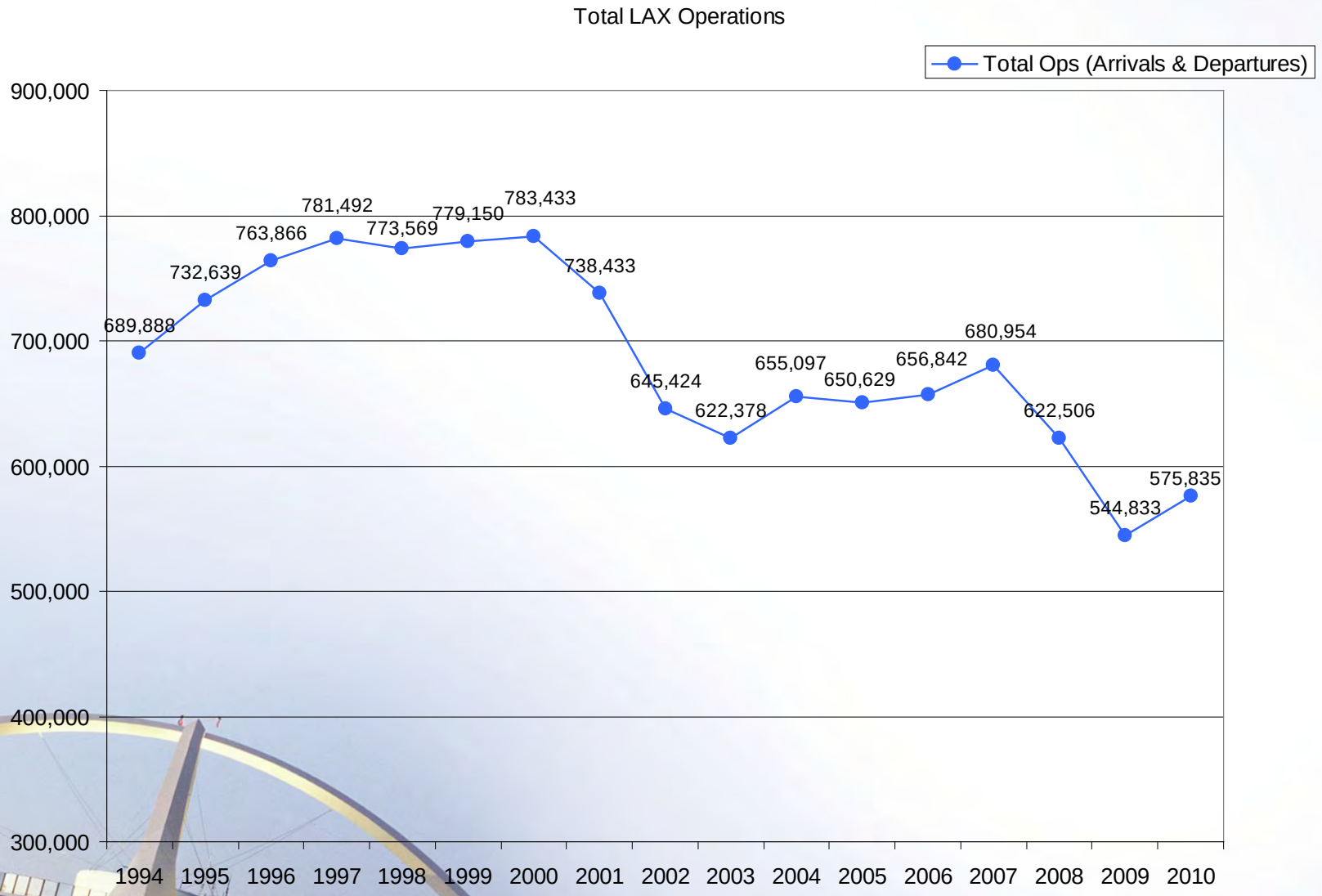
Overview

Statistical information on the following operations:

- East Departures
- Early Turns
- Go-arounds
- Short Turns
- Extended Downwind Approaches
- Palos Verdes Overflights
- Loop Departures
- 25L Departures

