Appendix F
LAX SPECIFIC PLAN AMENDMENT STUDY REPORT

Operational Analysis

July 2012

Prepared for:

Los Angeles World Airports
One World Way
Los Angeles, California 90045

Prepared by:

Ricondo & Associates, Inc.
1917 Palomar Oaks Way, Suite 350
Carlsbad, CA 92008

Appendix F-1
LAX SPECIFIC PLAN AMENDMENT STUDY REPORT

LAX 2009-2025 Passenger Forecast and Design Day Flight Schedule Development

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1917 Palomar Oaks Way, Suite 350
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1. OVERVIEW

This passenger activity forecast (herein referred to as the LAX Passenger Forecast) was prepared to evaluate passenger activity that may be projected to occur under the alternative airfield and terminal configurations at the Los Angeles International Airport (LAX) analyzed in the Specific Plan Amendment Study (SPAS) (the Project) from Baseline Year 2009 through Plan Year 2025. **Section 2** of this report presents the methodology, assumptions and development process used to prepare the LAX Passenger Forecast.

Sections 3 and **4** of this report presents the assumptions, methodology and results related to the development of two design day flight schedules (DDFSs) prepared in support of the Project, as follows:

- The 2009 DDFS represents existing activity levels for a peak month average day (PMAD) in 2009 (the baseline year). In accordance with the provisions of the California Environmental Quality Act (CEQA), October 2010 is the baseline date for characterizing existing conditions in the SPAS EIR. For the analysis of airfield operations, a full year's worth of data was considered necessary and appropriate to characterize existing baseline conditions. Airport operations data for the prior calendar year, which for purposes of the SPAS analysis is 2009, were used to define existing baseline conditions related to airfield operations.
- The 2025 DDFS represents forecasted activity levels for a PMAD in 2025 (the forecast year). The number of scheduled passenger operations was derived from the forecasted passenger activity levels presented in the LAX Passenger Forecast. The number of non-scheduled operations (non-scheduled passenger, non-scheduled air taxi (AT), general aviation (GA), cargo and military operations) was derived from projections of unscheduled activity for 2025.

The LAX Passenger Forecast and associated DDFSs developed for the Project are based on data and assumptions made in early to mid-2010 (March through June 2010). Because future conditions are by definition unknown, future activity results may be different from those predicted in the forecast results. Development of DDFSs carries the further uncertainty of airline responses to changes in operating costs and demand. Therefore, the 2025 DDFS developed from the LAX Passenger Forecast represents a range of possible, but not necessarily actual, future aircraft activity levels.

2. LAX PASSENGER FORECAST

The following sections discuss the LAX Passenger Forecast development process and results.

2.1 The Uncertainty Related to Forecasting

Significant national and international events over the last twelve years have affected aviation activity. Of the several factors that continue to affect the industry and add uncertainty to the forecasting effort, the following are four of the most significant.

Cost of Aviation Fuel

The volatile price of fuel is one of the most significant forces affecting the industry today. The average price of jet fuel was $0.81 per gallon in 2000 compared with $2.10 in 2007. In May 2008, the average price of jet fuel increased to $3.79 per gallon. By December 2011, prices were just below $3.00.

According to Airlines for America (A4A)[1], every one-cent average annual increase in the price per gallon increases the annual airline operating expenses for the industry by approximately $175 million. The A4A's reported airline cost index indicates that fuel is the industry's top cost (30.7) percent of industry expenditures for fuel; 22.1 percent for labor in third quarter 2011.

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[1] Airlines for America (A4A), formerly known as Air Transport Association of America, Inc. (ATA), is a trade organization of the principal U.S. airlines.

The significant increases in the price of jet fuel over the past ten years have contributed to airline capacity reductions. This puts downward pressure on activity increases through higher fares and higher flight load factors on fewer available flights.

Economic Conditions

In addition to airline cost factors, the overall state of the economy affects the propensity to travel, and therefore airline revenue. For an international gateway airport such as LAX, this includes both domestic and international conditions. Because economic conditions are typically cyclical over time (over longer periods, average changes are more regular and predictable), trends can be extracted from the balance of strong and weak economic years. However, when combined with the unsteady growth at LAX over the last twelve years, changing economic conditions can affect the reliability of forecasts of airline activity by further reducing the correlation between the economic conditions and airport activity.

Airport Security

The requirements and uncertainties related to airport security and the processes and procedures of the Department of Homeland Security (DHS) can affect the decision to, and the mode choice for, travel. With enactment of the Aviation and Transportation Security Act (ATSA) in November 2001, the Transportation Security Administration (TSA) was created, followed by the Homeland Security Act (which created the DHS) in November 2002. The ATSA mandates certain passenger, cargo and baggage screening requirements, security awareness programs for airport personnel, and deployment of explosive detection devices. These security requirements have increased the time required in the terminal to reach aircraft gates as well as bag check-in decisions. Wait time expectations at a particular airport may affect the travel mode choice made by the passenger.

Threat of Terrorism and Associated Uncertainty

As has been the case since September 11, 2001, terrorism incidents directed against either domestic or international aviation, or against other targets that directly affect aviation, contribute to the uncertainty of achieving activity projections. An increase in terrorist activity produces a disincentive for passengers to travel because of the perceived additional risk, as well as the additional security screening procedures discussed above. Therefore, any terrorist incident aimed at aviation during the forecast period of this study could immediately and significantly affect demand for aviation services.

The cost of aviation fuel, unpredictable economic conditions, increasing airport security measures, and threats of terrorism can and may affect the assumptions and results of this LAX Passenger Forecast. Given how these circumstances, along with other unforeseen airline business decisions, can also affect forecast variables, the LAX Passenger Forecast indicates possible rather than predictable results. These airline business decisions may include starting or stopping service to different markets; changes in aircraft fleets; and growth or reduction of capacity at LAX.

As noted in the LAX Senior Revenue Bonds 2008 Series Report, "despite current uncertainties facing the aviation industry today, it is expected that in the long term the Airport will maintain its role as one of the premier airports worldwide, both in service to domestic O&D [Origin & Destination] passengers and as an international gateway. Given the strength of its economic base and leading socioeconomic indicators, the Los Angeles CSA [Combined Statistical Area] will support long-term growth in passenger demand, with regional demand continuing to be predominantly served at the Airport, including international travel and nonstop travel to major medium and long-haul markets."[2]

[2] Ricondo & Associates, Inc., Los Angeles International Airport Senior Revenue Bonds, 2008 Series A Senior Refunding Revenue Bonds, 2008 Series B Subordinate Revenue Bonds, 2008 Series C - Appendix A: Report of the Airport Consultant, July 2008.

2.2 Background Information

The following sections present a summary of historical data and an analysis of passenger activity at LAX.

2.2.1 Passenger Activity

Of the top five U.S. airports with the largest total passengers in 2010, LAX ranks third with 59,069,409 passengers—ahead of Dallas Fort-Worth International and Denver International airports—and behind Hartsfield-Jackson Atlanta International and Chicago O'Hare International airports.

As presented in **Table 1**, over the last 10 years, LAX has experienced significant shifts in passenger activity. Historically, domestic enplanements have represented between 72 and 75 percent of all enplanements at LAX. In addition to compounded annual growth rates (CAGR), i.e., the year-over-year growth rates over a specified period of time, Table 1 presents year-to-year growth percentages to depict variations in enplanements from one year to the next.

Domestic Enplanements

Domestic enplanements at LAX increased from approximately 23.7 million enplaned passengers in Fiscal Year (FY) 1999 to approximately 25.0 million in FY 2001. This increase represents a CAGR of 2.5 percent during this period, compared with 1.2 percent nationwide. Domestic enplaned passengers at LAX decreased 16.7 percent between FY 2001 and FY 2002, compared to a nationwide activity decrease of 8.1 percent. Thereafter, domestic enplanements at LAX increased at a CAGR of 1.3 percent between FY 2002 and FY 2008, reaching approximately 22.4 million in FY 2008, compared with a 2.8 percent annual growth nationwide during this same 2002-2008 period. Between 2008 and 2009, the number of LAX enplanements decreased by 7.9 percent, reaching approximately 20.6 million enplanements.

International Enplanements

Table 1 also presents historical data on international enplaned passengers at LAX between FY 1999 and FY 2009. International passenger activity at LAX increased from approximately 7.7 million enplanements in FY 1999 to approximately 8.9 million in FY 2001, a CAGR of 7.0 percent. International enplanements decreased from approximately 8.9 million in FY 2001 to approximately 7.3 million in FY 2002 (a CAGR of 17.2 percent). Thereafter, between 2002 and 2008, international passenger activity began to recover, with enplaned passengers increasing at a CAGR of 2.9 percent, reaching approximately 8.7 million in FY 2008 before decreasing to approximately 7.7 million in FY 2009.

Total Enplanements

Commensurate to the increases and decreases in domestic and international enplanements described above, total LAX enplanements fluctuated over the period of 1999 to 2009, decreasing at a CAGR of 1.1 percent. In comparison, U.S. enplanements increased at a CAGR of 0.3 percent over the same period of 1999 to 2009.

LAX Share of U.S. Domestic Enplanements

As depicted in Table 1, LAX share of U.S. domestic enplaned passengers slowly decreased between FY 2001 and FY 2005, settling at approximately 3.3 percent between 2006 and 2009.

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Table 1
Domestic and International Enplaned Passengers

	Domestic Activity					International Activity		Total Activity	
Fiscal Year	LAX Enplanements [1/]	LAX Annual Growth	U.S. Enplanements[2/]	U.S. Annual Growth	LAX Share of U.S. Enplanements	LAX Enplanements [1/]	Annual Growth	LAX Enplanements [1/]	Annual Growth
1999	23,736,102	3.0%	610,900,000	3.5%	3.9%	7,749,359	0.9%	31,485,461	2.4%
2000	24,880,727	4.8%	641,200,000	5.0%	3.9%	8,350,995	7.8%	33,231,722	5.5%
2001	24,960,755	0.3%	625,800,000	-2.4%	4.0%	8,879,214	6.3%	33,839,969	1.8%
2002	20,783,817	-16.7%	575,100,000	-8.1%	3.6%	7,347,844	-17.2%	28,131,661	-16.9%
2003	20,441,104	-1.6%	587,800,000	2.2%	3.5%	7,269,224	-1.1%	27,710,328	-1.5%
2004	21,241,860	3.9%	628,500,000	6.9%	3.4%	7,837,987	7.8%	29,079,847	4.9%
2005	22,143,442	4.2%	669,400,000	6.5%	3.3%	8,404,809	7.2%	30,548,251	5.0%
2006	22,030,697	-0.5%	668,400,000	-0.1%	3.3%	8,624,449	2.6%	30,655,146	0.3%
2007	22,374,333	1.6%	690,100,000	3.2%	3.2%	8,429,137	-2.3%	30,803,470	0.4%
2008	22,427,379	0.2%	679,600,000	-1.5%	3.3%	8,714,960	3.4%	31,142,339	1.1%
2009	20,662,550	-7.9%	626,500,000	-7.8%	3.3%	7,666,428	-12.0%	28,328,978	-9.0%
Compounded Annual Growth Rate									
1999 - 2001	2.5%		1.2%			7.0%		3.7%	
2001 - 2002	-16.7%		-8.1%			-17.2%		-16.9%	
2002 - 2008	1.3%		2.8%			2.9%		1.7%	
2008-2009	-7.9%		-7.8%			-12.0%		-9.0%	
1999-2009	-1.4%		0.3%			-0.1%		-1.1%	

Notes:
[1/] Twelve months ending June 30.
[2/] Twelve months ending September 30.
[3/] Estimated by the FAA.

Source: Los Angeles World Airports (Airport activity); Federal Aviation Administration Data & Statistics Reports (U.S. activity), June 2009.
Prepared by: Ricondo & Associates, Inc., February 2012.

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As a primary U.S. gateway with substantial domestic air service, the percentage of connecting passenger traffic at LAX is relatively high for an airport where no airline dominates activity. LAX connecting domestic activity has fluctuated around the 30 percent range as presented in **Table 2**. As data on the ratio of international passengers connecting at LAX is limited, the following data focuses on domestic connecting passengers.