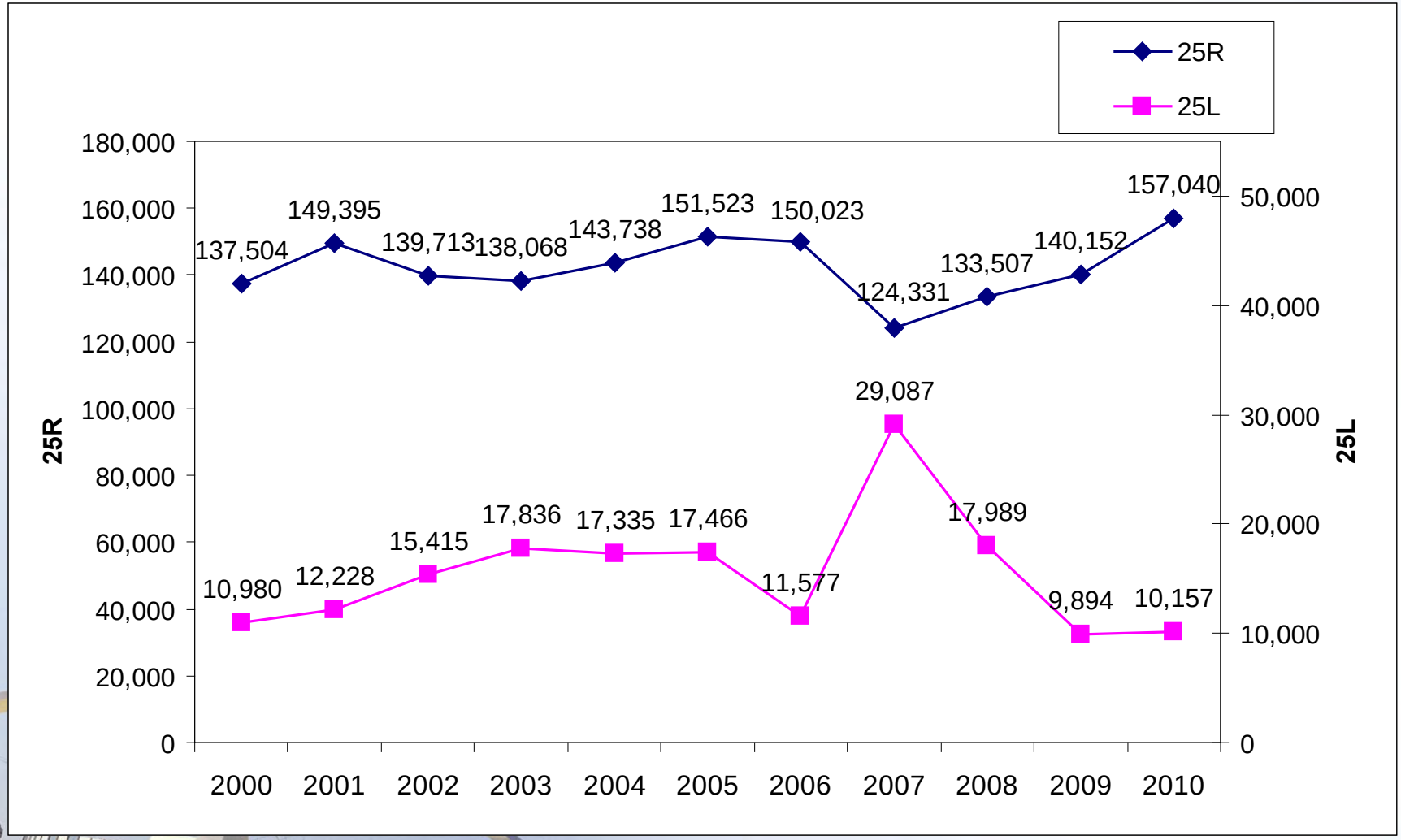
Los Angeles World Airports

Total Operations Comparison



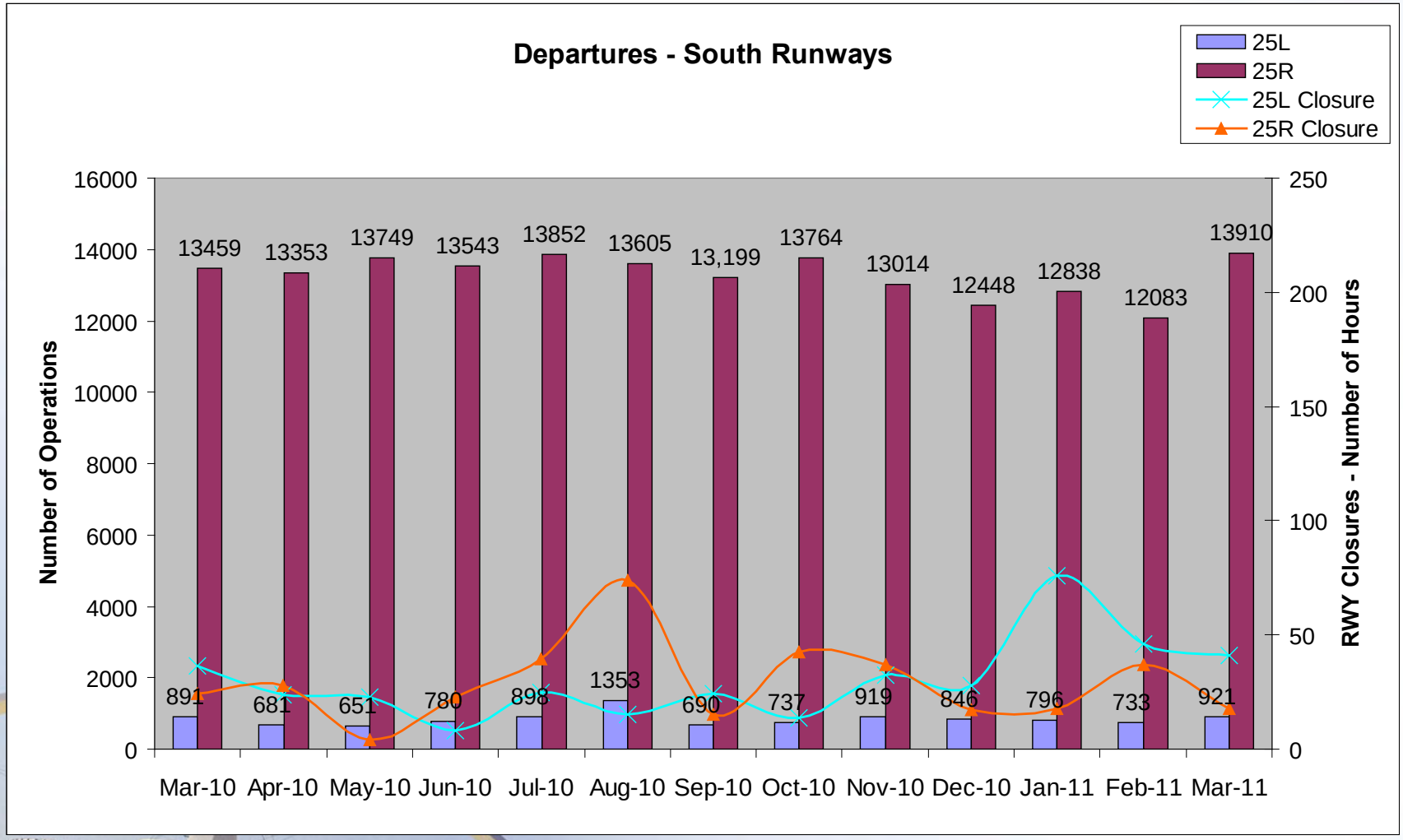
Los Angeles World Airports

Departures – South Runways (25L and 25R)
Annual Comparison



Los Angeles World Airports

Departures – South Runways (25L and 25R)
13-month period



Los Angeles World Airports

Statistical Update on LAX Aircraft Operations

November 10, 2010

LAX/Community Noise Roundtable

Los Angeles World Airports

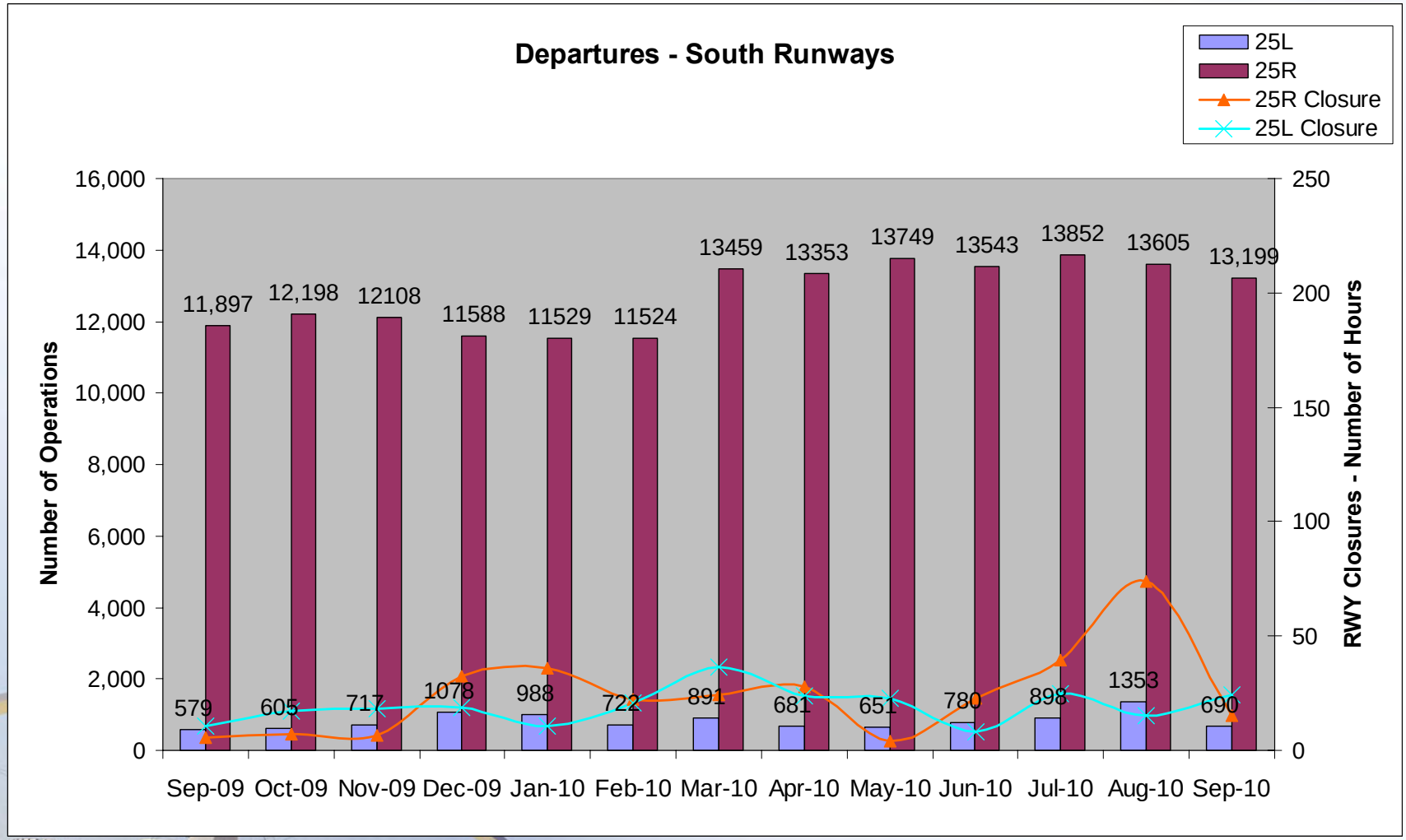
Overview

Statistical information on the following operations:

- *East Departures*
- *Early Turns*
- *Go-arounds*
- *Short Turns*
- *Palos Verdes Overflights*
- Extended Downwind Approaches
- Loop Departures
- 25L Departures

Los Angeles World Airports

Departures – South Runways (25L and 25R)
13-month period



Los Angeles World Airports

25L Departures Analysis with Closure Activity

Date	Time	25L	25R	Grand Total	Runway Closure	Note
4/4/2010	12 AM		23	23		
	1 AM		7	7		
	2 AM	1	3	4	2:29 AM 25R closed	3 departures on 25R occurred within 1st 12 minutes of 2 AM hour
	3 AM	2		2	25R closed	
	4 AM	2		2	25R closed	
	5 AM	4		4	5:54 AM 25R opened	
	6 AM		24	24		
	7 AM		25	25		
	8 AM	4	23	27		
	9 AM		29	29		
	10 AM		25	25		
	11 AM	1	24	25		
	12 PM	1	28	29		
	1 PM		30	30		
	2 PM	1	16	17		
	3 PM	2	19	21		
	4 PM	1	29	30		
	5 PM		21	21		
	6 PM		24	24		
	7 PM	1	15	16		
	8 PM		15	15		
	9 PM		17	17		
	10 PM		18	18		
	11 PM		26	26		
4/4/2010 Total		20	441	461		

25L Departures Analysis with Closure Activity

Date	Time	25L	25R	Grand Total	Runway Closure	Note
4/11/2010	12 AM		25	25		
	1 AM		4	4		
	2 AM	3	2	5	2:07 AM 25R closed	
	3 AM				25R closed	
	4 AM	1		1	25R closed	
	5 AM	3		3	5:56 AM 25R opened	
	6 AM		22	22		
	7 AM	1	26	27		
	8 AM	2	26	28		
	9 AM		27	27		
	10 AM		20	20		
	11 AM		24	24		
	12 PM		24	24		
	1 PM	1	21	22		
	2 PM		18	18		
	3 PM		26	26		
	4 PM	1	23	24		
	5 PM	1	21	22		
	6 PM		22	22		
	7 PM		19	19		
	8 PM		9	9		
	9 PM		18	18		
	10 PM		18	18		
	11 PM	1	21	22		QFA94 A388 departed 25L at 11:56 pm
4/11/2010 Total		14	416	430		

25L Departures Analysis with Closure Activity

Date	Time	25L	25R	Grand Total	Runway Closure	Note
5/13/2010	12 AM	1	15	16		QFA94 A388 departed 25L
	1 AM		16	16		
	2 AM	5	3	8	2:12 AM 25R closed	
	3 AM	3		3	25R closed	
	4 AM	1		1	25R closed	
	5 AM	2	2	4	5:03 AM 25R opened	2 Cargo 25L Departures occurred from 5:00 to 5:03
	6 AM		26	26		
	7 AM	2	27	29		
	8 AM	2	28	30		
	9 AM		19	19		
	10 AM	1	23	24		
	11 AM	1	28	29		
	12 PM	1	27	28		
	1 PM		28	28		
	2 PM		21	21		
	3 PM	1	28	29		
	4 PM	3	20	23		
	5 PM	3	22	25		
	6 PM	1	24	25		
	7 PM	3	18	21		
	8 PM	2	12	14		
	9 PM		15	15		
	10 PM		22	22		
	11 PM		20	20		
5/13/2010 Total		32	444	476		

25L Departures Analysis with No Closure Activity

Date	Time	25L	25R	Grand Total	Note
5/8/10	12 AM	1	23	24	QFA94 A388 departed on 25L
	1 AM		19	19	
	2 AM		8	8	
	3 AM		1	1	
	5 AM		3	3	
	6 AM		26	26	
	7 AM	1	24	25	
	8 AM	2	21	23	
	9 AM	1	20	21	
	10 AM	1	19	20	
	11 AM		22	22	
	12 PM	1	25	26	
	1 PM	2	32	34	
	2 PM	2	26	28	
	3 PM		21	21	
	4 PM	3	22	25	
	5 PM		15	15	
	6 PM	1	26	27	
	7 PM		11	11	
	8 PM	1	11	12	
	9 PM	3	11	14	
	10 PM		24	24	
	11 PM		15	15	
5/8/10 Total		19	425	444	

25L Departures Analysis with No Closure Activity

Date	Time	25L	25R	Grand Total	Note
5/14/10	12 AM		21	21	
	1 AM		9	9	
	2 AM		5	5	
	3 AM		2	2	
	4 AM		3	3	
	5 AM		3	3	
	6 AM		23	23	
	7 AM	4	19	23	
	8 AM		20	20	
	9 AM		19	19	
	10 AM		21	21	
	11 AM	1	23	24	
	12 PM	2	24	26	
	1 PM		27	27	
	2 PM	1	26	27	
	3 PM		21	21	
	4 PM		23	23	
	5 PM		20	20	
	6 PM	3	17	20	
	7 PM	2	17	19	
	8 PM		16	16	
	9 PM	1	14	15	
	10 PM		17	17	
	11 PM		18	18	
5/14/10 Total		14	408	422	

25L Departures Analysis with No Closure Activity

Date	Time	25L	25R	Grand Total	Note
5/16/10	12 AM		20	20	
	1 AM		12	12	
	2 AM		4	4	
	3 AM		4	4	
	4 AM		2	2	
	5 AM		3	3	
	6 AM		22	22	
	7 AM	2	24	26	
	8 AM		23	23	
	9 AM		17	17	
	10 AM		29	29	
	11 AM	1	21	22	
	12 PM	2	27	29	
	1 PM		27	27	
	2 PM		27	27	
	3 PM		24	24	
	4 PM	1	24	25	
	5 PM		18	18	
	6 PM		24	24	
	7 PM		24	24	
	8 PM		11	11	
	9 PM		21	21	
	10 PM		17	17	
	11 PM		22	22	
5/16/10 Total		6	447	453	

Statistical Update on Aircraft Operating Procedures

May 12, 2010

LAX/Community Noise Roundtable

Los Angeles World Airports

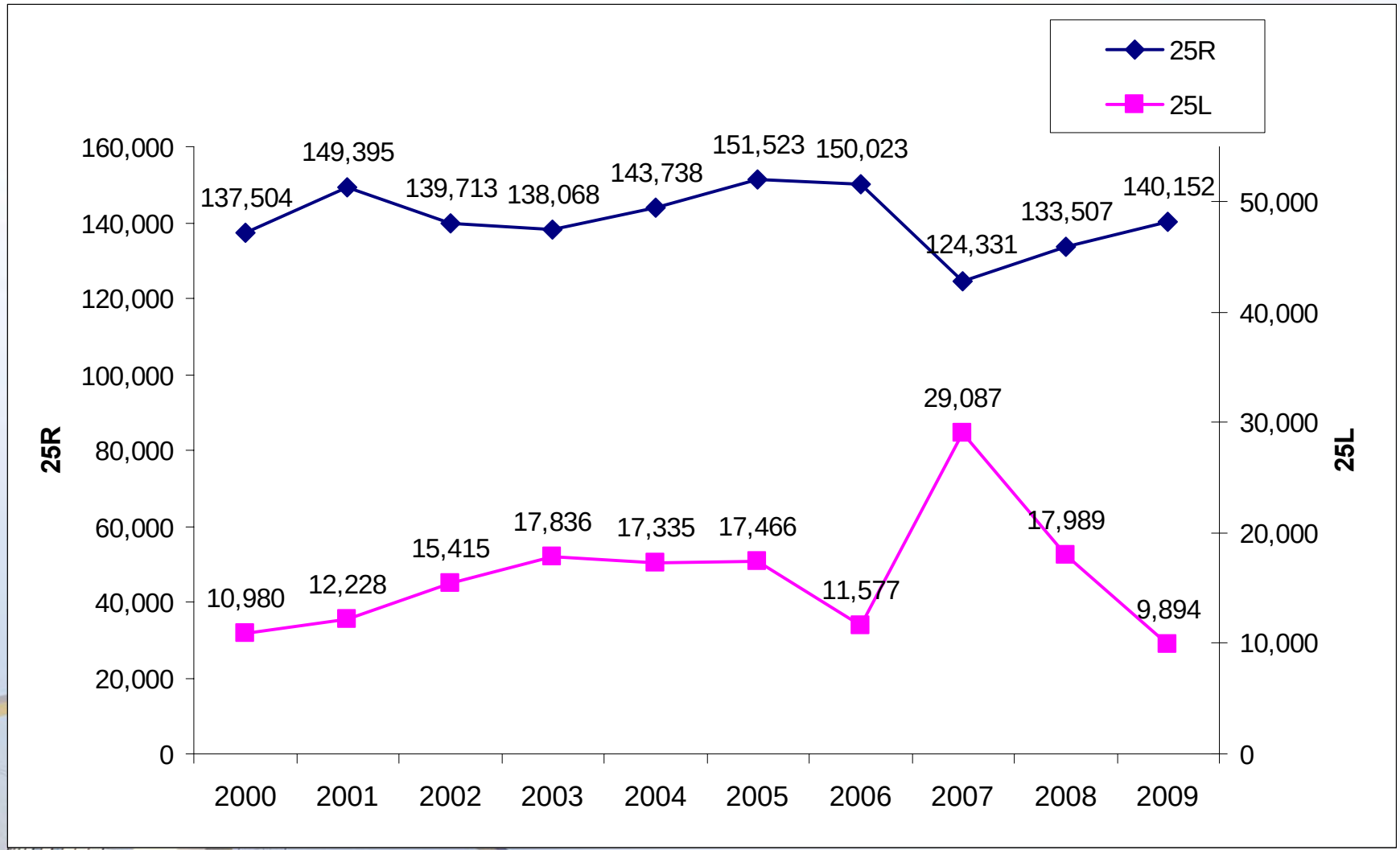
Overview

Statistical information on the following operations:

- 25L Departures
- Early Turns
- Go-arounds
- Palos Verdes Overflights
- Short Turns
- Extended Downwind Approach
- East Departures
- Loop Departures