Several factors contribute to this connecting activity:

- LAX role as a major gateway to international markets,
- The advantageous geographical location of LAX in relation to markets along the West Coast corridor,
- The significant number of nonstop flights each day to and from domestic markets, and
- The alliances among airlines serving LAX that foster connecting activity through alliance-related ticket pricing and marketing.

Table 2

Percentage of Domestic O&D Passengers

Calendar Year	LAX Domestic O&D Passengers	LAX Domestic Enplaned and Deplaned Passengers	LAX O&D Percentage	LAX Domestic Connecting Passengers	LAX Connecting Percentage
1999	33,273,400	48,464,655	68.7%	15,191,255	31.3%
2000	33,451,650	49,887,433	67.1%	16,435,783	32.9%
2001	30,601,960	45,656,025	67.0%	15,054,065	33.0%
2002	27,785,620	41,379,168	67.1%	13,593,548	32.9%
2003	28,012,880	40,358,935	69.4%	12,346,055	30.6%
2004	30,955,430	44,220,019	70.0%	13,264,589	30.0%
2005	31,200,070	44,003,135	70.9%	12,803,065	29.1%
2006	31,031,850	44,129,974	70.3%	13,098,124	29.7%
2007	31,453,800	44,732,810	70.3%	13,279,010	29.7%
2008	31,309,500	45,190,615	69.3%	13,881,115	30.7%
2009	29,115,070	41,393,269	70.3%	12,278,199	29.7%
Compounded Annual Growth Rates					
1999 - 2001	-4.0%	-2.9%		-0.4%	
2001 - 2002	-9.2%	-9.4%		-9.7%	
2002 - 2008	2.0%	1.5%		0.3%	
2008 - 2009	-7.0%	-8.4%		-11.5%	

Source: Los Angeles World Airports (Airport activity); Federal Aviation Administration Data & Statistics Reports (U.S. activity), June 2009.
Prepared by: Ricondo & Associates, Inc., February 2012.

2.2.2 Aircraft Operations

The total for aircraft operations at LAX has fluctuated over the past decade due, in part, to factors affecting the entire aviation industry. **Table 3** presents historical operations (take-offs and landings) at LAX by major user group between FY 1999 and FY 2009.

Total aircraft activity at LAX increased from 762,828 operations in FY 1999 to 796,129 operations in FY 2001, a CAGR of 2.2 percent, compared with a compounded decrease of 1.3 percent nationwide. With the effects of September 11, 2001, total aircraft activity at LAX steadily decreased the next few years—from 796,129 operations in FY 2001 to 636,687 in FY 2004, a CAGR of 7.2 percent. Contributing to this decrease were an economic slowdown and the subsequent reduced activity by passengers and all-cargo carriers at LAX. Thereafter, total operations increased at a compounded annual growth rate of 1.4 percent between FY 2004 and FY 2007, reaching 663,509 operations in FY 2007. Operations in 2008 increased by 2.5 percent, followed by a 17.3 percent drop in 2009 to 561,989, caused primarily by a 14.3 percent decrease in passenger airline operations.

Table 3

Annual Airport Operations by Type

Fiscal Year	U.S. Carriers	Foreign Flag Carriers	Airline Total	General Aviation	All Cargo	Other Air Taxi	Military	Total
1999	624,110	70,376	694,486	18,430	33,918	13,330	2,664	762,828
2000	633,404	74,516	707,920	18,292	36,756	16,388	2,552	781,908
2001	647,792	78,744	726,536	17,787	36,110	13,728	1,968	796,129
2002	528,750	66,650	595,400	15,188	31,694	12,818	2,315	657,415
2003	506,940	71,834	578,774	16,379	25,834	18,208	2,239	641,434
2004	496,712	74,376	571,088	14,709	25,344	22,740	2,806	636,687
2005	506,418	80,808	587,226	14,040	27,100	22,605	2,852	653,823
2006	498,930	81,476	580,406	16,116	26,272	25,582	2,488	650,864
2007	510,210	74,918	585,128	15,624	25,232	35,037	2,488	663,509
2008	526,662	80,706	607,368	18,239	22,530	28,886	2,758	679,781
2009	447,370	73,044	520,414	15,758	19,414	3,842	2,561	561,989
Compounded Annual Growth Rate								
1999 - 2001	1.9%	5.8%	2.3%	-1.8%	3.2%	1.5%	-14.1%	2.2%
2001 - 2004	-8.5%	-1.9%	-7.7%	-6.1%	-11.1%	18.3%	12.6%	-7.2%
2004 - 2007	0.9%	0.2%	0.8%	2.0%	-0.1%	15.5%	-3.9%	1.4%
2007 - 2008	3.2%	7.7%	3.8%	16.7%	-10.7%	-17.6%	10.9%	2.5%
2008 - 2009	-15.1%	-9.5%	-14.3%	-13.6%	-13.8%	-86.7%	-7.1%	-17.3%

Source: Los Angeles World Airports, June 2009.
Prepared by: Ricondo & Associates, Inc., February 2012.

2.2.3 Existing Aviation Forecasts

Developing the LAX Passenger Forecast included reviewing existing aviation forecasts for LAX and the Los Angeles metropolitan area developed by the Federal Aviation Administration (FAA), LAWA, and the Southern California Association of Governments (SCAG) to assess consistency in both the forecasting process and the proposed LAX Passenger Forecast. Four key forecasts are discussed below.

The Southern California Association of Governments Regional Forecast

When development of this LAX Passenger Forecast was initiated, the 2008 Regional Transportation Plan (RTP) and its Aviation and Airport Ground Access Report, was the latest RTP available. SCAG's

Regional Aviation Demand Allocation Model (RADAM) was updated in 2008 to include updated assumptions about the impact of security screening at airports as well as the effects of rising fuel costs.

The 2008 RTP assessed three different scenarios with a planning horizon of 2035 for the entire SCAG region, which includes all airports in Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura counties. It also anticipates SCAG Region airports capturing some demand from San Diego County. The unconstrained forecast scenario yielded a CAGR of 3.93 percent between 2005 and 2035 for the Southern California region. Both the SCAG Constrained and Preferred scenarios stabilized LAX growth at 78.9 million annual passengers.[3]

Based on the now adopted 2012-2035 SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and the adopted Medium Growth/Baseline Growth scenario, aviation demand is forecasted to grow at a 2.5 CAGR through 2035. All scenarios studied in the 2012 RTP/SCS show LAX passenger demand at 78.9 Million Annual Passengers (MAP).

The Federal Aviation Administration Terminal Area Forecast

The FAA's Terminal Area Forecast (TAF) is the official forecast of fiscal year aviation activity at FAA facilities (FAA towered airports, federally contracted towered airports, non-federal towered airports, and non-towered airports) for active airports in the National Plan of Integrated Airport System (NPIAS). The FAA prepares the TAF for federal budgetary and planning purposes, as well as a reference for state and local authorities, the aviation industry at large, and the general public. The TAF includes the major users of the national aviation system: air carriers, air taxi and commuter carriers (not including non-revenue passengers), GA operators, and military activity.

At the time the development of this LAX Passenger Forecast was initiated, the 2009 TAF (published December 2009) was the most recent TAF available. It projected LAX enplanements to grow at a CAGR of 2.8 percent between 2009 and 2025, reaching approximately 43.5 million enplanements (approximately 87 million total passengers) in 2025.

The FAA revises the TAF annually, and since December 2009, the projected CAGR has fluctuated, with the most recent projection being lower than the December 2009 projection. Specifically, the 2010 TAF for LAX projected LAX enplanements to grow at a 3.5 percent CAGR between 2010 and 2025, reaching approximately 47.0 million enplanements (approximately 94 million total passengers) in 2025. The 2011 LAX TAF reduced these results to a 2.5 percent CAGR between 2011 and 2025, reaching approximately 41.6 million enplanements (approximately 83.2 million total passengers) in 2025.

LAX Financial Feasibility Forecast

Financial feasibility forecasts supporting the LAX Senior Revenue Bonds, 2009 Series A Senior Revenue Bonds, 2009 Series C and D Subordinate Revenue Bonds, and 2009 Series E Subordinate Refunding Revenue Bonds were submitted to the LAWA Board of Airport Commissioners in October 2009. The financial feasibility forecast was intended to be "conservative," leading to projections of activity that are reasonably probable for evaluating the Airport's financial health and ability to repay new bond debt service.

The Financial Feasibility forecast effort focused on two forecasting models: (1) regression analysis based on recent annual passenger activity and regional socioeconomic statistics, and (2) national market share and growth rate for LAX. The resulting regression correlation was judged too low to be reliable, and therefore was not used as the basis for the Financial Feasibility forecasts. A 2.2 percent annual enplanement growth rate (1.6 percent domestic; 2.9 percent international) for the period 2010 through 2016 was adopted as reasonable and conservative results in the Financial Feasibility forecast analysis.

[3] Source: Southern California Association of Governments, *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy*, Chapter 2 "*Transportation Investments*", p. 58, April 2012.

LAX Master Plan Forecast

The LAX Master Plan passenger forecast, developed in 1995, projected total passenger demand reaching 98 million passengers in 2015. The Master Plan projected average annual growth rates over three 5-year periods: 2000-2005 (3.6 percent); 2005-2010 (2.9 percent); and 2010-2015 (2.7 percent). The Master Plan forecasts were based on the relatively consistent growth years of 1970 to 1994. Because the Master Plan did not produce forecasted passengers beyond 2015, and for comparison purposes, the Master Plan forecast growth rate for the period of 2010 to 2015 of 2.7 percent was applied to the base year (actual) of 2009. With the 2.7 percent kept constant through 2025, the calculation yields passenger activity of approximately 86.5 million total passengers in 2025.

The LAX Master Plan forecast process was a multi-level analysis, addressing individual components of LAX activity using analytic and comparative approaches depending on the type of data available and the confidence levels of the results. Regression analysis was one of the primary tools used in that analysis.

2.3 LAX Passenger Forecast Assumptions

The following assumptions were used to develop the LAX Passenger Forecast. These assumptions include both qualitative and quantitative considerations that set up a framework for developing the LAX Passenger Forecast.

- For the analysis of airfield operations, a full year's worth of data was considered necessary and appropriate to characterize existing baseline conditions. Airport operations data for the prior calendar year, which for purposes of the SPAS analysis is 2009, were used to define existing baseline conditions related to airfield operations.
- The stability and/or general relationship of airline fuel costs with respect to other costs and revenue factors is unknown over the longer term. This study assumed fuel costs would not disproportionately affect airline costs or fares to the extent that demand would not be overly depressed because of fuel costs.
- The percentage of capacity provided by low cost carriers has increased significantly at airports in the Los Angeles area in recent years. These are primarily narrowbody domestic service carriers and can serve any of the regional commercial service airports. Their choice of which airports to serve could affect growth at LAX. This study assumed that the LAX share of the region’s low cost airline activity will remain relatively constant over the term of the forecast.
- As Open Skies and more liberal bi-lateral agreements are finalized, U.S. Flag and Foreign Flag carriers will have more flexibility to fly both to LAX and beyond LAX with non-stop service to inland airports. This will be aided by increased range capabilities for new aircraft currently in engineering design or production.
- The various activity limits at some of the region’s airports, such John Wayne and Long Beach airports, can be expected to displace traffic growth to other regional commercial service airports, including LAX. These limits, however, can also encourage airlines to increase service to capture market share before capacity is reached, or alternately, encourage airlines to add service at airports where growth is not constrained. For this study, these effects were assumed to be neutral with respect to LAX.
- FAA’s activity forecasts are based on revenue passengers only. However, the LAX Passenger Forecast was set to include non-revenue passengers.
- Recent annual activity was reviewed to identify trends in the domestic and international shares of the total annual passengers. The ratio of international to total passengers have held relatively steady in the approximate 25 percent to 28 percent range between 1999 and 2009. The average international share in this period was approximately 27 percent; however, in the past five years it has remained in the 27 percent to 28 percent range. Based on this information, a slow decrease per year in domestic share and a slow increase in international share were assumed, leading to a 28 percent international, 72 percent domestic ratio assumed in 2025.