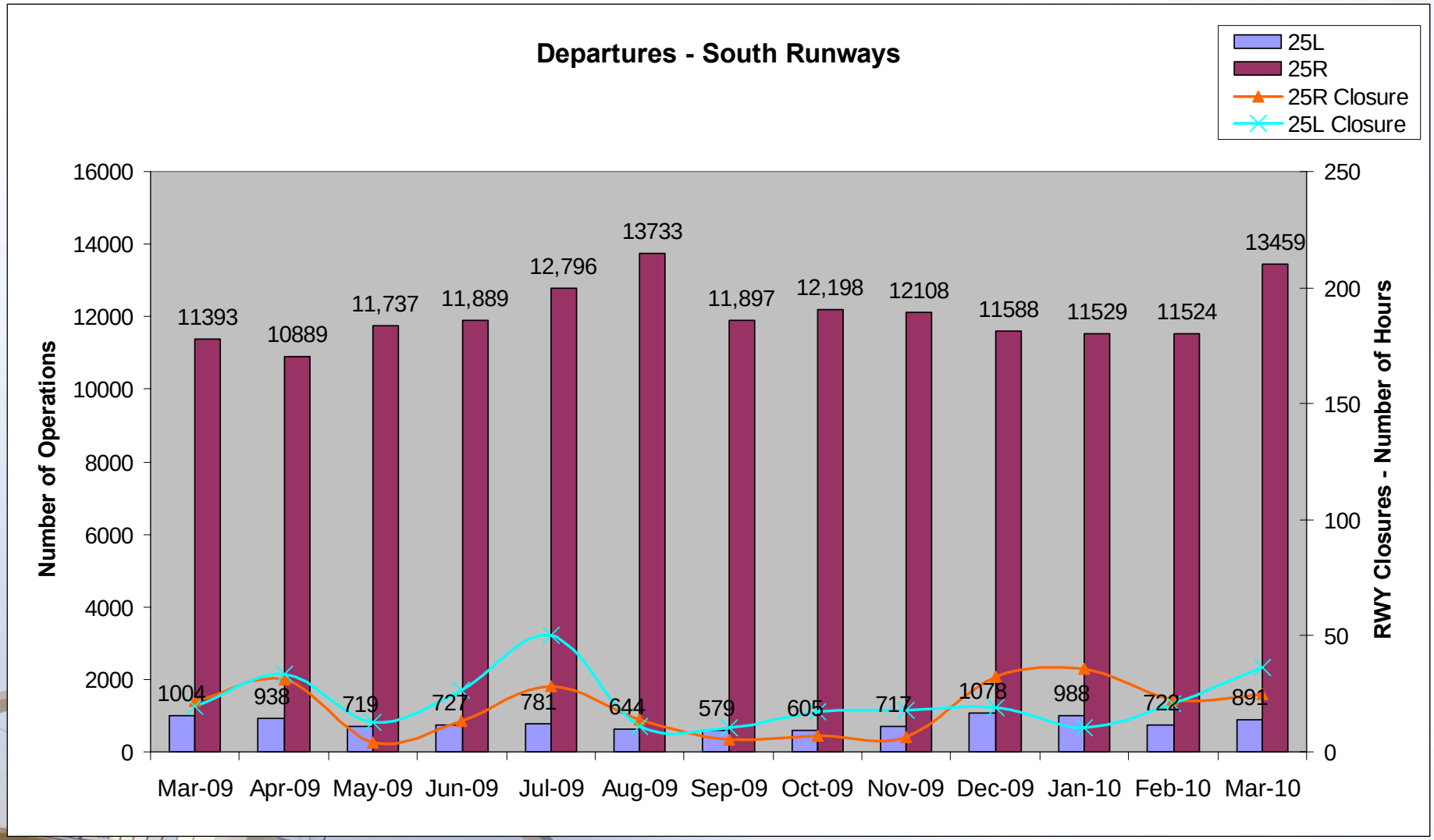
Los Angeles World Airports

Departures – Runways 25L and 25R
Annual Comparison



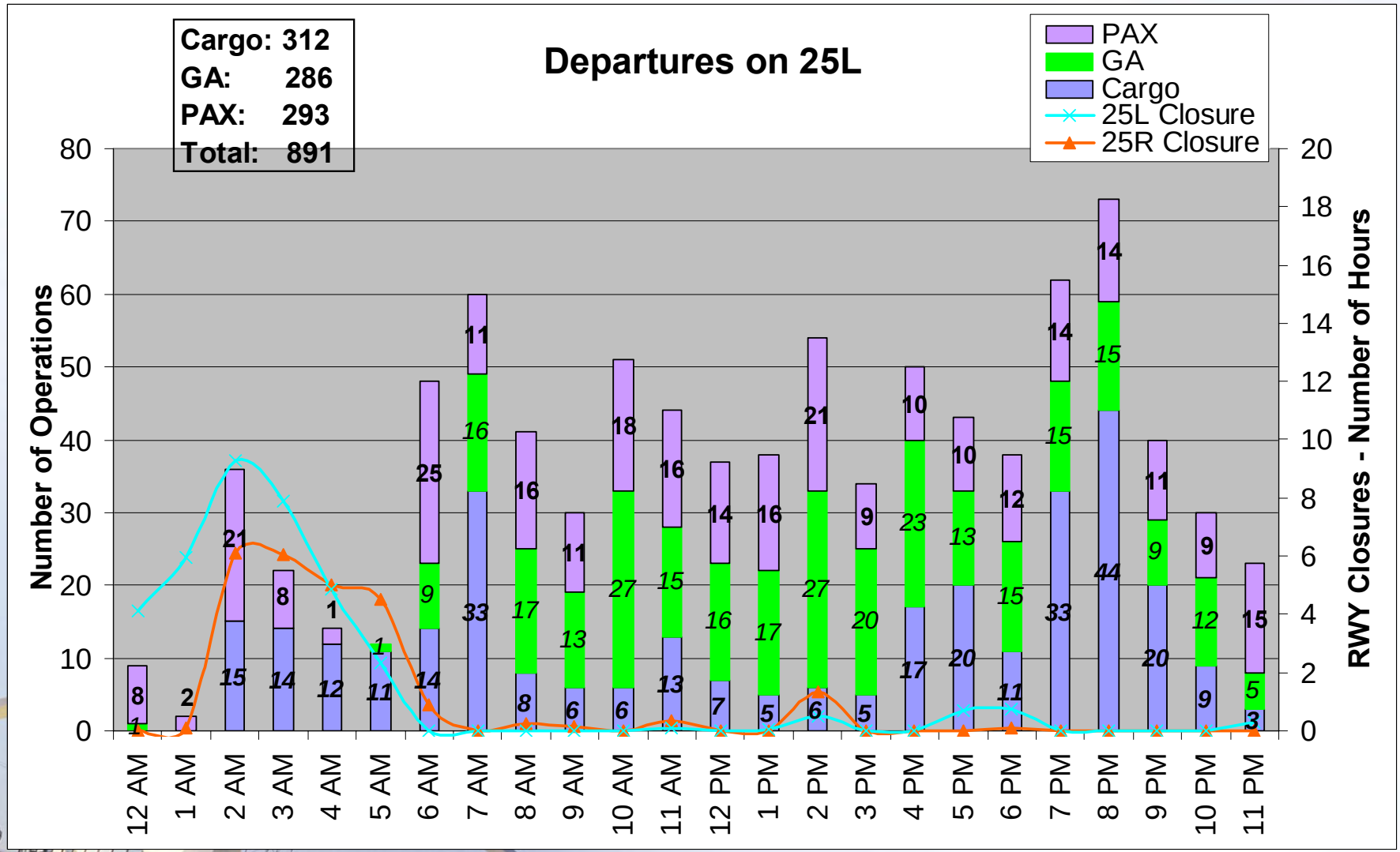
Los Angeles World Airports

Departures – Runways 25L and 25R
13-month period



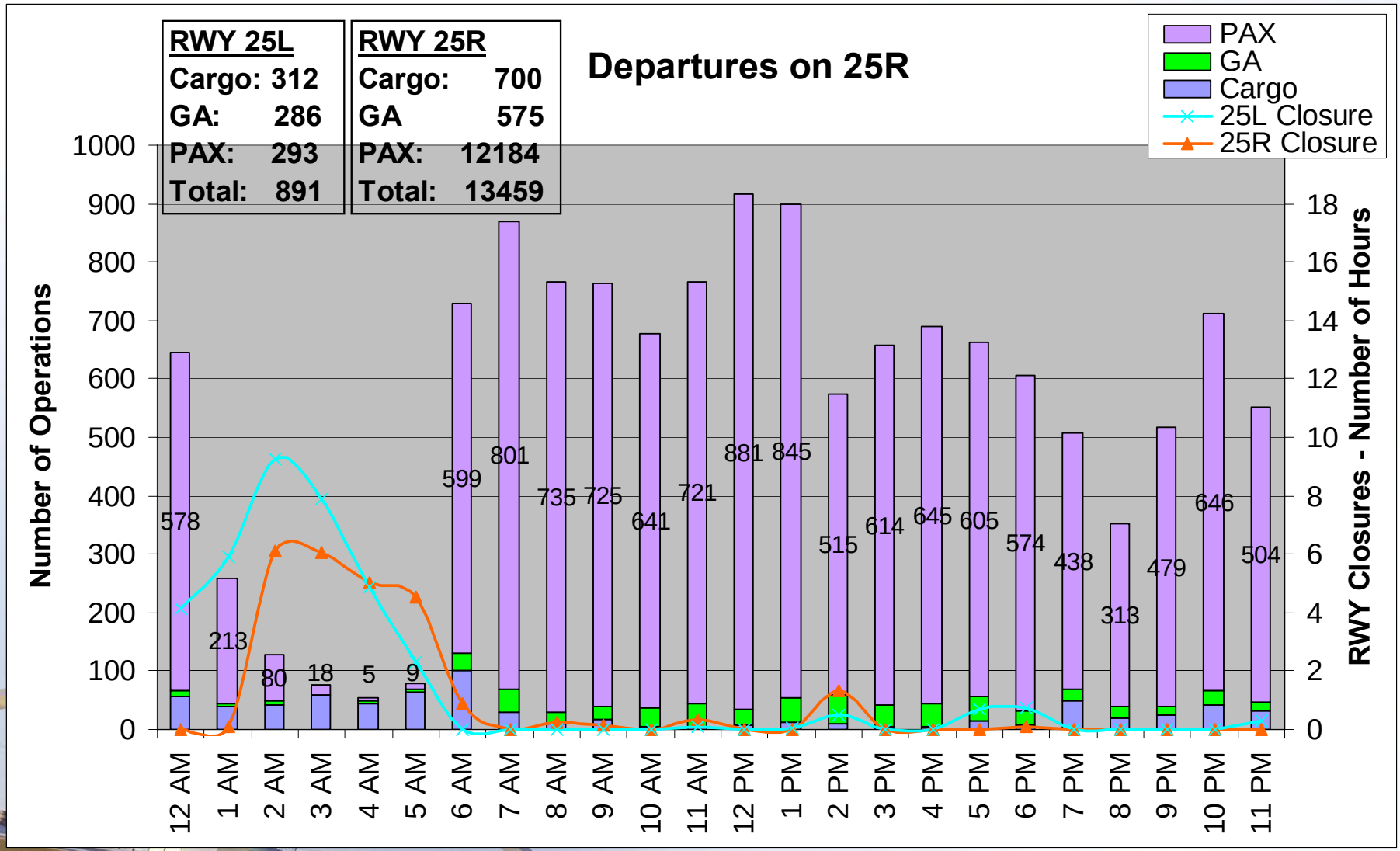
Los Angeles World Airports

Time of Day by Operator on 25L
March 2010



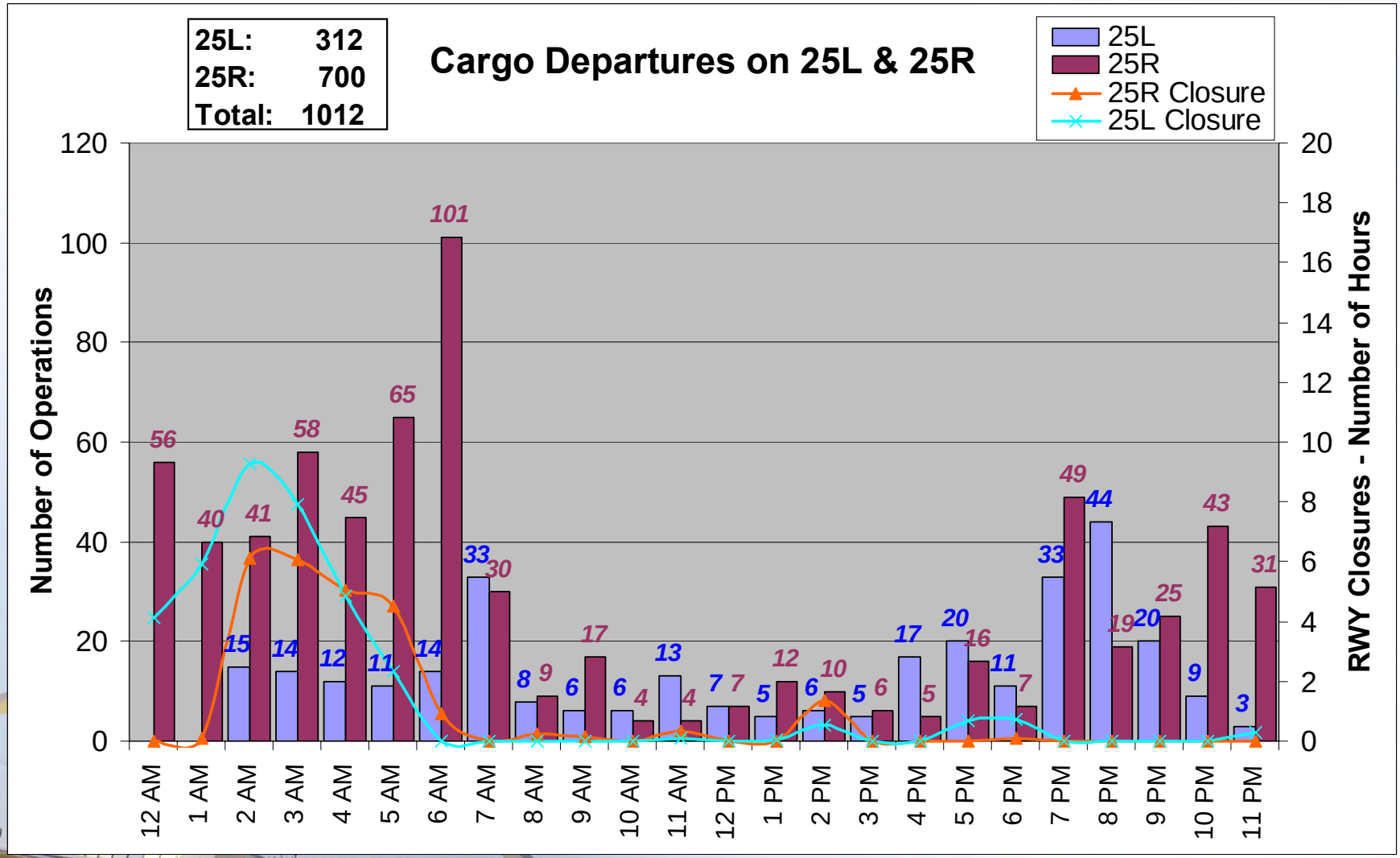
Los Angeles World Airports

Time of Day by Operator on 25R
March 2010



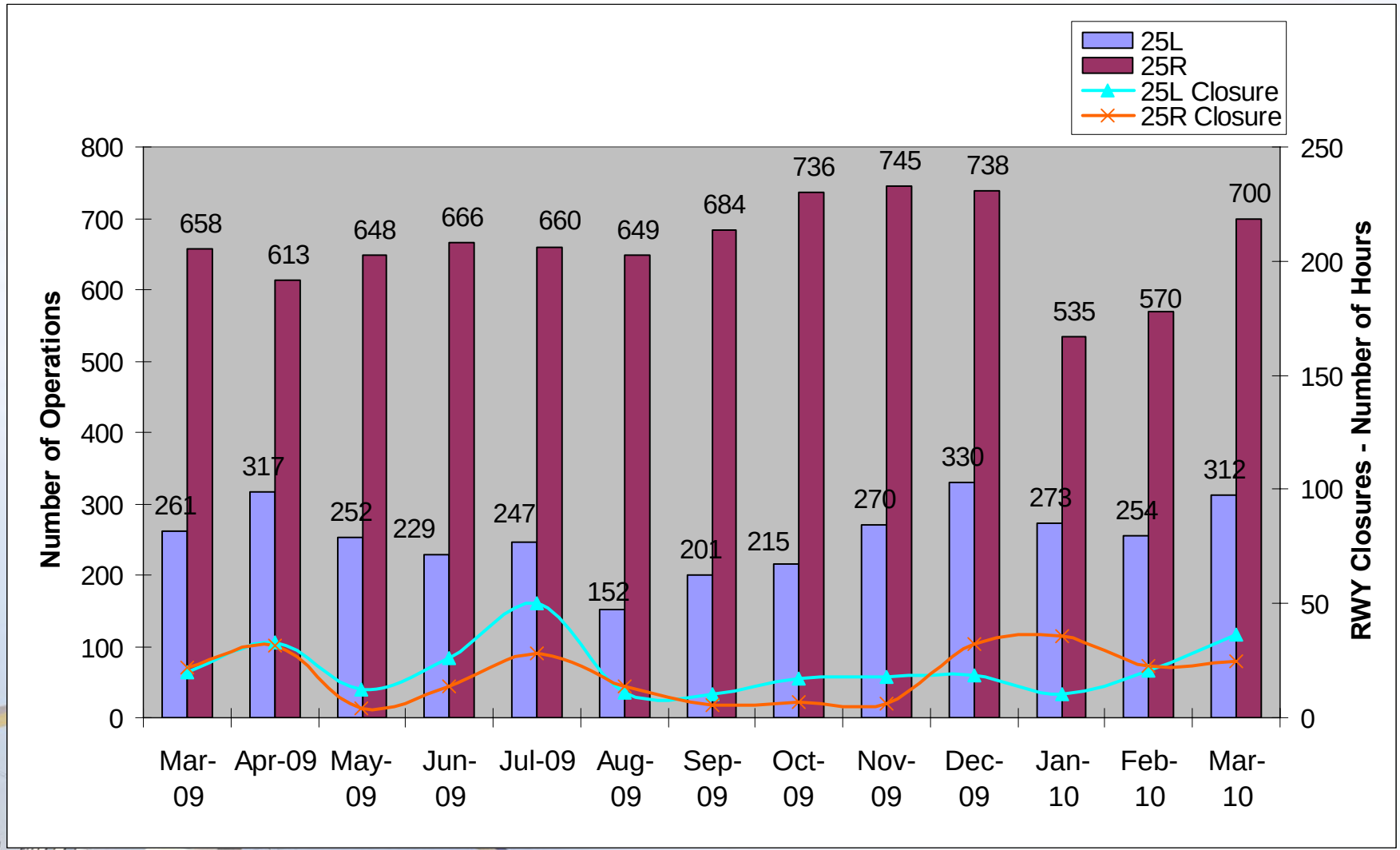
Los Angeles World Airports

Time of Day – Cargo Only
March 2010



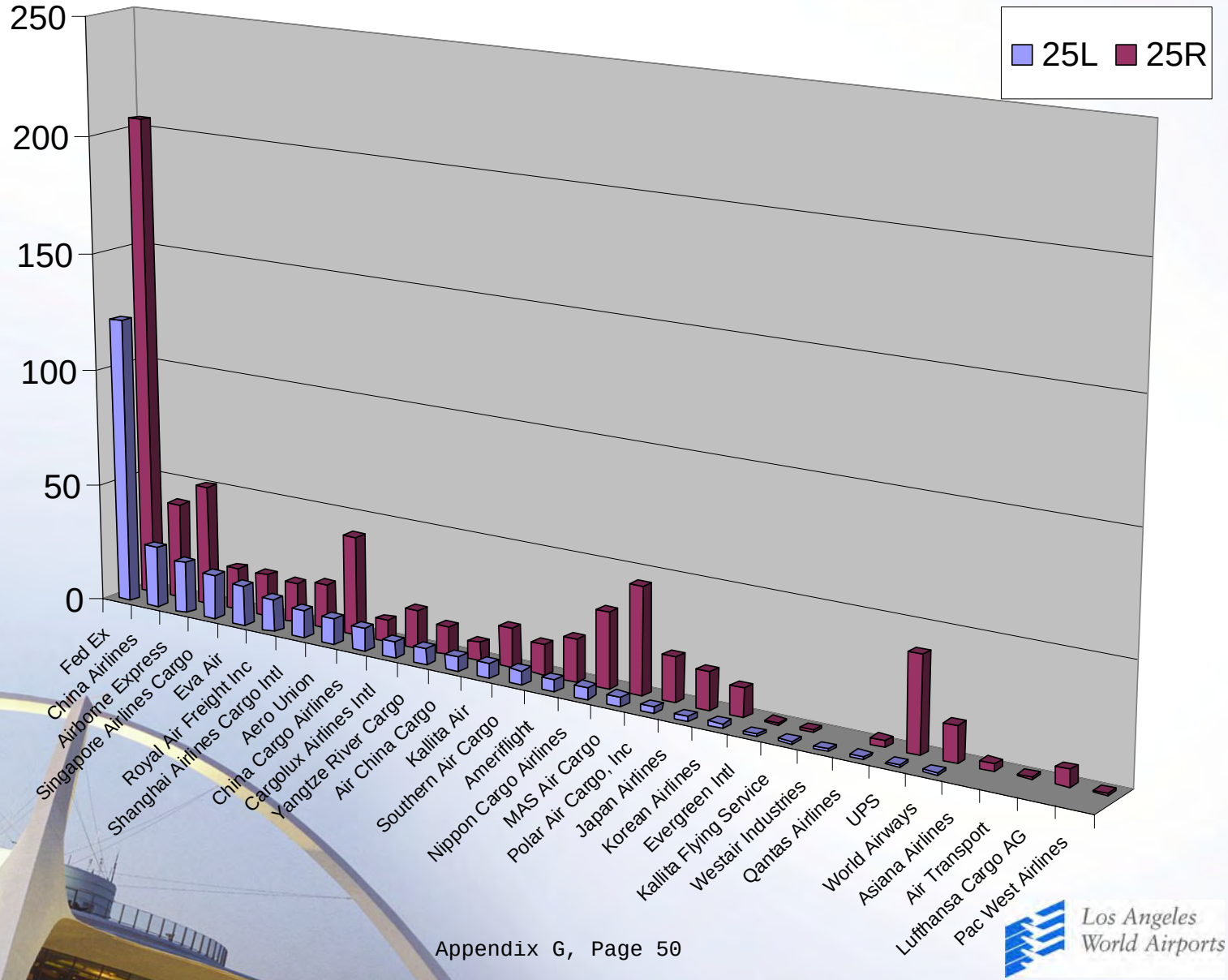