- Overall, the LAX total domestic O&D passengers in 2009 made up approximately 70 percent of total domestic passengers with the remaining 30 percent of passengers using LAX as a connection point. Due to limited and restricted data, the international O&D percentage was derived from calculations using passenger statistics based on a mix of U.S. DOT and LAWA data, which indicate that 89 percent of international passengers originate or terminate their trip at LAX, while 11 percent connect to other international or domestic flights. This O&D percent was assumed to be increased by 0.3 percent per year through the forecast period to reflect the increase in international 'open skies' agreements, permitting more international flights to other than the traditional international gateways.

2.4 Forecast Development Methodology

One of the methodologies considered for the LAX Passenger Forecast was a regression analysis approach. A regression analysis is a traditional model used for aviation forecasts, with single and multiple variable regressions calculated based on historical enplanements and regional socio-economic conditions. Following the results of the Financial Feasibility analysis discussed in the previous section, it was determined that the use of a regression analysis approach for the LAX Passenger Forecast would not produce acceptable and reliable results due to the relatively wide fluctuation in activity from the 1990s through 2009—notably the substantial capacity and passenger increases in the late 1990s; the significant drop after 2001; and again in 2008 and 2009.

Projecting future years based on the activity trend of the last ten years would indicate future decreases in activity to uncharacteristically low levels for a major international gateway and population center such as the Los Angeles region.

Instead of a regression analysis or a trend approach, a market share approach was used to develop the LAX Passenger Forecast. This approach compared recent LAX passenger activity with the FAA U.S. Aerospace Forecasts. Over the past ten years, LAX share of national activity has slowly decreased, settling in the past three years at approximately 3.55 percent annually. With reliable forecast data readily available from the FAA for 2025, the forecasted number of passengers at LAX for 2025 was calculated based on this 3.55 percent share of the U.S. activity. The following section presents the results of the LAX Passenger Forecast.

2.5 LAX Passenger Forecast Results

The LAX Passenger Forecast resulted in a 2.3 percent annual increase in passenger (CAGR) through 2025. Based on this forecast growth rate, the total number of annual passengers reaches 78.9 MAP in 2024. Relative to the LAX Passenger Forecast, the number of passengers was maintained at 78.9 MAP in 2025, which is consistent with the adopted 2012 RTP that has LAX at 78.9 MAP in the future. It also reflects the fact that all of the SPAS alternatives include (i) no more than 153 gates and (ii) the amendment of LAX Specific Plan section 7.H requiring action to encourage further shifts in passenger and airline activity to other regional airports if the annual aviation activity analysis forecasts that the annual passengers for that year at LAX are anticipated to exceed 75 MAP, and, by requiring a Specific Plan Amendment Study if the annual aviation activity analysis forecasts that LAX annual passengers for that year are anticipated to exceed 78.9 MAP.

Table 4 presents the year-by-year projections for domestic, international and total passengers through 2025.

To place the LAX Passenger Forecast results in perspective with the other LAX forecasts discussed in previous sections, **Figure 1** depicts the LAX Passenger Forecast along with the 2009 and 2011 FAA TAF, the Master Plan growth rates from a 2009 base, and the 2009 Financial Feasibility results.

Here are some of the main differences between these forecasts and the LAX Passenger Forecast:

- The 2009 LAX Financial Feasibility Senior Revenue Bonds forecast provides a 2.2 percent growth rate through 2016, slightly below the LAX Passenger Forecast.

- The 2009 TAF growth rate of approximately 2.7 percent annually (CAGR) translates into approximately 86.5 MAP in 2025.
- The 2011 TAF growth rate of approximately 2.5 percent annual (CAGR) translates into approximately 83.22 MAP in 2025.
- The LAX Master Plan projected a CAGR of 2.7 percent between 2010 and 2015. If this growth rate was applied to the 2009 base year activity levels through 2025, projections would reach approximately 86.5 MAP in 2025.

Table 4

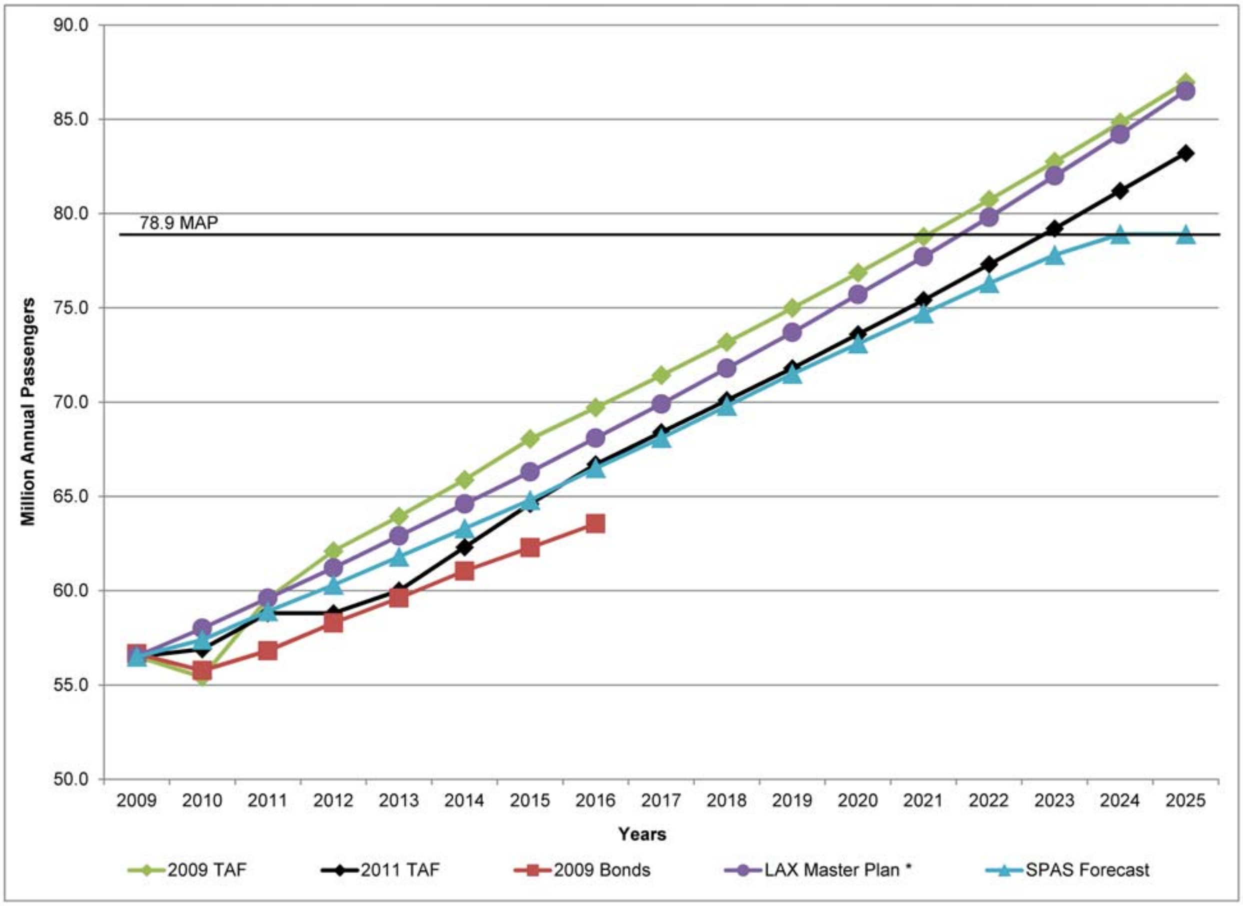
LAX Passenger Forecast Results (in million annual passengers)

Years	Domestic	Percentage of Total	International	Percentage of Total	Total Passengers
2009	41.4	73.3%	15.1	26.7%	56.5
2010	42.1	73.3%	15.3	26.7%	57.4
2011	43.1	73.2%	15.8	26.8%	58.9
2012	44.1	73.1%	16.2	26.9%	60.3
2013	45.2	73.1%	16.7	26.9%	61.8
2014	46.2	73.0%	17.1	27.0%	63.3
2015	47.2	72.9%	17.6	27.1%	64.8
2016	48.4	72.8%	18.1	27.2%	66.5
2017	49.5	72.7%	18.6	27.3%	68.1
2018	50.7	72.6%	19.1	27.4%	69.8
2019	51.8	72.5%	19.6	27.5%	71.5
2020	53.0	72.4%	20.2	27.6%	73.1
2021	54.1	72.4%	20.6	27.6%	74.7
2022	55.1	72.3%	21.1	27.7%	76.3
2023	56.2	72.2%	21.6	27.8%	77.8
2024	56.8	72.0%	22.1	28.0%	78.9
2025	56.8	72.0%	22.1	28.0%	78.9

CAGR between 2009 and 2024: 2.3 percent, with 78.9 MAP held in 2025.

Source: Ricondo & Associates, Inc., February 2012.
Prepared by: Ricondo & Associates, Inc., February 2012.

Figure 1 **LAX Passenger Forecast Results and Comparison to Other Aviation Forecasts**



* LAX Master Plan forecasted growth rate of 2.7 percent applied linearly from 2009 through 2025.

Sources: Ricondo & Associates, Inc., May 2012.
Prepared by: Ricondo & Associates, Inc., May 2012.

3. 2009 DESIGN DAY FLIGHT SCHEDULE

2009 serves as a baseline year for the development of the DDFS for LAX. The following sections present the steps taken to develop the 2009 DDFS, including data sources, assumptions, methodology, and the results of the flight schedule development process.

3.1 Data Sources and Assumptions

The following data sources were used in the development of the baseline 2009 DDFS:

- Published Official Airline Guide (OAG) schedule for August 2009, which included information on published carrier, operator, aircraft type, seat capacity, origin/destination, flight number, and time of arrival/departure.

- LAX radar flight data for the third quarter of 2009 was obtained from the LAWA's Environmental Services Division, Noise Office in order to develop the non-scheduled activity component of the 2009 DDFS (non-scheduled passenger, non-scheduled air taxi, cargo, GA and military operations).
- U.S. Department of Transportation (U.S. DOT) T100 Database. The U.S. DOT T100 database for reporting air carrier traffic and capacity data was used to populate the 2009 passenger counts on an airline/market basis and compute resulting load factors.

The following assumptions were made to prepare the 2009 DDFS:

- Peak month average day: August 2009 was the month with the highest number of operations recorded in 2009. August 18, 2009 was selected as a representative average day in the peak month of August based on its number of total aircraft operations performed on that day. Therefore, the number of operations recorded on this date is representative of the average number of daily operations that occurred at LAX in August 2009.
- Passenger volumes: passenger volumes were calculated based on the aircraft seat capacity and the assumed load factors (for scheduled passenger activity).
- City pairs: regions, markets and city pairs served in 2009 were included in the published OAG schedule for Tuesday, August 18, 2009 (scheduled passenger activity) and in the radar flight dataset for the third quarter of 2009 (non-scheduled activity).
- Aircraft fleet mix: for scheduled passenger activity, the 2009 DDFS is based on the aircraft fleet mix contained in the published OAG schedule for Tuesday, August 18, 2009. For non-scheduled activity, the 2009 DDFS is based on the aircraft fleet mix contained in the radar flight dataset for the third quarter of 2009.
- Time of operation: for scheduled passenger activity, arrival and departure times were included in the published OAG schedule for Tuesday, August 18, 2009. For non-scheduled activity, arrival and departure times were included in the radar flight dataset for the third quarter of 2009.
- Aircraft seat capacity: the number of seats assumed on each aircraft was included in the published OAG schedule for Tuesday, August 18, 2009 (for scheduled passenger activity).
- Assumed load factor: load factors were derived from the U.S. DOT T100 database for the month of August 2009 (for scheduled passenger activity).

3.2 Methodology and Results

The 2009 DDFS was developed to represent a schedule of aircraft movements and passenger traffic distribution throughout the 24 hours of a PMAD at LAX. The following sections describe the methodology used to prepare the 2009 DDFS.