Los Angeles World Airports

Cargo Departures on 25L & 25R
13-month period



Los Angeles World Airports

Air Cargo Departures on 25L & 25R
March 2010

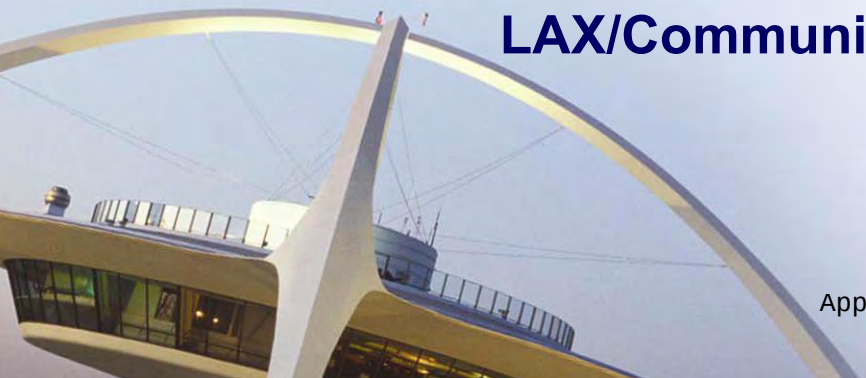


Los Angeles World Airports

South Runway Utilization Analysis

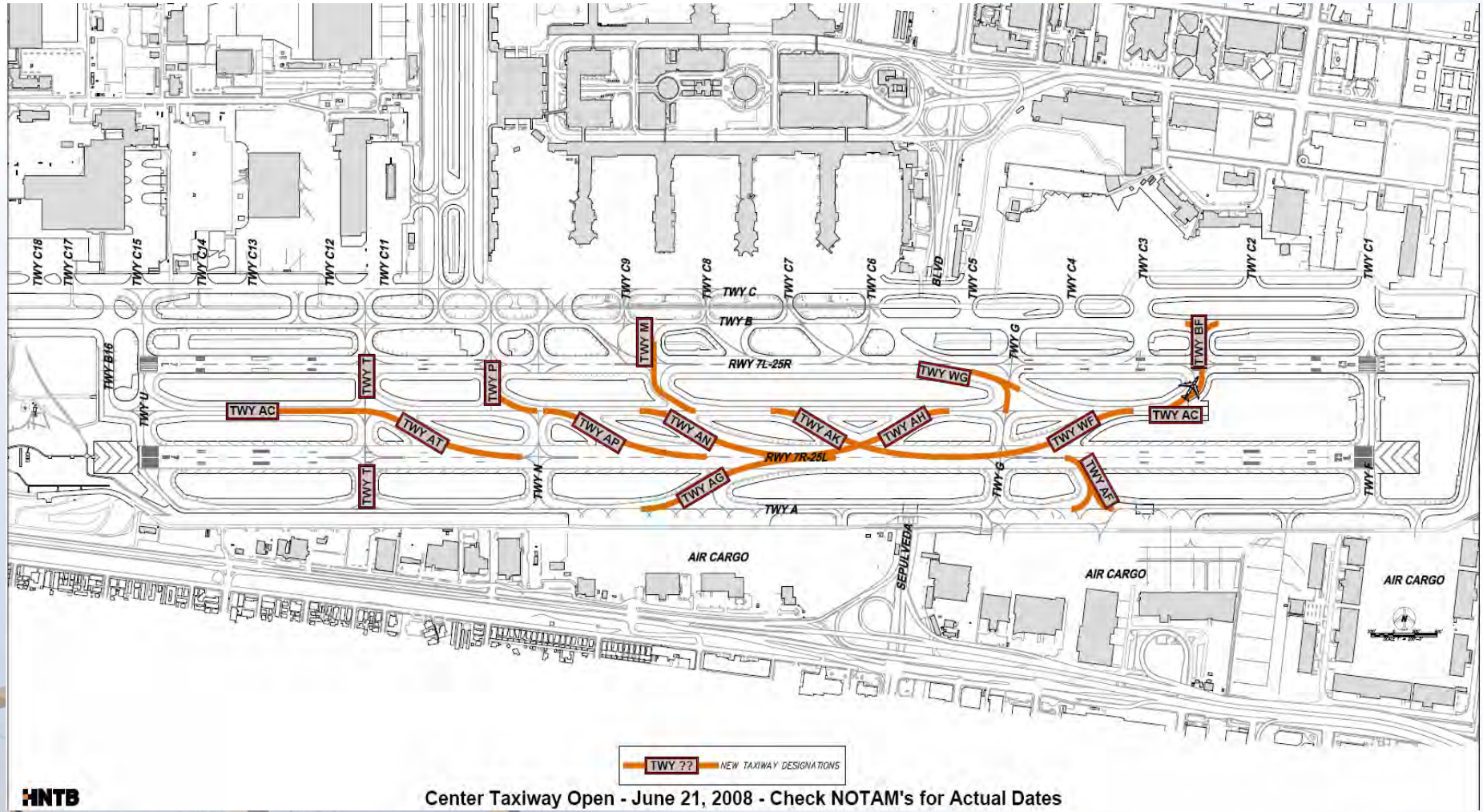
September 10, 2008

LAX/Community Noise Roundtable



Los Angeles World Airports

New Center Taxiway



Los Angeles World Airports

Overview

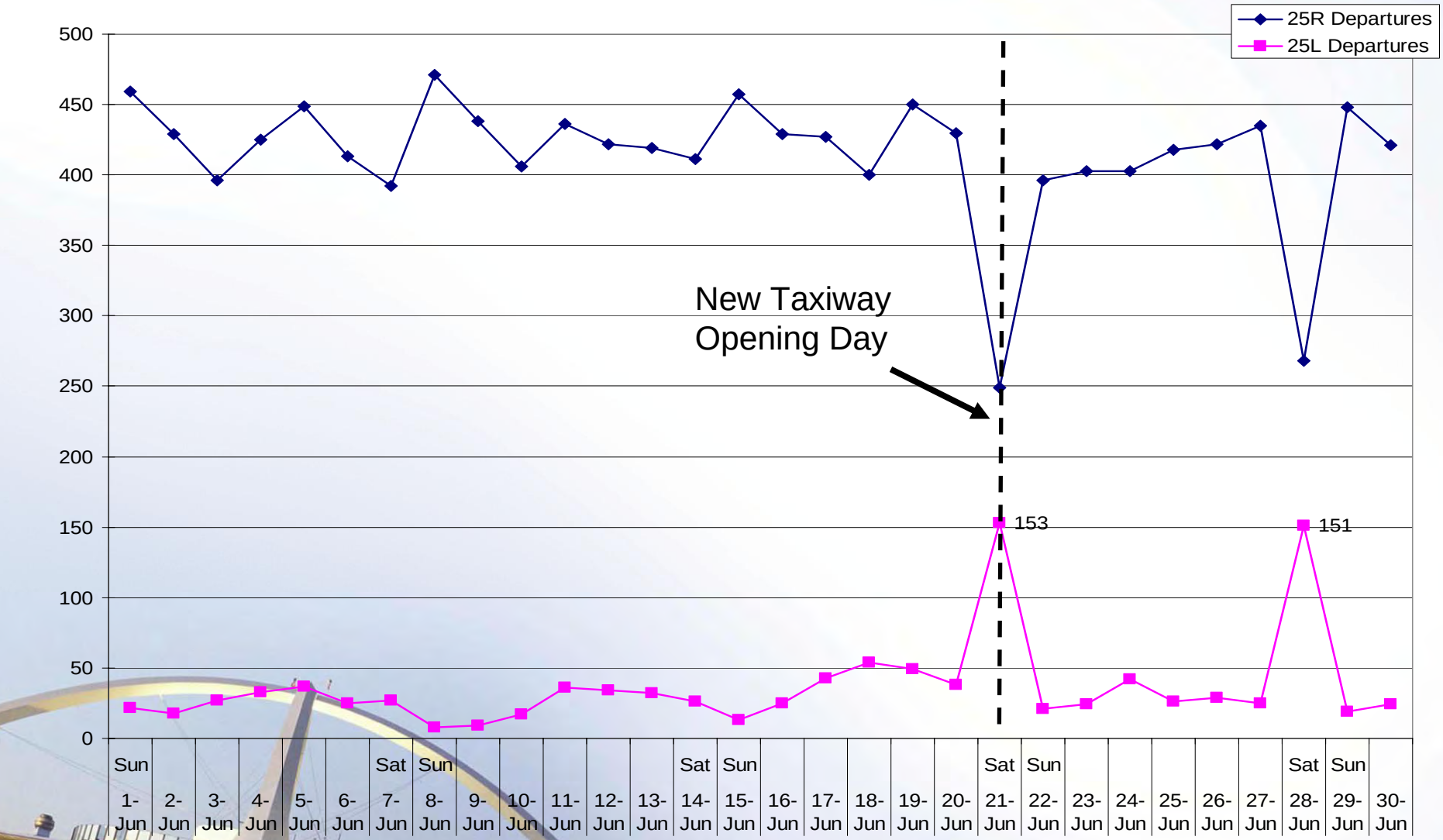
- **Runway Utilization on 25L and 25R**
- **Operations by Air Cargo Carriers**
- **Early Turn Operations**

Los Angeles World Airports

May 2008 South Runway Utilization

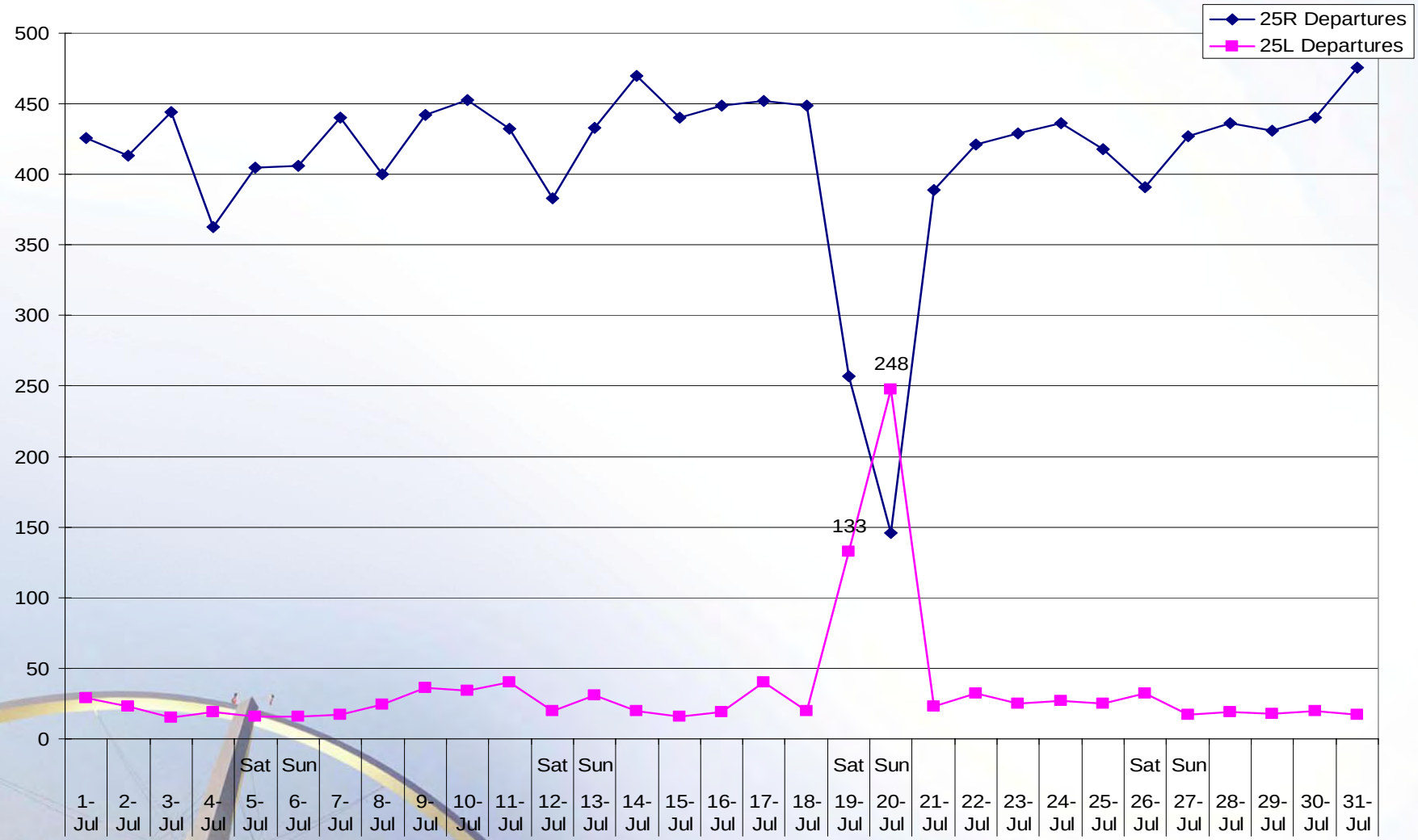
Los Angeles World Airports

June 2008 South Runway Utilization



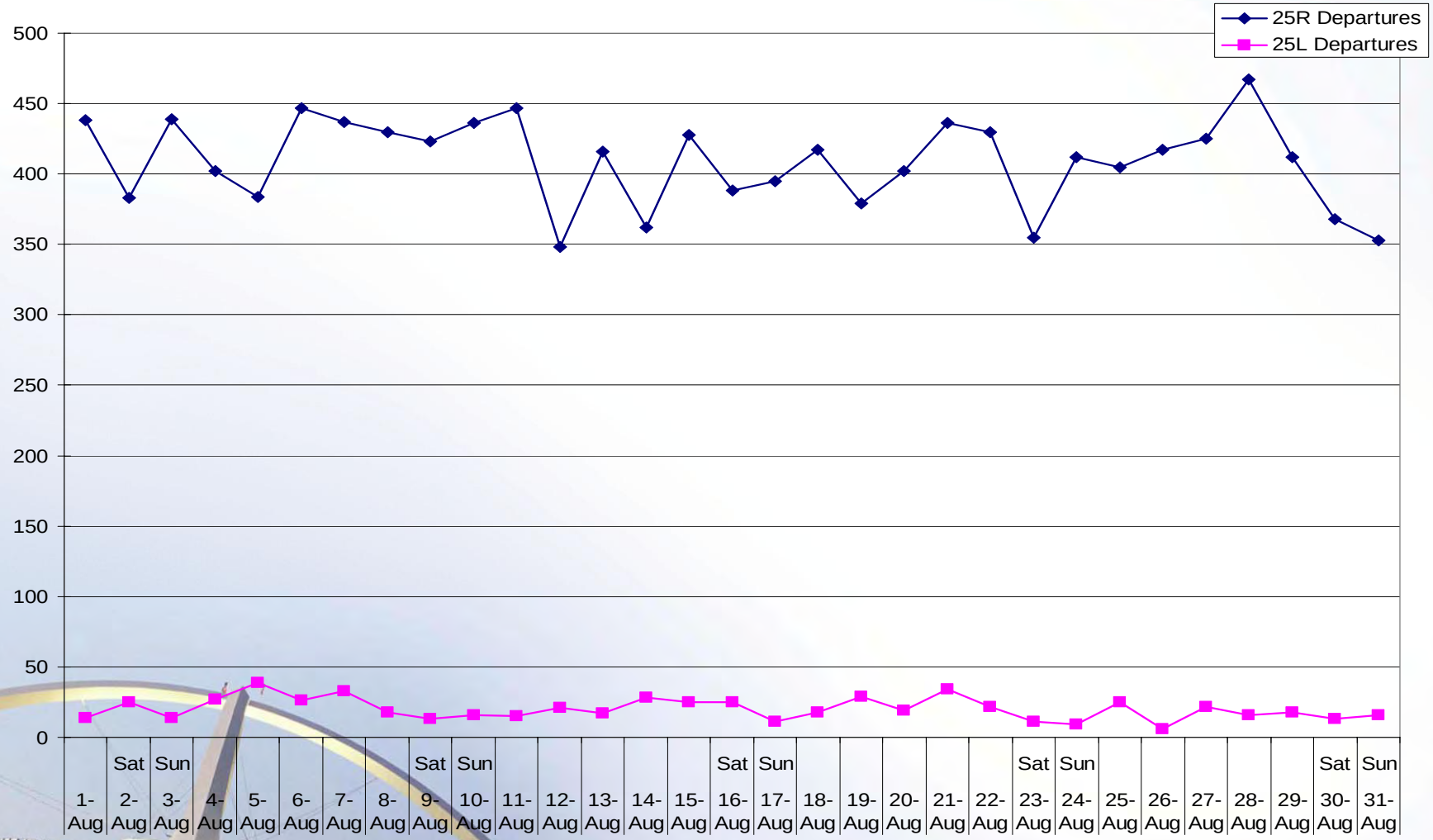
Los Angeles World Airports

July 2008 South Runway Utilization



Los Angeles World Airports

August 2008 South Runway Utilization



Los Angeles World Airports

25R Weekend Closures Recap

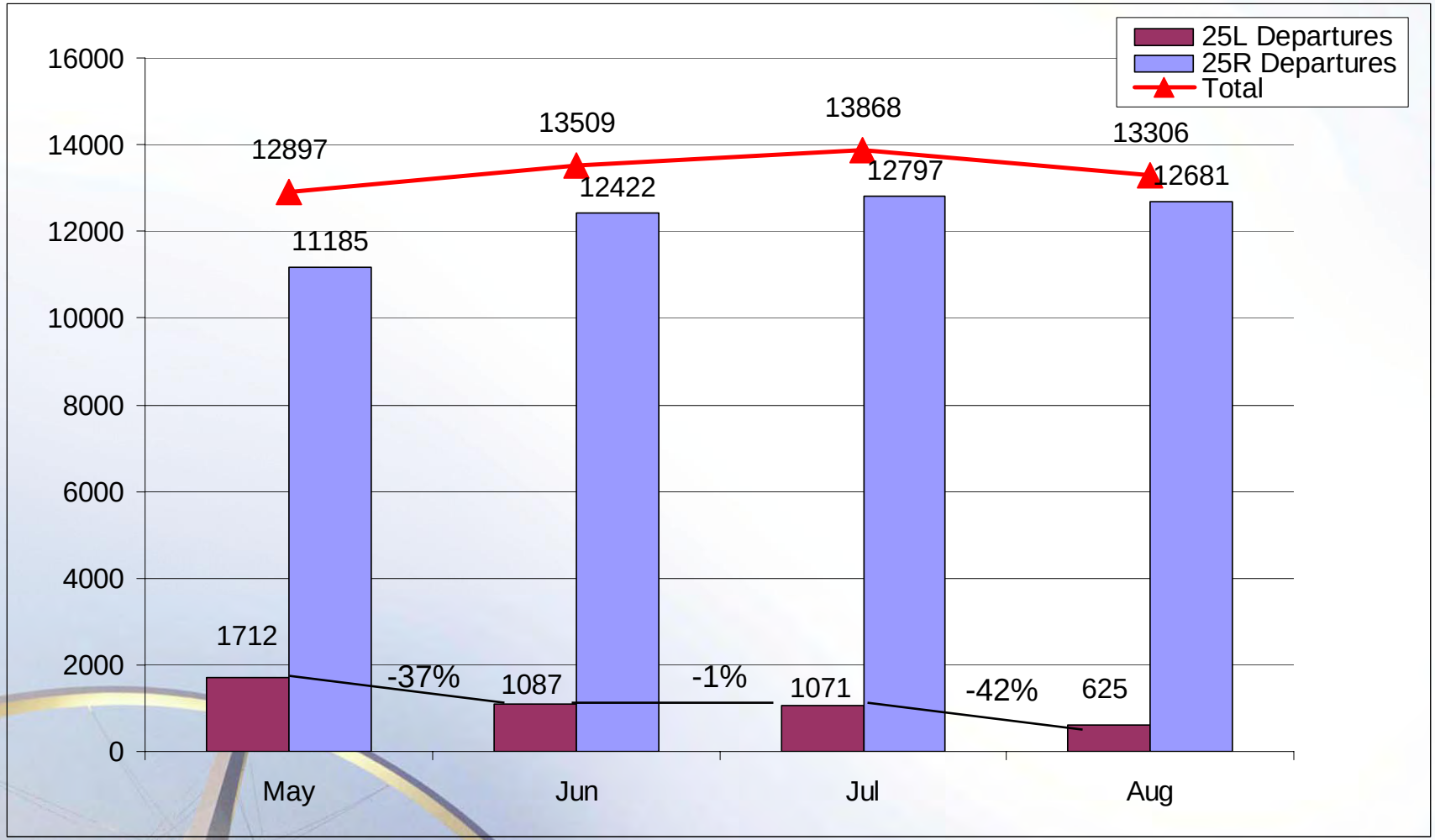
Date	25L	25R	Total	Reason
May 3rd & 4th Fri & Sat	302	443	745	Partial Closure 18-Hour - Taxiway
May 10th & 11th Sat & Sun	624	40	664	Full Closure 52-Hour - Taxiway
June 21st & 28th Two Saturdays	304	517	821	Partial Closure 21-Hour Electrical Work
July 19th & 20th Sat & Sun	381	403	784	Partial Closure 25-Hour Concrete Repair

Los Angeles World Airports

Daily Average Ops on Weekdays

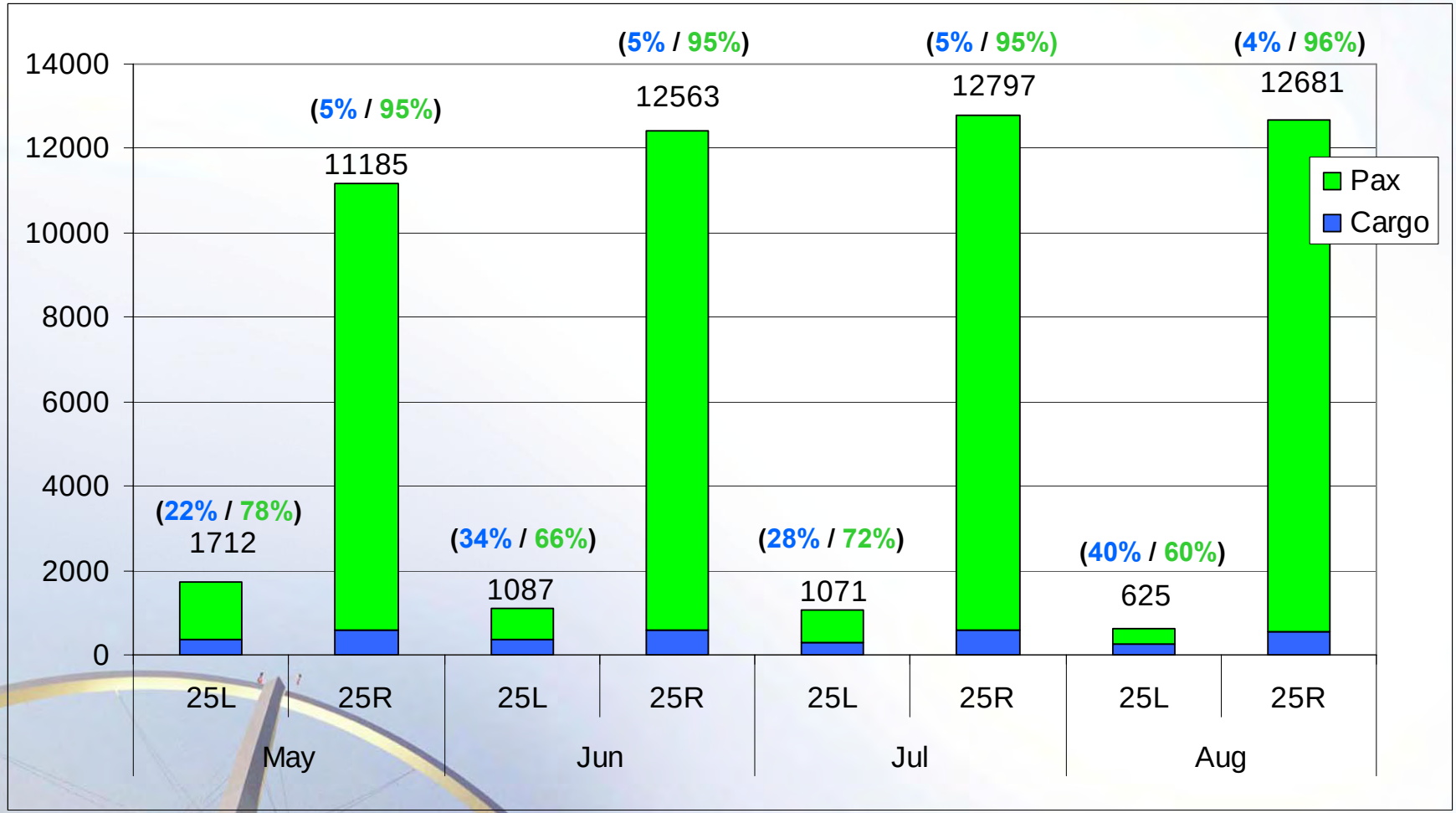
Weekdays	25L	25R	Total
May	37	388	425
June	31	422	453
July	24	433	457
August	22	416	438