Identify the 2009 PMAD Day and Number of Operations

Typically, the design day activity level is defined to correspond to that experienced on the average day of the peak month. The peak activity month is identified from monthly operations data for the baseline year. The average day is derived by dividing the peak month activity by the number of days in that month. This approach defines a reasonably peaked condition for programmatic planning purposes.

Based on the monthly numbers of total aircraft operations, August 2009 was identified as the peak month of the year, representing 8.9 percent of the total operations in 2009. In comparison, August's passenger activity represented 9.6 percent of the total passengers in 2009, ranking second after the month of July 2009 which represented 9.9 percent of the total operations in 2009.

Table 5 presents the calculated numbers of 2009 PMAD operations by each aircraft category as defined by the FAA: air carrier, air taxi, GA and military.

Table 5

Calculation of 2009 Peak Month Average Day Operations FAA Aircraft Category

	FAA Aircraft Categories [1/]				
	Air Carrier	Air Taxi	General Aviation	Military	Totals
August 2009	39,571	7,216	1,416	245	48,448
PMAD (August 2009 divided by 31 days)	1,276	233	46	8	1,563

Notes:

1/ Air Carrier—an aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds carrying passengers or cargo for hire or compensation; Air Taxi—an aircraft designed to have a maximum seating capacity of 60 seats or fewer or a maximum payload capacity of 18,000 pounds or less carrying passengers or cargo for hire or compensation; GA—takeoffs and landings of all civil aircraft, except those classified as air carriers or air taxis; and Military—all classes of military takeoffs and landings at FAA facilities.

Sources: Federal Aviation Administration, Aviation System Performance Metrics, Glossary of Terms; http://aspmhelp.faa.gov/index.php/Glossary (accessed July 15, 2010); Federal Aviation Administration, Air Traffic Activity System, July 2010 (operations for August 2009 by aircraft category); Ricondo & Associates, Inc., July 2010 (calculated peak month average day operations).

Prepared by: Ricondo & Associates, Inc., May 2012.

Scheduled-Passenger Activity Data

In order to gather information on scheduled-passenger activity, an OAG schedule for August 18, 2009 was acquired. The OAG schedule provided data on the published carrier, operator, aircraft type, seat capacity, origin/destination, flight number, and time of arrival/departure for each scheduled-passenger operation.

Non-Scheduled Activity Data

In order to develop the non-scheduled activity portion of the 2009 DDFS, a radar flight dataset was provided by LAWA's Environmental Services Division, Noise Office. The radar flight dataset for the third quarter of 2009 (which included August 2009) provided data on carrier, aircraft type, tail number, origin/destination, flight number, and time of arrival/departure. The non-scheduled air carrier, air taxi, cargo, GA, and military flights in the radar flight dataset were identified and reconciled to match the PMAD operations identified in Table 5. Note that because these operations are non-scheduled operations, no matching of arrivals with departures was needed, as opposed to matching the scheduled-passenger arrivals and departures in order to be assigned to the terminal gates.

Scheduled-Passenger Arrivals and Departures

The scheduled-passenger arrival flights (included in the August 18, 2009 published OAG schedule) were matched with the departure flights. The matches were guided by a "first-in, first-out" goal, by airline and aircraft type, and after typical ground (or gate turn) times were applied. Algorithms were used to produce the most efficient arrival and departure matches based on assumed minimum gate turn times for each aircraft type and/or air carrier. Typical minimum gate turn times are 30 minutes for regional jet/propeller aircraft, 45 minutes for narrow-body aircraft, and 60 minutes for wide-body aircraft. To reflect actual air carriers' practices, exceptions were made on an individual basis. For instance, Southwest Airlines' typical practice of using 20-minute minimum gate turn time was used in matching Southwest Airlines' arriving and departing flights.

When a reasonable match could not be found in the list of arrivals and departures, towing operations were created. Aircraft were coded as "tows" and were codified as being towed either after arrival or before departure, as opposed to being designated as “through flights” continuing on to specific destinations. Minimum targeted tow times were identified for each Airplane Design Group (ADG):

- After arrival: 30 minutes for ADG I & II aircraft; 30 minutes for ADG III aircraft; 45 minutes for ADG IV aircraft; 60 minutes for V aircraft; and 90 minutes for ADG VI aircraft.
- Before departure: 30 minutes for ADG I & II aircraft; 45 minutes for ADG III aircraft; 45 minutes for ADG IV aircraft; 60 minutes for V aircraft; and 90 minutes for ADG VI aircraft.

2009 DDFS Passenger Volumes

The published OAG does not provide passenger volumes. A reliable source for passenger volumes is the U.S. DOT T100 database. However, the T100 database only includes monthly passenger data, as opposed to daily numbers. In order to identify the numbers of passengers on each flight in the 2009 DDFS, average load factors were calculated using the T100 database for August 2009 based on:

- the air carriers that operated the aircraft,
- the markets that were served, and
- the types of aircraft flown.

For instance, the average load factor was calculated for an American Airlines flight arriving from Chicago’s O’Hare International Airport, operated on a Boeing 737-800. This load factor was then applied to all similar flights in the 2009 DDFS.

Final 2009 DDFS

Both sets of scheduled-passenger and non-scheduled operations were then assembled into one DDFS file. For the purposes of this analysis, the DDFS operations were categorized slightly differently than the traditional FAA’s aircraft categorization. For the purposes of the gating analysis, it is helpful to group all scheduled-passenger air carrier and air taxi operations together, as these operations would be gated at passenger terminal contact and remote gates. On the other hand, the non-scheduled passenger (both air carrier and air taxi), cargo, GA and military operations are not assigned specific gates, but rather parking areas.

Table 6 presents the 2009 DDFS operations by categories of operation. **Table 7** presents summary statistics for the 2009 DDFS operations by types of operations (arrivals and departures). **Table 8** presents the 2009 DDFS aircraft fleet mix by ADG. **Figure 2** depicts the 2009 DDFS rolling 60-minute distributions of operations and passengers.

Table 6

2009 DDFS Operations

Operation Categories	Number of Operations
Scheduled Passenger Operations	1,438
Non-Scheduled Operations	
Cargo	58
General Aviation	46
Passenger	13
Military	8
Total Operations	1,563

Source: Ricondo & Associates, Inc., April 2011 (number of operations by operation category).
Prepared by: Ricondo & Associates, Inc., May 2012.

Table 7

LAX 2009 DDFS Summary Statistics

	Arrivals		Departures		Total Operations	
Operations						
Domestic	643	82.6%	642	81.8%	1285	82.2%
International	135	17.4%	143	18.2%	278	17.8%
Total	778		785		1563	
Seats						
Domestic	76,800	74.0%	76,826	72.8%	153,626	73.4%
International	26,922	26.0%	28,647	27.2%	55,569	26.6%
Total	103,722		105,473		209,195	
Seats/Operation						
Domestic	119		120		120	
International	199		200		200	
Total	133		134		134	
Passengers						
Domestic	64,665	74.8%	64,702	73.7%	129,367	74.2%
International	21,767	25.2%	23,113	26.3%	44,880	25.8%
Total	86,432		87,815		174,247	
Average Load Factor						
Domestic		84.2%		84.2%		84.2%
International		80.9%		80.7%		80.8%
Total		83.3%		83.3%		83.3%

Source: Ricondo & Associates, Inc., April 2011 (summary statistics).
Prepared by: Ricondo & Associates, Inc., May 2012.

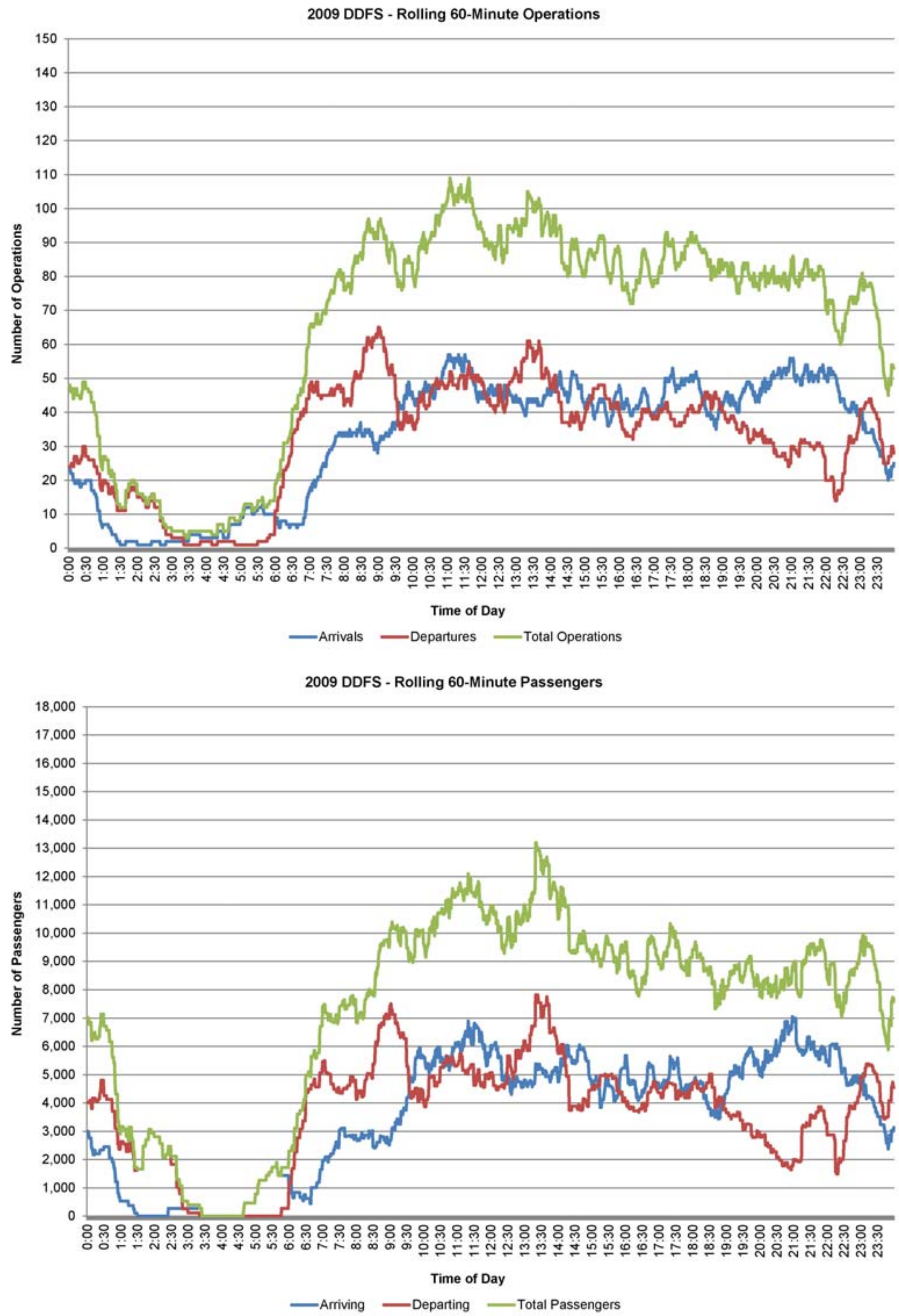
Table 8

LAX 2009 DDFS Aircraft Fleet Mix by Airplane Design Group

Airplane Design Group/Aircraft Families	Daily Operations	ADG Percentage of Total Operations	Percentage of ADG Operations
ADG I			
Propellers	4		40.0%
Regional Jets	6		60.0%
Total ADG I Operations	10	0.6%	
ADG II			
Propellers	128		38.6%
Regional Jets	204		61.4%
Total ADG II Operations	332	21.2%	
ADG III			
Airbus 318,319,320,321,32s	259		34.1%
Boeing 717 Series	2		0.3%
Boeing 737 Series	389		51.3%
McDonnell-Douglas 80-90 Series	54		7.1%
Propellers	24		3.2%
Regional Jets	31		4.1%
Total ADG III Operations	759	48.6%	
ADG IV			
Airbus 300-310s	8		2.6%
Boeing 757 Series	206		65.8%
Boeing 767 Series	77		24.6%
McDonnell-Douglas 80-90 Series	2		0.6%
McDonnell-Douglas DC-10 Series	11		3.5%
McDonnell-Douglas MD-11 Series	7		2.2%
Lockheed C-130	2		0.6%
Total ADG IV Operations	313	20.0%	
ADG V			
Airbus 343,345,346	22		15.0%
Boeing 747 Series	74		50.3%
Boeing 777 Series	51		34.7%
Total ADG V Operations	147	9.4%	
ADG VI			
Airbus 380	2		100.0%
Total ADG VI Operations	2	0.1%	
Grand Total	1,563	100.0%	

Source: Ricondo & Associates, Inc., April 2011 (aircraft fleet mix by ADG).
Prepared by: Ricondo & Associates, Inc., May 2012.