Runway Use Comparison



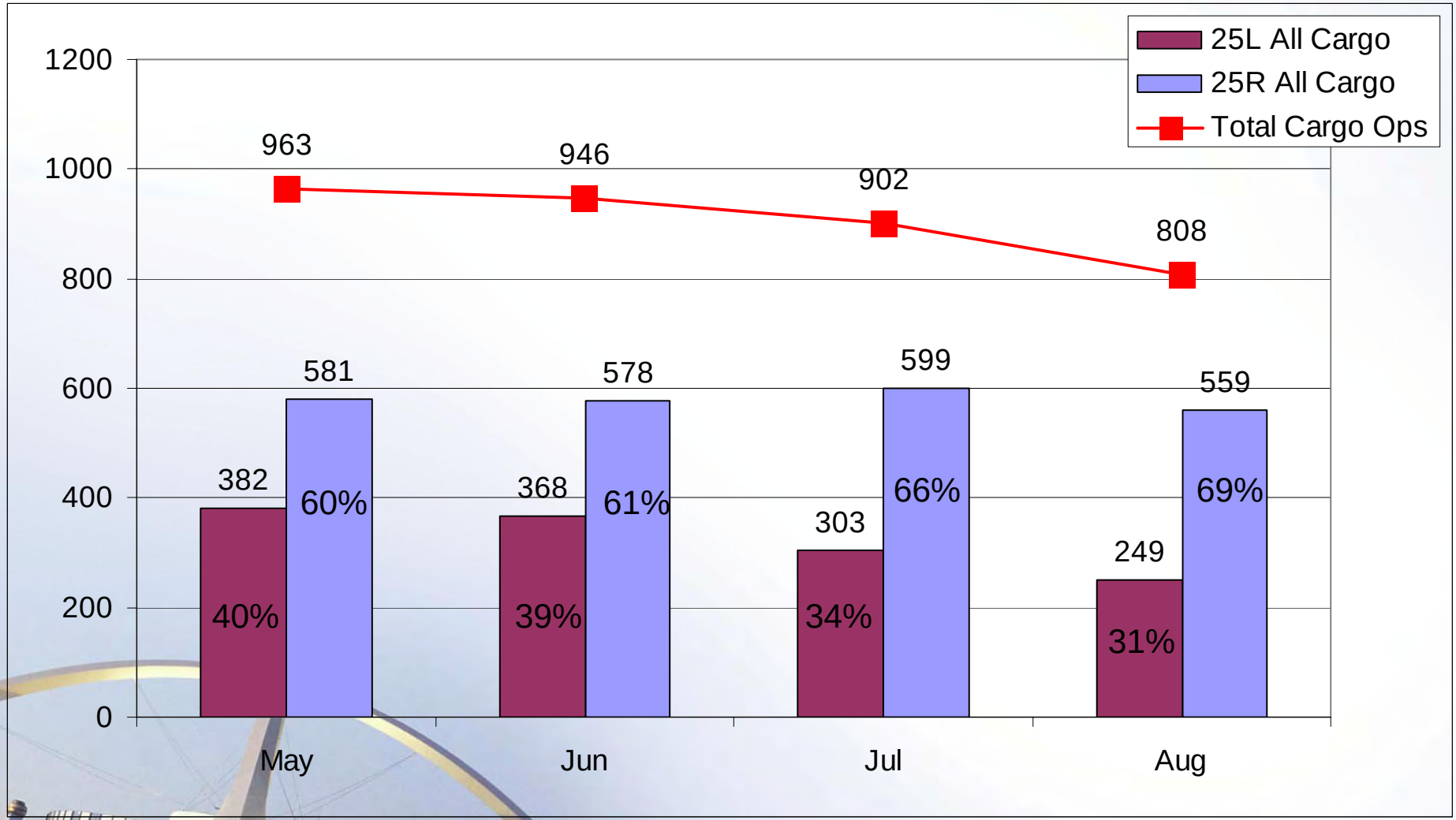
Los Angeles World Airports

Passenger vs. Cargo



Los Angeles World Airports

All Cargo Departure Operations



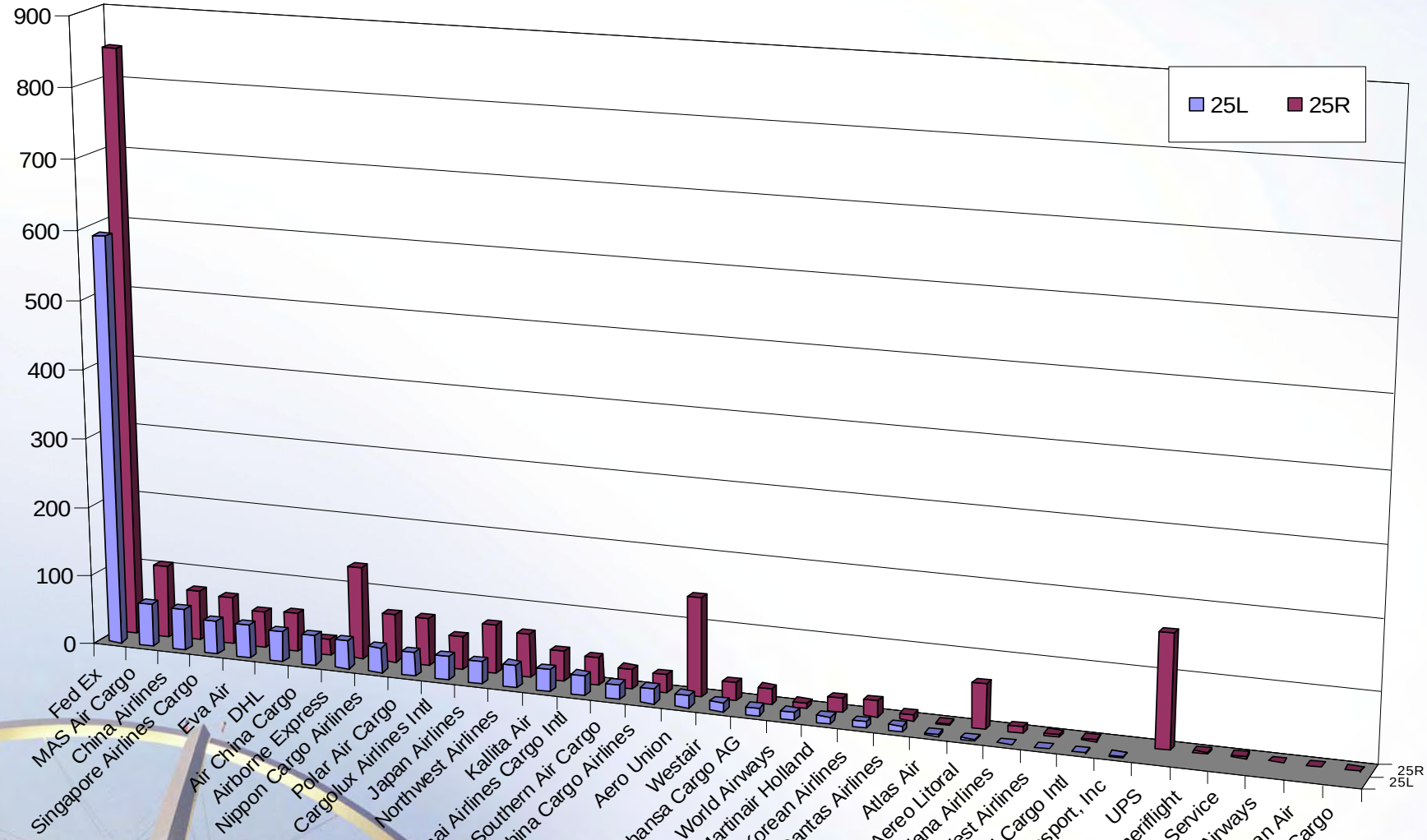
Los Angeles World Airports

Air Cargo Ops – 4 Months Total

Cargo Carriers	25L	25R	Total	25L %	25R %
Fed Ex	591	846	1437	41%	59%
MAS Air Cargo	62	104	166	37%	63%
China Airlines	60	72	132	45%	55%
Singapore Airlines Cargo	48	68	116	41%	59%
Eva Air	47	52	99	47%	53%
DHL	44	55	99	44%	56%
Air China Cargo	43	23	66	65%	35%
Airborne Express	41	133	174	24%	76%
Nippon Cargo Airlines	36	70	106	34%	66%
Polar Air Cargo	35	70	105	33%	67%
Cargolux Airlines Intl	34	48	82	41%	59%
Japan Airlines	33	70	103	32%	68%
Northwest Airlines	33	62	95	35%	65%
Kallita Air	32	44	76	42%	58%
Shanghai Airlines Cargo Intl	29	39	68	43%	57%
Southern Air Cargo	22	29	51	43%	57%
China Cargo Airlines	22	26	48	46%	54%
Aero Union	18	142	160	11%	89%
Westair	13	26	39	33%	67%
Lufthansa Cargo AG	11	23	34	32%	68%
World Airways	11	8	19	58%	42%
Martinair Holland	10	21	31	32%	68%
Korean Airlines	9	23	32	28%	72%
Qantas Airlines	9	9	18	50%	50%
Atlas Air	3	2	5	60%	40%
Aereo Litoral	2	64	66	3%	97%
Asiana Airlines	1	9	10	10%	90%
Pak West Airlines	1	4	5	20%	80%
Capital Cargo Intl	1	3	4	25%	75%
Air Transport, Inc	1		1	100%	0%
UPS		162	162	0%	100%
Ameriflight		3	3	0%	100%
Kallita Flying Service		3	3	0%	100%
Cargojet Airways		1	1	0%	100%
Ryan Air		1	1	0%	100%
Contract Air Cargo		1	1	0%	100%
Grand Total	1302	2316	3618	36%	64%