Figure 2 **LAX 2009 DDFS – Rolling 60-Minute Operation and Passenger Distributions**



Source: Ricondo & Associates, Inc., May 2012 (operation and passenger distributions).
Prepared by: Ricondo & Associates, Inc., May 2012.

3.3 Gating

Each scheduled-passenger flight in the 2009 DDFS was assigned a terminal gate or parking position based on the 2009 existing condition terminal and gate layout. The process of assigning gates or parking positions to flights is herein referred to as "gating". The assumptions, methodology and results related to the gating of scheduled-passenger aircraft are presented in the following sections.

3.3.1 Description of Terminal and Gate Layout

Figure A in **Attachment A** depicts the terminal and gate layout assumed under the 2009 conditions. The layout includes the Central Terminal Area (CTA) terminals (Terminals 1 through 8), Tom Bradley International Terminal (TBIT), the West Gates, the American Eagle Commuter Terminal, and the remote United Express commuter gates. 159 gates were assumed in use to gate the 2009 DDFS.

3.3.2 Assumptions

The following assumptions were used to gate the 2009 DDFS:

- Airline assignments, as well as common and/or shared gate use rules, were followed.
- TBIT procedures were followed as it related to towing aircraft off a gate after 90 minutes for wide-body aircraft.
- ADG VI operations were accommodated at TBIT (rather than at the West Gates) to maximize passenger level of service.
- As an industry standard to reflect common airline practices, a minimum gate rest time of 15 minutes between a departure and the next arrival at a gate was maintained.
- Typical gating practices, such as segmented pushbacks, were assumed.

3.3.3 Methodology and Results

The gating model is based on algorithms, logic statements, and an iterative process which assigns flights to gates starting with the first flight in the DDFS. Through iterations, the gating model seeks to maximize the use of each gate by ensuring that a large aircraft takes precedent over smaller aircraft. Each gate is codified based on a nominal gate size (i.e., the size of a specific aircraft type which is the largest aircraft that can be accommodated at the gate). At LAX, and as depicted on Figure A, certain gates are designed to be dependent on adjacent gate(s). Gate dependencies can exist when parking a large aircraft at a particular gate requires that the adjacent gate(s) either be closed or accommodate a smaller aircraft than the nominal gate size would allow.

Based on the gating assumptions, the gating model was set up to accommodate all airlines and aircraft types included in the DDFS.

Under the 2009 conditions, aircraft were assigned to specific terminals and gates based on airline assignments in effect in the summer 2009, as presented in **Table 9**.

Each aircraft included in the 2009 DDFS was assigned a gate or parking position. There were an adequate number of gates and aircraft positions in 2009 to accommodate all scheduled-passenger flights. The results of the gating exercise are illustrated on the 2009 conditions ramp chart included in **Attachment B**. **Table 10** presents the average numbers of turns per gate calculated based on the results of the gating exercise. In 2009, the average number of turns per gate airport wide was 4.5 turns.

Table 9

2009 Conditions – Airline Terminal Assignments

Terminals	Airlines
T1	Southwest Airlines, US Airways
T2	Aeromexico; Air Canada; Air China; Air France; Air New Zealand; Alitalia; Avianca Airlines; Hawaiian Airlines; KLM Royal Dutch Airlines; LACSA Airlines; Sun Country; TACA International Airlines; Virgin Atlantic; Volaris; West Jet
T3	Alaska Airlines; Horizon Air; V Australia; Virgin America
T4	American Airlines, Qantas
T5	Aerolitoral; Delta Air Lines; Northwest Airlines
T6	AirTran Airways; Allegiant Air; Continental Airlines; Copa Airlines; Frontier Airlines; JetBlue; Midwest Airlines; Spirit Airlines
T7	United Airlines
T8	United Airlines; United Express
American Eagle	American Eagle
TBIT	Aeroflot; Air Pacific; Air Tahiti Nui; Alaska Airlines (international arrivals); All Nippon Airways; Asiana Airlines; British Airways; Cathay Pacific Airways; China Airlines; China Eastern; China Southern; Copa Airlines; El Al Israel Airlines; Emirates; EVA Air; Japan Airlines; Korean Airlines; LAN (Chile); Lufthansa; Malaysia Airline; Mexicana Airlines; Philippine Airlines; Qantas; Singapore Airlines; Swiss International Air Lines Ltd.; Thai Airways

Source: Los Angeles World Airports, List of Airlines, http://www.lawa.org/LAXAirlines.aspx (accessed July 9, 2010).
Prepared by: Ricondo & Associates, Inc., May 2012.

Table 10

Gated 2009 DDFS -- Average Numbers of Turns Per Gate

Terminals	Turns	Number of Gates	Average Number of Turns/Gate
Terminal 1	132.0	15	8.8
Terminal 2	45.5	10	4.6
Terminal 3	60.0	12	5.0
Terminal 4	85.0	13	6.5
Terminal 5	54.0	13	4.2
Terminal 6	67.5	13	5.2
Terminal 7	85.0	11	7.7
Terminal 8	95.5	11	8.7
American Eagle Commuter Terminal	32.0	12	2.7
TBIT	49.0	12	4.1
West Gates	13.5	19	0.7
United Express Commuter Gates [1/]	0.0	18	0.0
Totals	719.0	159	4.5

Note:

[1/] All United Express flights were accommodated at Terminal 8.

Source: Ricondo & Associates, Inc., April 2011 (average numbers of turns per gate based on gating model results).
Prepared by: Ricondo & Associates, Inc., May 2012.

4. 2025 DESIGN DAY FLIGHT SCHEDULE

The 2025 DDFS serves as a future year condition flight schedule. It was developed to represent a schedule of aircraft movements and passenger traffic distribution throughout the 24 hours of a PMAD projected at LAX in 2025. The following sections present the steps taken to prepare the 2025 DDFS, including data sources, assumptions, methodology, and the results of the flight schedule development process.

Domestic and foreign airline scheduling practices and operations constantly evolve to adapt to various economic, financial, and airport operational constraints, as well as shifts in passenger demand.

With more than 60 airlines providing scheduled-passenger service at nine LAX terminals, many uncertainties exist and need to be considered when developing future passenger schedules. In the case of the SPAS analyses, the forecast horizon covers a 14-year span, during which numerous unknown events may occur, including increases or reductions in service; potential mergers, consolidations or bankruptcy filings; changes in code share partner agreements; terminal reassignments; and changes in fleet mix.

To respond to these uncertainties, airline-specific characteristics assumed in the 2025 DDFS (primarily scheduling practices, seat configurations and terminal assignments) were generalized to reflect those of typical airline and industry practices.

4.1 Data Sources and Assumptions

The 2025 DDFS was derived from the following sources:

- The LAX Passenger Forecast results (see Section 2).
- The 2009 DDFS (see Section 3).
- Aircraft manufacturers' reference planning manuals and databases accessed on the websites for Boeing, Airbus, Embraer, Bombardier, and Saab to obtain general planning information, seating configurations, as well as aircraft manufacturing schedules, air carrier orders, and anticipated delivery dates.

The following assumptions were made to prepare the 2025 DDFS.

- Passenger volumes: the annual passenger activity is forecasted to be 78.9 Million Annual Passengers (MAP) in 2025, which represents approximately 245,000 total daily passengers on a PMAD at LAX.
- City pairs: regions, markets and city pairs anticipated to be served in 2025 were identified based on those included in the 2009 DDFS. Cities where service was recently discontinued from LAX were selected as representative of new potential markets.
- Aircraft fleet: for scheduled passenger and cargo activity, the future aircraft fleet was developed based on the 2009 DDFS aircraft fleet assumed to be operating in 2025. Older, less fuel-efficient aircraft were identified and assumed to be retired by 2025. Newer aircraft that would be operating by 2025 were added to the available fleet mix. For non-scheduled activity (except cargo), no change in the aircraft fleet mix was assumed between 2009 and 2025.
- Time of operation: expected daily hourly distributions of operations were assessed based on (1) the 2009 DDFS; (2) typical peaking activity recorded at LAX; and (3) typical industry scheduling practices and destination/origin airport characteristics.
- Aircraft seat capacity: the number of seats assumed on each aircraft was set at the average number of seats based on industry standards and typical seat configurations published by aircraft manufacturers.
- Assumed load factor: future average load factor targets for 2025 were set between 80 and 82 percent, reflecting historical values and typical performance of recently profitable air carriers.

- Minimum turn times: for scheduled-passenger operations, the following minimum turn times were assumed: ADG II-0:45; ADG III-1:00; ADG IV-1:30; ADG V-2:30; and ADG VI-3:00. Because non-scheduled activity operations were not matched, turn times were involved in the development of the 2025 DDFS.

4.2 Methodology and Results

The 2009 DDFS was used as a base schedule to develop the 2025 DDFS. The number of scheduled passengers and resulting operations was forecasted based on the results of the LAX Passenger Forecast discussed in Section 2. Based on review of recent trends, projections were developed for non-scheduled passenger, non-scheduled air taxi, cargo, GA and military operations. The following paragraphs describe the methodology used to develop the 2025 DDFS and the results of the flight schedule development process.

Scheduled-Passenger Fleet Mix

Based on the results of the LAX Passenger Forecast, domestic and international passenger growth factors were applied to each market in the 2009 DDFS. The development of the 2025 DDFS was based on an iterative process that assessed each market individually and the resulting load factor. Future average load factor targets for 2025 were set between 80 and 82 percent, reflecting historical values and typical performance of recently profitable air carriers. Mathematically, if the individual load factor on each aircraft is equal to or close to the overall target load factor, the target overall airport-wide average load factor will be reached.

On a market basis, the estimated 2025 number of passengers was assessed against the number of available seats in the baseline flight schedule (the 2009 DDFS). This comparison resulted in three scenarios under which the available number of seats assigned to a particular market was:

(1) Sufficient to accommodate the estimated number of passengers, resulting in a load factor below or within the target load factor range of 80 to 82 percent.

(2) Sufficient to accommodate the estimated number of passengers but resulted in a load factor greater than 82 percent. This scenario would require increasing the number of seats available.

(3) Not sufficient to accommodate the estimated number of passengers, resulting in a load factor greater than 100 percent. This scenario required increasing the number of seats available.

To accommodate a higher than desired load factor, typical industry practices would suggest either (1) adding frequencies to the markets (scheduling extra weekly or daily flights), or (2) scheduling larger aircraft with greater seat capacity.

A comprehensive fleet list was assembled, which included aircraft types (reflecting the retirement of older, less fuel-efficient aircraft and the addition of newer aircraft types) and the corresponding numbers of seats based on the manufacturers' recommended seat configurations. In deciding whether to add a frequency or to increase the size of the aircraft, careful attention was put on the availability and reasonableness of a larger aircraft being scheduled to a particular market. It was important to ensure that a larger aircraft could be scheduled to a particular market considering whether the destination airport could physically accommodate a larger aircraft (being especially true for smaller regional airports), and whether the aircraft had adequate range to reach the market. As additional seats were input into the model, the resulting load factors decreased and were compared to the targeted load factor.

Departure and Arrival Times of Scheduled-Passenger Activity

Departure times of scheduled-passenger operations that were included in the 2009 DDFS were retained and rounded to the nearest 10-minute increment of time to reflect potential future adjustments in schedules. When new operations were created, departure times were selected based on destinations, as well as typical industry scheduling practices. For instance, flights to East Asia or Europe were typically scheduled within defined windows of time throughout the day in order for the passengers to reach Asia and Europe at convenient times and be able to make their connection flights.