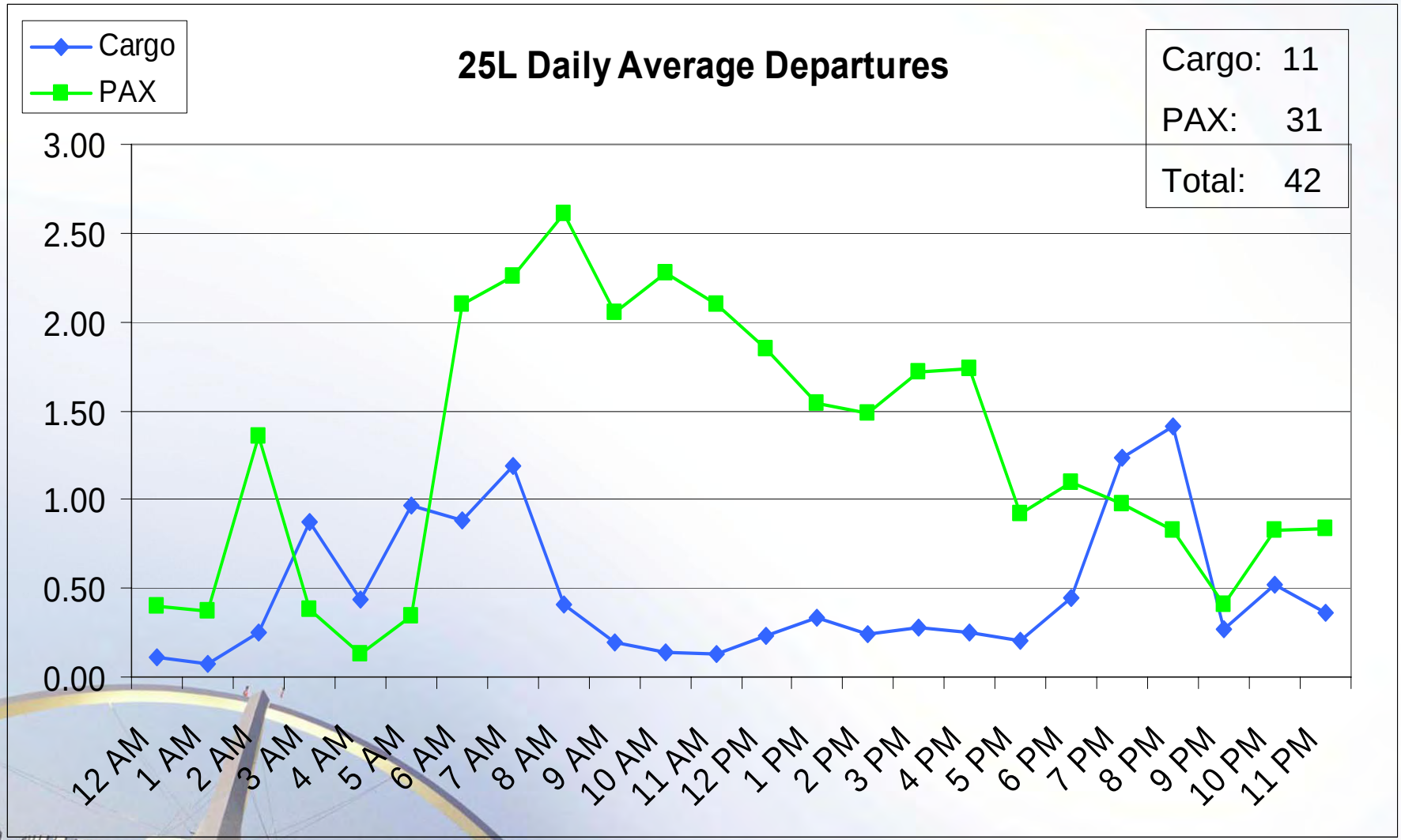
Los Angeles World Airports

Air Cargo – 4 Months Total



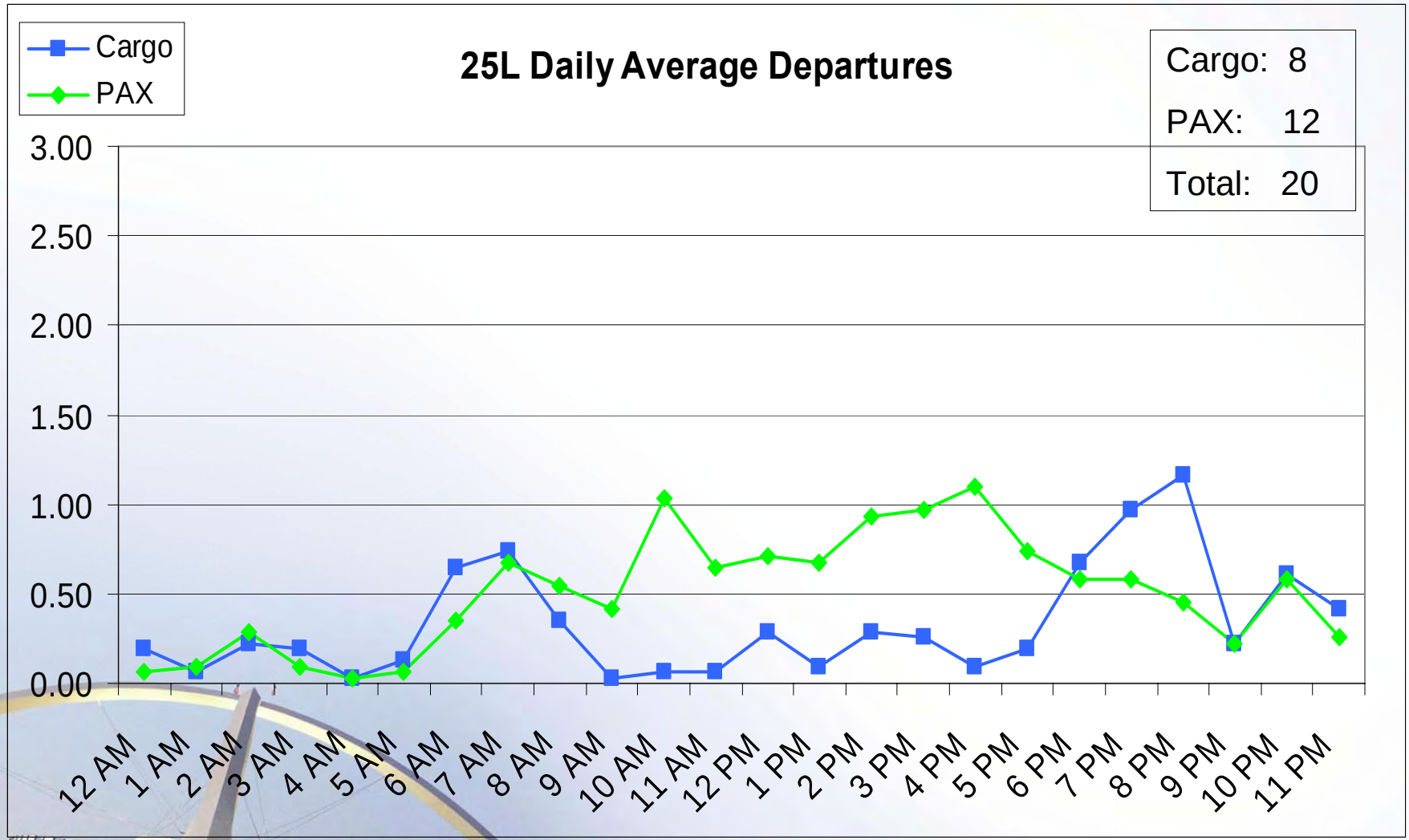
Los Angeles World Airports

25L Time of Day – May to July Timeframe



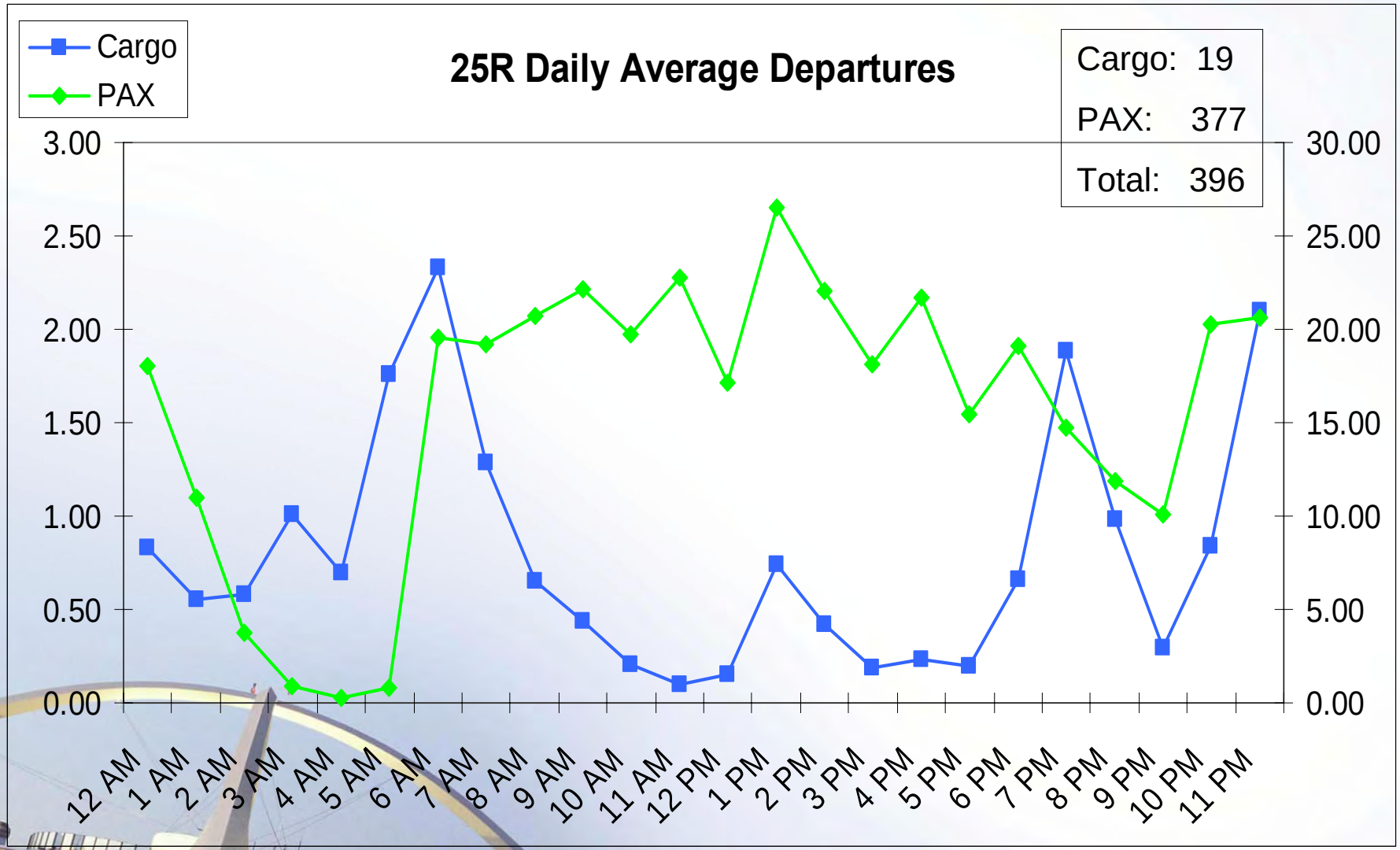
Los Angeles World Airports

25L Time of Day – August



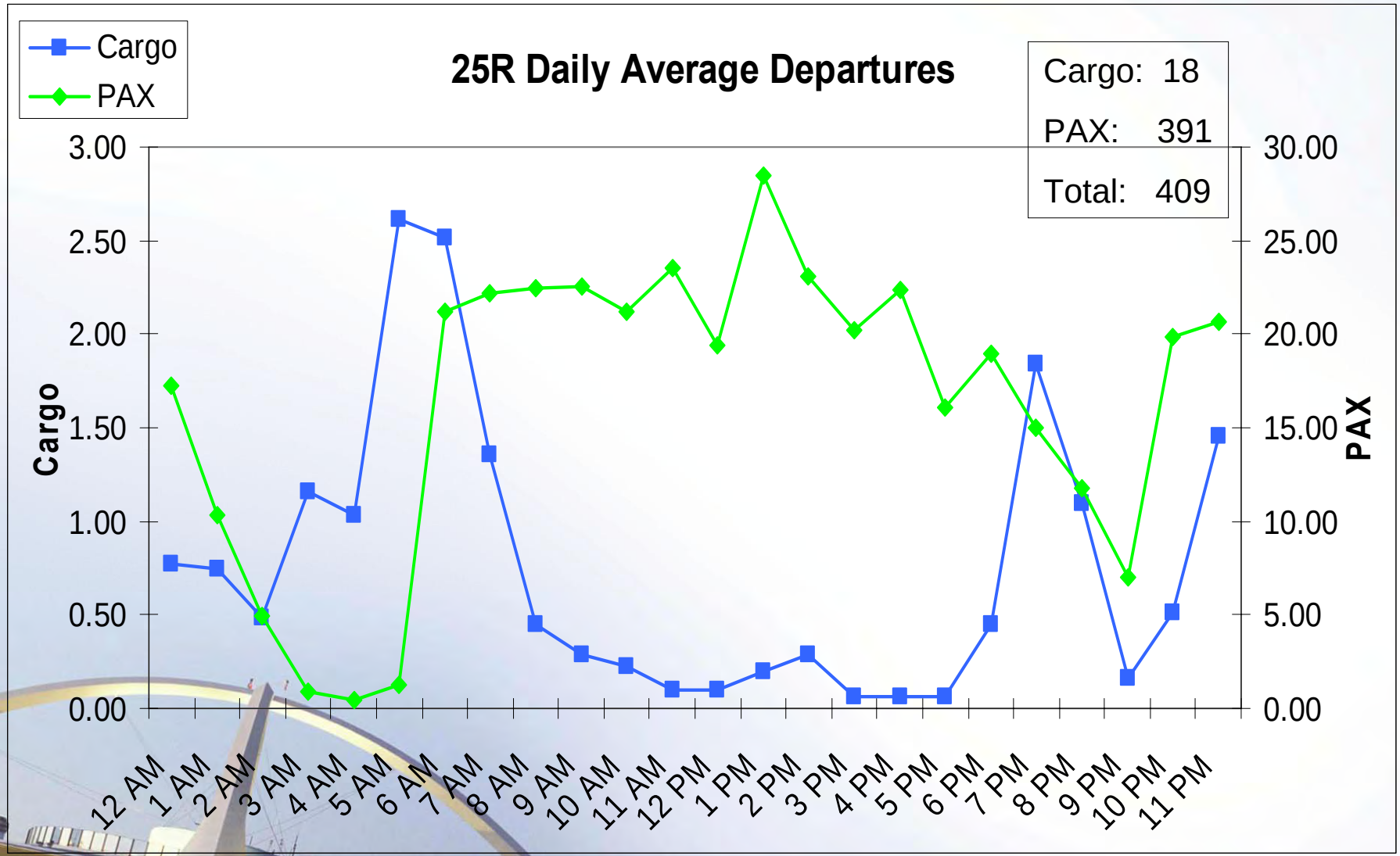
Los Angeles World Airports

25R Time of Day – May to July Timeframe



Los Angeles World Airports

25R Time of Day – August



Los Angeles World Airports

Runway Utilization Report

Summary of Runway Use (Total)

Los Angeles International Airport

Period : 01/01/2011 to 12/31/2011

Airline : ALL

Aircraft : ALL

Time Period	Percent Daily Operations Per Runway								Total	Runway Complex		Runway Flow		In	Out
	06L	06R	07L	07R	24L	24R	25L	25R	Operations	South	North	West	East	Board	Board
Departures															
Total Hours															
24 Hours	<1%	<1%	1%	<1%	37%	1%	3%	56%	298,961	61%	39%	98%	2%	95%	5%
CNEL Hours															
0700 - 1900	<1%	1%	1%	<1%	39%	1%	3%	54%	205,027	58%	42%	97%	3%	96%	4%
1900 - 2200	<1%	<1%	1%	<1%	41%	<1%	5%	52%	35,671	58%	42%	98%	2%	95%	5%
2200 - 0700	<1%	<1%	1%	<1%	26%	1%	4%	67%	58,263	72%	28%	98%	2%	95%	5%
Contra Hours															
Midnight - 0630	<1%	<1%	2%	<1%	21%	2%	6%	69%	26,595	76%	24%	98%	2%	92%	8%
0630 - Midnight	<1%	<1%	1%	<1%	38%	1%	3%	55%	272,366	59%	41%	97%	3%	96%	4%
Arrivals															
Total Hours															
24 Hours	1%	1%	2%	2%	2%	43%	48%	2%	294,539	53%	47%	94%	6%	7%	93%
CNEL Hours															
0700 - 1900	1%	<1%	<1%	1%	1%	45%	49%	2%	193,333	53%	47%	97%	3%	3%	97%
1900 - 2200	<1%	<1%	<1%	1%	2%	45%	47%	3%	56,598	52%	48%	98%	2%	6%	94%
2200 - 0700	2%	9%	11%	3%	2%	30%	41%	2%	44,608	58%	42%	75%	25%	24%	76%
Contra Hours															
Midnight - 0630	4%	24%	30%	7%	<1%	7%	24%	3%	16,069	64%	36%	35%	65%	58%	42%
0630 - Midnight	1%	<1%	<1%	1%	2%	45%	49%	2%	278,470	53%	47%	98%	2%	4%	96%

All percentages are rounded to the nearest whole number.

LAX
Los Angeles World Airports

Runway Utilization Report

Summary of Runway Use (Total)

Los Angeles International Airport

Period : 01/01/2012 to 12/31/2012

Airline : ALL

Aircraft : ALL

Time Period	Percent Daily Operations Per Runway								Total	Runway Complex		Runway Flow		In	Out
	06L	06R	07L	07R	24L	24R	25L	25R	Operations	South	North	West	East	Board	Board
Departures															
Total Hours															
24 Hours	<1%	<1%	<1%	<1%	37%	2%	4%	55%	284,889	60%	40%	99%	1%	94%	6%
CNEL Hours															