Arrival times were set using typical turn times based on industry standards and manufacturers' data, as listed in Section 4.1. Accordingly, turn times were subtracted from the departure times discussed in the preceding paragraph.

Cargo Operations

For the purposes of projecting cargo operations for 2025, air freight activity trends over the period of 1999 to 2009 were analyzed. Over the ten-year period, overall annual air freight activity at LAX varied between approximately 2.05 million tons in 2005 (high point) and approximately 1.60 million tons in 2009, with growth varying around an average of approximately 1.90 million tons. This included express cargo tonnage (primarily FedEx and UPS) as well as all cargo activity. Transported tonnage decreased at a CAGR of 1.6 percent over the ten-year period. Although positive growth was recorded post-2001, air freight activity at LAX steadily declined starting in 2005 through 2009, recording a 6.0 percent decrease (CAGR) over the four-year period. Express cargo held approximately steady through 2009, whereas all cargo activity decreased significantly between 2007 and 2009 (from approximately 600,000 annual tons in 2007 to approximately 380,000 annual tons in 2009).

For comparison purposes, over the same period of 2005 to 2009, the U.S. air freight tonnage totals increased through 2007 (28,960 million tons), with a small decrease in 2008 (27,845 million tons) and a significant decrease in 2009 (reaching 23,472 million tons). Over the 2005 to 2009 period, U.S. transported tonnage decreased at a CAGR of 4.0 percent.

As demand for transported tonnage varied greatly over the 1999 to 2009 period at LAX, relying on the past 10-year trends would not provide a reliable basis for projecting future 2025 tonnage levels. For programmatic planning purposes, it was assumed that an annual increase of 1.0 to 1.5 percent in the number of cargo operations through 2025 would provide for conservative growth at LAX. A daily total of 58 cargo operations were recorded in 2009. Out of 58, 12 flights were "orphan" flights, with no departure or arrival flights on the same day. Adding 12 daily flights to match with these departure or arrival orphans increased the number of cargo operations to 78 daily operations, which represented a CAGR of 1.2 percent between 2009 and 2025. Along with an increase in the number of daily cargo operations, new cargo carrier aircraft were assumed to be in operation in 2025, which provided additional tonnage capacity. New Boeing 777-200Fs and 747-800s were introduced in the 2025 DDFS cargo fleet, to replace older McDonnell Douglas DC-10s and Boeing 747-400s, respectively.

General Aviation, Non-Scheduled Passenger and Military Operations

GA activity represented approximately 2.8 percent in the 2009 DDFS. The number of annual GA operations at LAX decreased at a CAGR of 1 percent over the period of 1999 to 2009. For programmatic planning purposes, and to provide for some opportunity for GA activity to upturn over the next 14 years, it was assumed that an annual increase of 0.5 to 1.0 percent in the number of GA operations through 2025 would provide for conservative growth at LAX. A daily total of 46 GA operations were recorded in the 2009 DDFS. Adding 5 daily flights resulted in 51 daily GA operations in the 2025 DDFS and represented a CAGR of 0.6 percent through 2025. Similarly to the approach described above, 5 daily flights were selected to be matched to orphan arrivals or departures. No change in GA fleet mix was assumed in 2025 when compared with 2009.

Non-scheduled passenger and military operations represented a small fraction of the total number of daily operations at LAX in 2009 (0.3 and 0.5 percent, respectively). No growth was assumed in the numbers of non-scheduled passenger and military operations for 2025.

Table 11 presents summary statistics for the 2025 DDFS operations by types of operations (arrivals and departures). **Table 12** presents the 2025 DDFS aircraft fleet mix by ADG. **Figure 3** depicts the 2025 rolling 60-minute distributions of operations and passengers.

Table 11

LAX 2025 DDFS Summary Statistics

	Arrivals		Departures		Total Operations	
Operations						
Domestic	844	82.6%	844	81.9%	1,688	82.2%
International	178	17.4%	187	18.1%	365	17.8%
Total	1,022		1,031		2,053	
Seats						
Domestic	109,358	73.2%	120,721	79.9%	230,079	76.6%
International	39,964	26.8%	30,398	20.1%	70,362	23.4%
Total	149,322		151,119		300,441	
Seats/Operation						
Domestic	130		130		130	
International	223		164		193	
Total	146		136		141	
Passengers						
Domestic	88,564	72.9%	97,864	79.7%	186,428	76.3%
International	32,860	27.1%	24,954	20.3%	57,814	23.7%
Total	121,424		122,818		244,242	
Average Load Factor						
Domestic		81.0%		81.1%		81.0%
International		82.2%		82.1%		82.2%
Total		81.3%		81.3%		81.3%

Source: Ricondo & Associates, Inc., April 2011 (summary statistics).
Prepared by: Ricondo & Associates, Inc., January 2012.

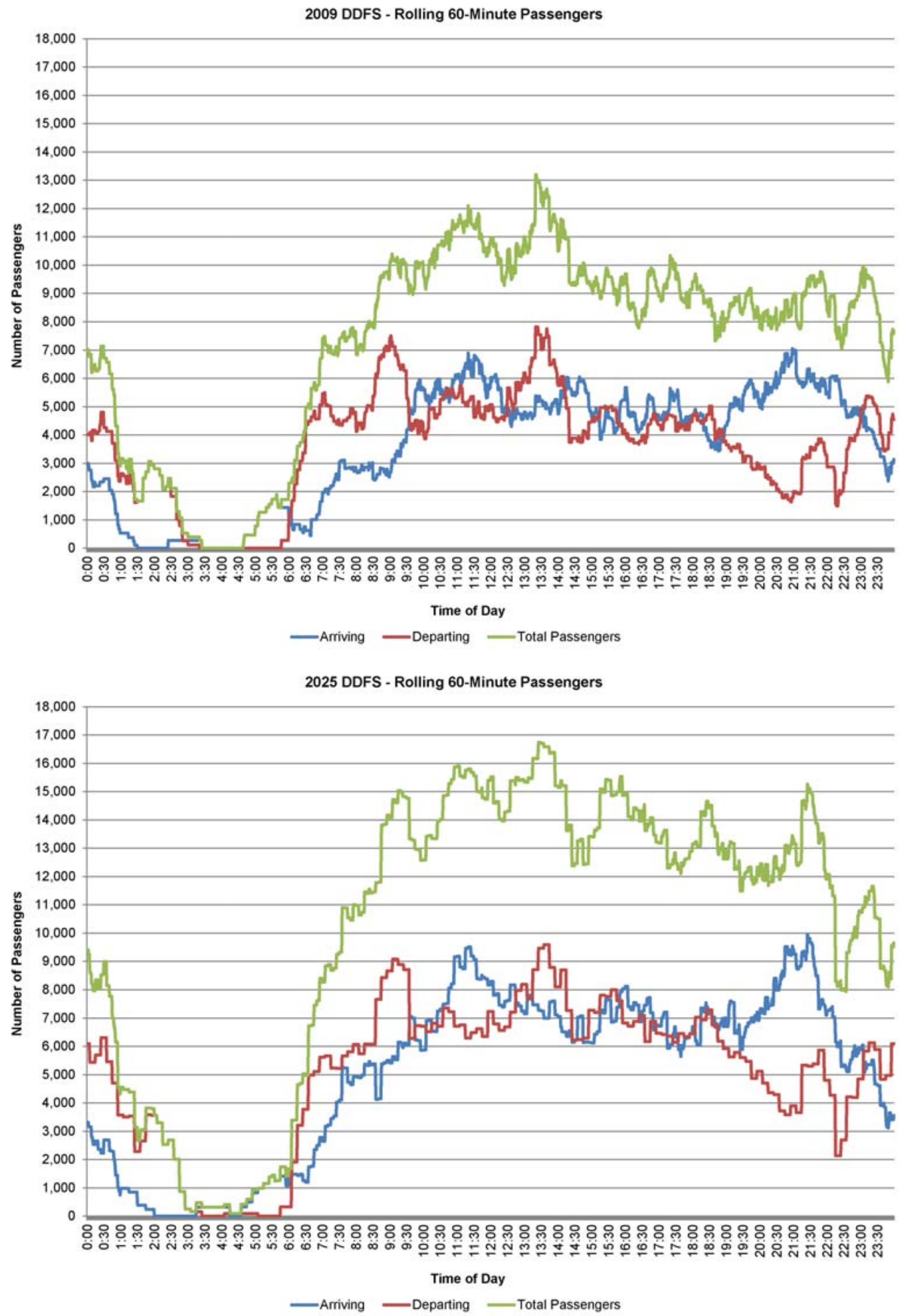
Table 12

LAX 2025 DDFS Aircraft Fleet Mix by Airplane Design Group

Airplane Design Group/ Aircraft Families	Operations	ADG Percentage of Total Operations	Percentage of ADG Operations
ADG I			
Propellers	5		41.7%
Regional Jets	7		58.3%
Total ADG I Operations	12	0.6%	
ADG II			
Propellers	152		35.2%
Regional Jets	280		64.8%
Total ADG II Operations	432	21.0%	
ADG III			
Airbus 318,319,320,321,32s	273		28.6%
Boeing 737 Series	588		61.6%
McDonnell-Douglas 80-90 Series	16		1.7%
Regional Jets	77		8.1%
Total ADG III Operations	954	46.5%	
ADG IV			
Airbus 300-310s	8		2.0%
Boeing 757 Series	184		45.9%
Boeing 767 Series	190		47.4%
McDonnell-Douglas 80-90 Series	2		0.5%
McDonnell-Douglas DC-10 Series	5		1.2%
McDonnell-Douglas MD-11 Series	10		2.5%
Lockheed C-130	2		0.5%
Total ADG IV Operations	401	19.5%	
ADG V			
Airbus 330,332	6		2.8%
Airbus 343,345,346	22		10.2%
Boeing 747 Series	65		30.2%
Boeing 777 Series	89		41.4%
Boeing 787 Series	33		15.3%
Total ADG V Operations	215	10.5%	
ADG VI			
Airbus 380	27		69.2%
Boeing 747-800	12		30.8%
Total ADG VI Operations	39	1.9%	
Grand Total	2,053	100.0%	

Source: Ricondo & Associates, Inc., April 2011 (aircraft fleet mix by ADG).
Prepared by: Ricondo & Associates, Inc., May 2012.

Figure 3 LAX 2025 DDFS – Rolling 60-Minute Operation and Passenger Distributions



Source: Ricondo & Associates, Inc., May 2012 (operation and passenger distributions).
Prepared by: Ricondo & Associates, Inc., May 2012.

4.3 Gating

The 2025 DDFS was gated to the assumed 2025 conditions for the alternative terminal and gate layouts analyzed in the LAX SPAS. The assumptions, methodology and results related to the gating of scheduled passenger aircraft are presented in the following sections. Non-scheduled aircraft were not gated.

4.3.1 Description of Terminal and Gate Layouts

Three terminal and gate layouts were developed to gate the 2025 DDFS for the following SPAS alternatives, as depicted in **Figures B** through **D** in **Attachment A**:

- SPAS Alternative 1 (Figure B)
- SPAS Alternative 2 (Figure B)
- SPAS Alternative 3 (Figure C)
- SPAS Alternative 4 (Figure D)

For the purposes of developing detailed airside design assumptions that could be utilized in modeling a reasonable range of airfield configuration options, and do so in an efficient and cost-effective manner taking into account contract scope and budget considerations, the gating exercise focused on only Alternatives 1 through 4. Based on the detailed information developed for those alternatives, the SPAS Environmental Team was able to estimate performance assumptions and projections for Alternatives 5 through 7, as utilized in the aircraft noise and air quality analyses. No gating analysis was undertaken for Alternatives 8 or 9 because those alternatives do not include terminal or airfield improvements.

From a gating standpoint, the terminal and gate layouts assumed under SPAS Alternatives 1 and 2 are identical. Therefore, gating results were applied to both alternatives.

All three terminal and gate layouts include the CTA terminals (Terminals 1 through 8), TBIT, the Midfield Satellite Concourse (MSC), and commuter positions.[4] All three layouts include 153 gates assumed to be in use to gate the 2025 DDFS. The use of a Terminal 0 Concourse was assumed under SPAS Alternatives 1 and 2. Under SPAS Alternative 3, a linear concourse was assumed to replace Terminals 1 through 3.

4.3.2 Assumptions

The following assumptions were used to gate the 2025 DDFS:

- The terminal and gate layouts presented in this section were developed for programmatic planning purposes only. The gating results provided input into the airspace simulation and ground access analyses.
- TBIT procedures were followed as it related to towing aircraft off a gate after 90 minutes for wide-body aircraft.
- As an industry standard to reflect common airline practices, a minimum gate rest time of 15 minutes between a departure and the next arrival at a gate was maintained.
- As noted on Figures B through D, aircraft positions are depicted for illustration purposes only. Typical gating practices were assumed such as segmented pushbacks where apron linear frontage is limited.

[4] The DDFS and assumptions related to the assignment of passengers arriving and departing to and from the MSC utilized in the SPAS analysis represents programmatic level plans for the MSC. LAWA may proceed to implement separate and independent phases of the MSC Project, and at such time when LAWA determines that certain phases of MSC Project make operational and financial sense to implement, LAWA will initiate a project-level EIR that will document and analyze refined plans and assumptions concerning the operation of the MSC.

- A targeted average of 6 turns per gate was assumed for all terminals except TBIT. An average of 4 turns per gate was assumed for TBIT, which is characteristic of an international terminal with larger aircraft and longer turn time requirements.

4.3.3 Methodology and Results

The gating methodology used to gate the 2025 DDFS reflects uncertainties in future airline assignments to specific terminals. For programmatic planning purposes and because airline assignments throughout the LAX terminals in 2025 would be uncertain at the time this analysis was undertaken, the focus of this analysis was placed on maximizing the level of service and gate utilization at LAX.

The gating approach was developed using assumed targeted average numbers of turns per gate developed as means to assign groups of aircraft to each terminal. One aircraft turn is defined as an aircraft arriving at a gate and departing from the same gate, without being towed. If the aircraft is towed on for departure or off after arrival, it would be counted as one half turn.

The typical number of turns per gate varies according to the size and type of airport. Large gateway airports observe numbers of turns per gate averaging between 4.5 and to 5.5 turns (e.g., JFK and SFO); whereas airports with significant domestic hubbing and international activity (e.g., ORD or ATL) observe numbers of turns per gate averaging between 6 and 7 turns. The average number of turns per gate at LAX has typically been approximately 5 turns per gate, as evidenced by the 2009 average number of turns per gate of 4.5.

For this analysis, and except for TBIT, a targeted average of 6 turns per gate was assumed, which represented a relative increase in future gate use efficiency compared with the typical 4.5 to 5 turns per gates observed at LAX. For TBIT, the targeted average number of turns per gate was assumed to be 4 turns, reflective of characteristics of an international terminal with larger aircraft necessitating longer gate turn times. Gate assignments based on these average numbers of turns per gate demonstrates efficient gate use across terminals. It also reflects an increased level of service because flights would be spread among terminals and more time would be provided in between flights. In essence, this approach resulted in spreading the number of aircraft across all terminals based on the number of gates assumed in use in 2025. Terminals with a higher number of gates than other terminals would accommodate a higher number of aircraft.

Accordingly, the number of gates assumed in use in 2025 at each terminal was multiplied by the targeted average number of turns per gate, resulting in the number of aircraft turns that would be assigned to each terminal. For instance, Terminal 1 was assumed to have 12 gates in 2025. At a daily average of 6 turns per gate, Terminal 1 was assumed to be able to accommodate approximately 72 turns.

Flights to TBIT were the first flights to be identified because only international flights were assigned to it. The 2025 DDFS was sorted by domestic and international flights, and by arrival times. With 19 gates available and a targeted number of 4 turns per gate, 76 turns were assigned to TBIT. The remaining international flights were returned back into the pool of flights to be assigned to terminals with U.S. Customs and Border Protection (CBP) capabilities.

After all flights included in the 2025 DDFS were assigned to terminals, the gating model was run. Through multiple iterations, all aircraft included in the 2025 DDFS were successfully gated under each of the four SPAS alternative conditions. The results of the gating exercise are provided in Attachment B.

Table 13 presents the average numbers of daily turns per gate calculated based on the results of the gating exercise.

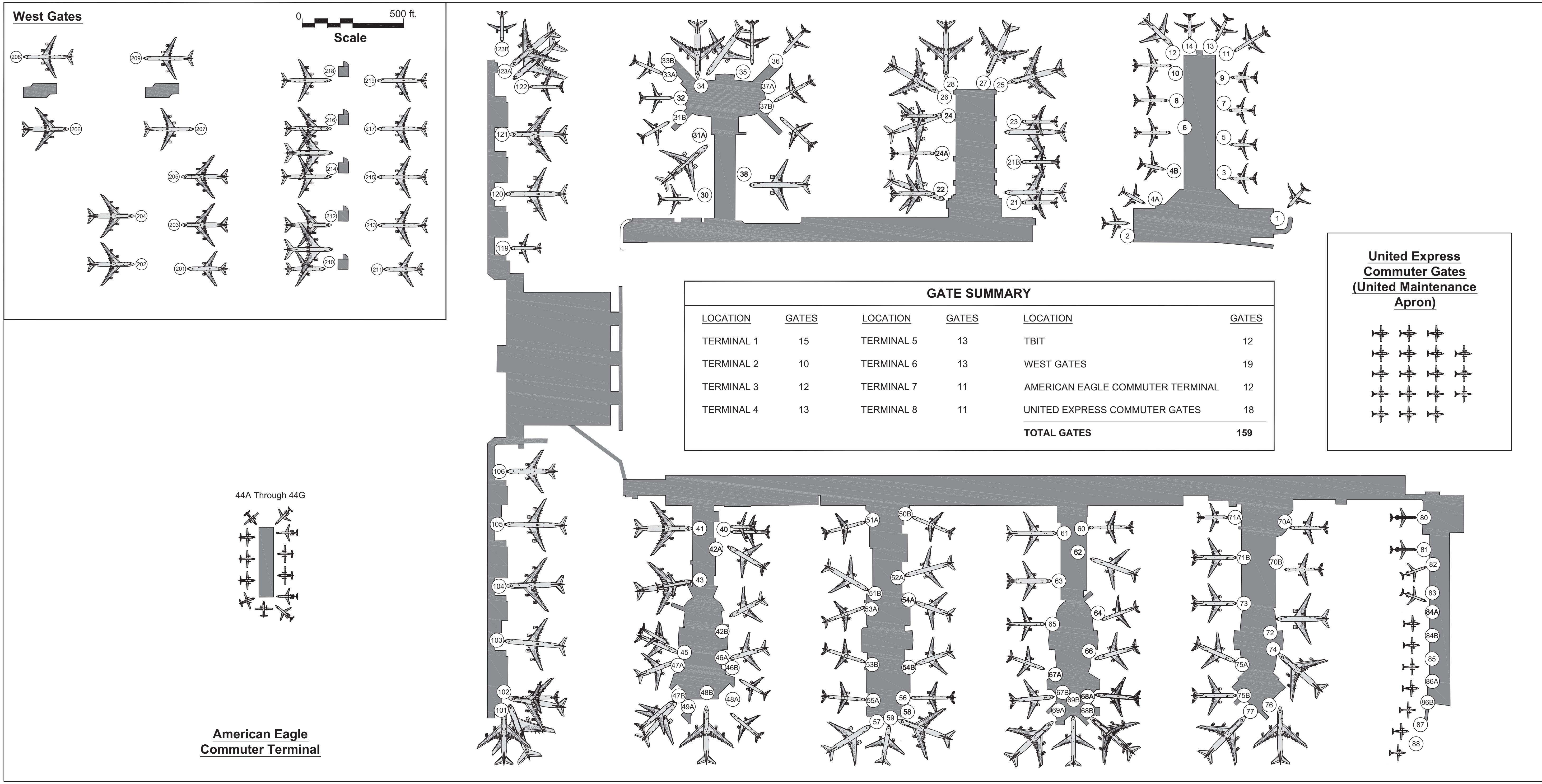
Table 13

Gated 2025 DDFS – Average Numbers of Turns Per Gate

	Alternatives 1 & 2			Alternative 3			Alternative 4		
Terminals	Number of Turns	Number of Gates	Average Number of Turns per Gate	Number of Turns	Number of Gates	Average Number of Turns per Gate	Number of Turns	Number of Gates	Average Number of Turns per Gate
Terminal 0	50.5	7	7.2	0.0	0	0.0	0	0	0.0
Terminal 1	89.5	12	7.5	104.5	14	7.5	0	0	0.0
Terminal 2	56.5	8	7.1	68.0	10	6.8	0	0	0.0
Terminal 3	57.5	8	7.2	81.5	12	6.8	0	0	0.0
Terminal 4	79.5	13	6.1	79.5	13	6.1	85	13	6.5
Terminal 5	81.0	13	6.2	81.0	13	6.2	89	13	6.8
Terminal 6	76.0	13	5.8	76.0	13	5.8	91.5	13	7.0
Terminal 7	71.5	12	6.0	71.5	12	6.0	80	12	6.7
Terminal 8	70.0	9	7.8	70.0	9	7.8	46.5	8	5.8
Commuter Positions	44.0	10	4.4	44.0	10	4.4	126	23	5.5
MSC	194.0	29	6.7	194.0	29	6.7	203.5	33	6.2
North Concourse	0.0	0	0.0	0.0	0	0.0	138	20	6.9
TBIT	85.0	19	4.5	85.0	18	4.7	95.5	18	5.3
Grand Total	**955.0**	**153**	**6.2**	**955.0**	**153**	**6.2**	**955**	**153**	**6.2**

Source: Ricondo & Associates, Inc., May 2012 (calculated numbers of turns per gate based on the results of the gating exercise).
Prepared by: Ricondo & Associates, Inc., May 2012.

ATTACHMENT A
GATE LAYOUTS



GATE SUMMARY

LOCATION	GATES	LOCATION	GATES	LOCATION	GATES
TERMINAL 1	15	TERMINAL 5	13	TBIT	12
TERMINAL 2	10	TERMINAL 6	13	WEST GATES	19
TERMINAL 3	12	TERMINAL 7	11	AMERICAN EAGLE COMMUTER TERMINAL	12
TERMINAL 4	13	TERMINAL 8	11	UNITED EXPRESS COMMUTER GATES	18
				TOTAL GATES	**159**