0700 - 1900	<1%	<1%	<1%	<1%	41%	2%	4%	52%	189,723	57%	43%	99%	1%	94%	6%
1900 - 2200	<1%	<1%	<1%	<1%	41%	1%	5%	53%	35,772	58%	42%	99%	<1 %	94%	6%
2200 - 0700	<1%	<1%	<1%	<1%	25%	1%	5%	67%	59,394	73%	27%	99%	1%	93%	7%
Contra Hours															
Midnight - 0630	<1%	<1%	1%	<1%	17%	2%	8%	72%	26,255	81%	19%	99%	1%	90%	10%
0630 - Midnight	<1%	<1%	<1%	<1%	39%	2%	4%	54%	258,634	58%	42%	99%	1%	94%	6%
Arrivals															
Total Hours															
24 Hours	<1%	2%	1%	<1%	2%	42%	48%	2%	296,300	53%	47%	95%	5%	8%	92%
CNEL Hours															
0700 - 1900	<1%	<1%	<1%	<1%	2%	45%	50%	2%	193,490	53%	47%	99%	1%	4%	96%
1900 - 2200	<1%	<1%	<1%	<1%	3%	45%	48%	4%	58,229	52%	48%	99%	<1 %	7%	93%
2200 - 0700	2%	13%	9%	3%	2%	30%	40%	2%	44,581	53%	47%	74%	26%	26%	74%
Contra Hours															
Midnight - 0630	5%	35%	23%	7%	<1%	7%	19%	2%	16,313	52%	48%	30%	70%	61%	39%
0630 - Midnight	<1%	<1%	<1%	<1%	2%	45%	50%	2%	279,987	53%	47%	99%	1%	5%	95%

All percentages are rounded to the nearest whole number.

Runway Utilization Report

Summary of Runway Use (Total)

Los Angeles International Airport

Period : 01/01/2013 to 12/31/2013

Airline : ALL

Aircraft : ALL

Time Period	Percent Daily Operations Per Runway								Total	Runway Complex		Runway Flow		In	Out
	06L	06R	07L	07R	24L	24R	25L	25R	Operations	South	North	West	East	Board	Board
Departures															
Total Hours															
24 Hours	<1%	<1%	<1%	<1%	39%	1%	5%	53%	304,805	59%	41%	99%	<1 %	94%	6%
CNEL Hours															
0700 - 1900	<1%	<1%	<1%	<1%	43%	1%	3%	51%	210,150	55%	45%	99%	1%	95%	5%
1900 - 2200	<1%	<1%	<1%	<1%	40%	<1%	5%	54%	35,538	59%	41%	99%	<1 %	94%	6%
2200 - 0700	<1%	<1%	<1%	<1%	26%	1%	11%	61%	59,117	73%	27%	99%	<1 %	88%	12%
Contra Hours															
Midnight - 0630	<1%	<1%	<1%	<1%	15%	2%	17%	65%	25,981	83%	17%	99%	1%	81%	19%
0630 - Midnight	<1%	<1%	<1%	<1%	42%	1%	4%	52%	278,824	57%	43%	99%	<1 %	95%	5%
Arrivals															
Total Hours															
24 Hours	<1%	2%	<1%	1%	2%	44%	47%	2%	304,251	51%	49%	95%	5%	7%	93%
CNEL Hours															
0700 - 1900	<1%	<1%	<1%	<1%	2%	46%	50%	2%	200,676	52%	48%	99%	1%	4%	96%
1900 - 2200	<1%	<1%	<1%	<1%	2%	47%	47%	3%	59,643	51%	49%	99%	<1 %	6%	94%
2200 - 0700	4%	16%	7%	4%	1%	31%	36%	2%	43,932	49%	51%	70%	30%	26%	74%
Contra Hours															
Midnight - 0630	9%	41%	17%	11%	<1%	6%	12%	2%	16,493	43%	57%	22%	78%	61%	39%
0630 - Midnight	<1%	<1%	<1%	<1%	2%	46%	49%	2%	287,758	52%	48%	99%	<1 %	4%	96%

All percentages are rounded to the nearest whole number.