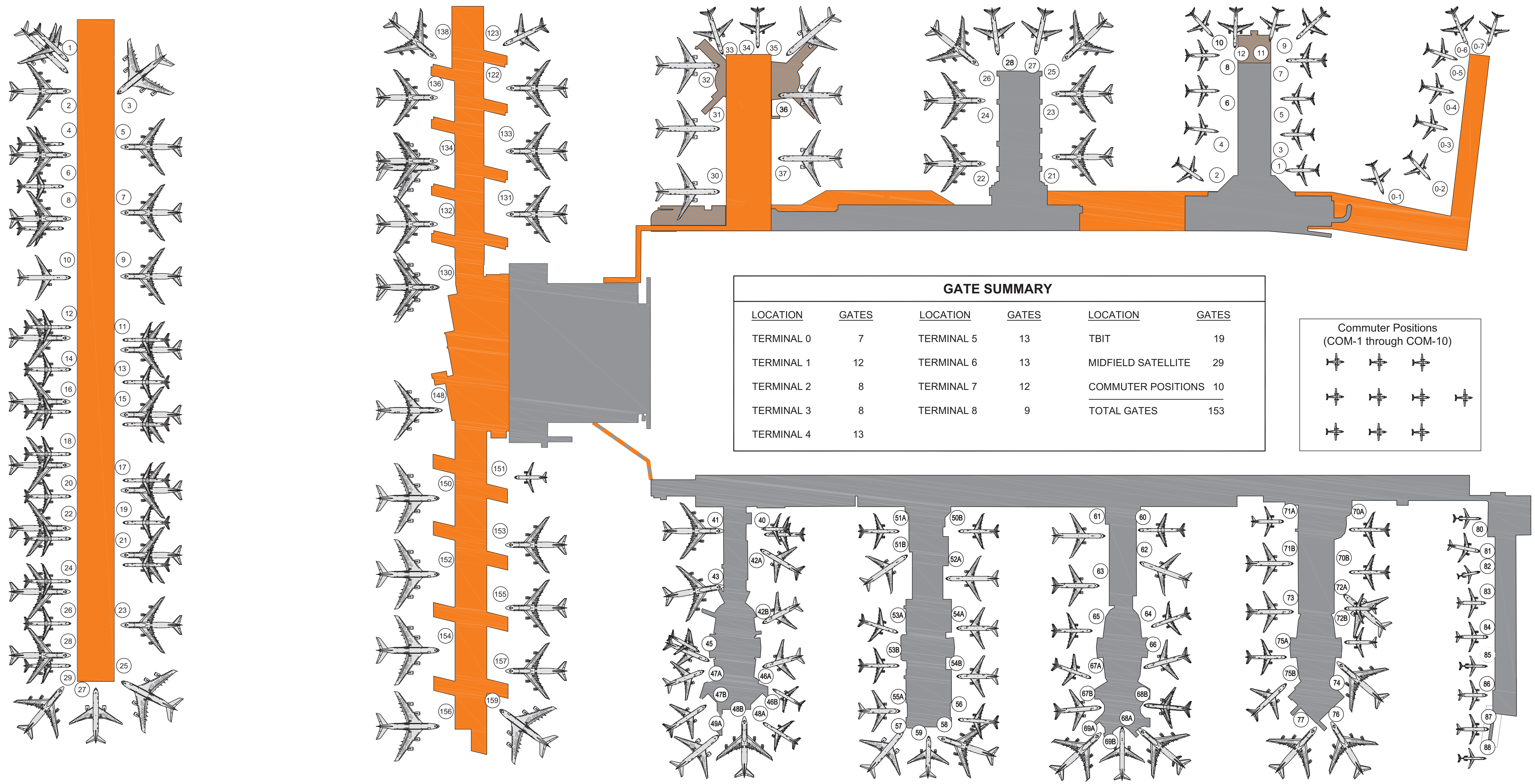
Note: Aircraft parking positions are shown for illustrative purposes only; assuming flexibility in passenger loading bridge, fuel pit, and terminal access and locations, and including some tow in/tow out and segmented pushback operations.

0 400 ft.
Scale north

Source: LAWA, 2010 (Current Gate Positions dated 9/8/2008, 8/19/2010 and various updates based on actual conditions in August of 2009).
Prepared by: Ricondo & Associates, Inc., February 2012.

Gate Positions
2009 Baseline Conditions

Figure
A



GATE SUMMARY

LOCATION	GATES	LOCATION	GATES	LOCATION	GATES
TERMINAL 0	7	TERMINAL 5	13	TBIT	19
TERMINAL 1	12	TERMINAL 6	13	MIDFIELD SATELLITE	29
TERMINAL 2	8	TERMINAL 7	12	COMMUTER POSITIONS	10
TERMINAL 3	8	TERMINAL 8	9	TOTAL GATES	153
TERMINAL 4	13				

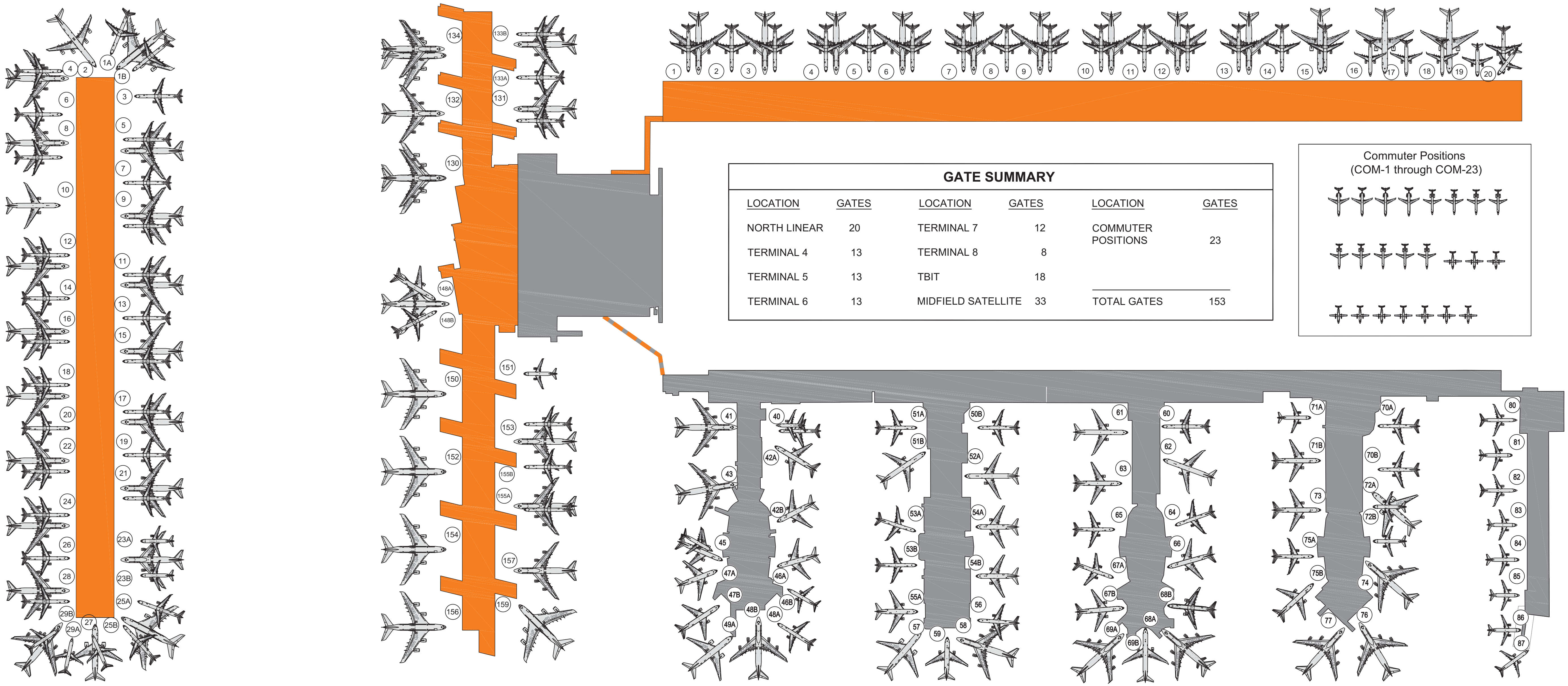
Note: Aircraft parking positions are shown for illustrative purposes only; assuming flexibility in passenger loading bridge, fuel pit, and terminal access and locations, and including some tow in/tow out and segmented pushback operations.

0 400 ft.
Scale north

Sources: LAWA, May 2011 (T0 through T8 gate positions); Hatch Mott MacDonald, February 2010 (Bradley West Modernization Project, TBIT gate positions); Ricondo & Associates, Inc., May 2011 (Midfield Satellite Concourse conceptual gate layout).
Prepared by: Ricondo & Associates, Inc.; February 2012.

SPAS Alternatives 1 and 2
Gate Positions

Figure
B



GATE SUMMARY

LOCATION	GATES	LOCATION	GATES	LOCATION	GATES
NORTH LINEAR	20	TERMINAL 7	12	COMMUTER POSITIONS	23
TERMINAL 4	13	TERMINAL 8	8		
TERMINAL 5	13	TBIT	18		
TERMINAL 6	13	MIDFIELD SATELLITE	33	TOTAL GATES	153

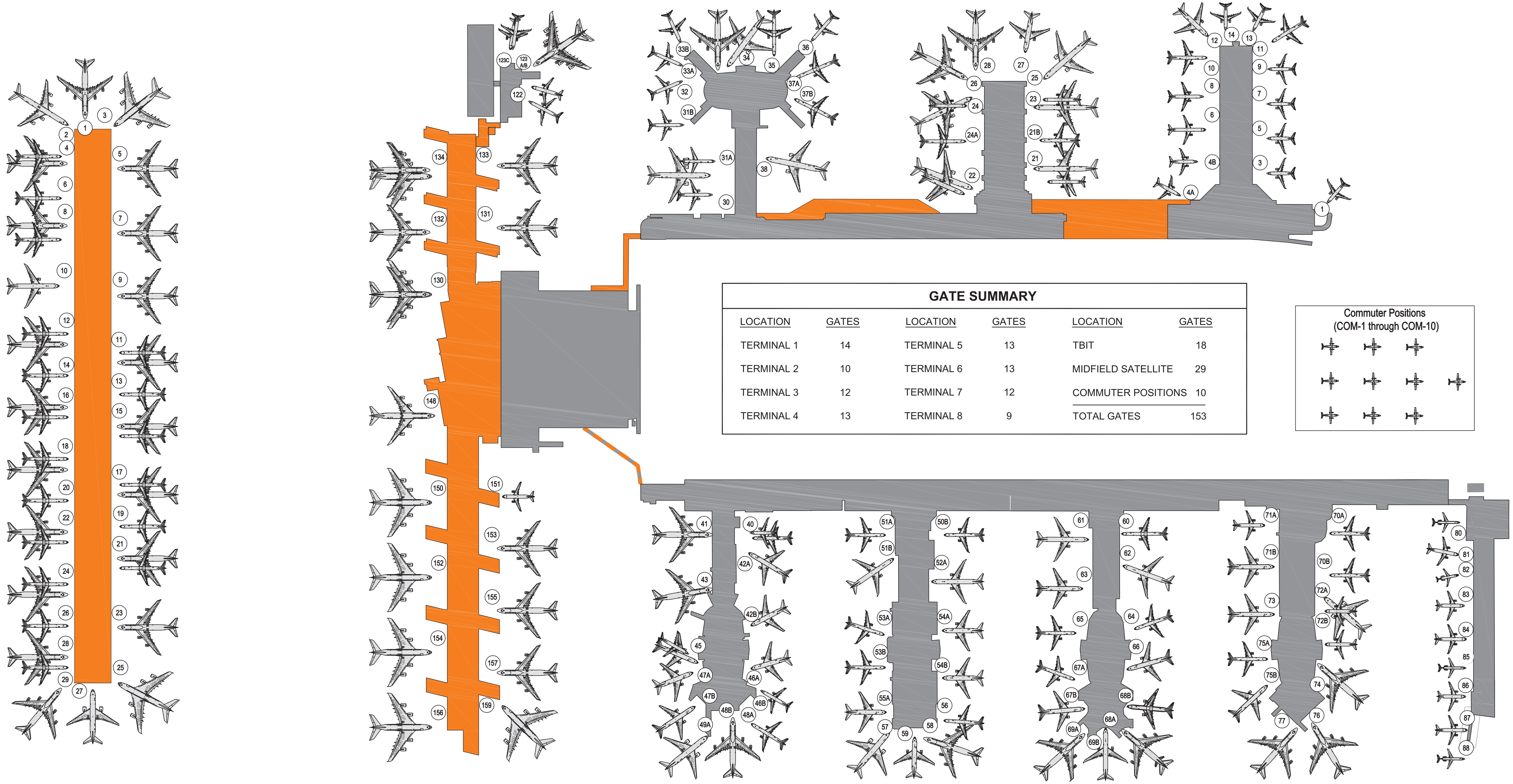
Note: Aircraft parking positions are shown for illustrative purposes only; assuming flexibility in passenger loading bridge, fuel pit, and terminal access and locations, and including some tow in/tow out and segmented pushback operations.

0 400 ft.
Scale north

Sources: LAWA, August 2010 (LAX Current Gate Positions for Terminals 4 through 7); HMMH, February 2010 (Bradley West Modernization Project, TBIT gates); Ricondo & Associates, Inc., June 2011 (conceptual gate layouts for MSC, North Linear, northside of TBIT, Terminal 8 and Commuter Positions).
Prepared by: Ricondo & Associates, Inc.; February 2012.

SPAS Alternative 3
Gate Positions

Figure
C



GATE SUMMARY

LOCATION	GATES	LOCATION	GATES	LOCATION	GATES
TERMINAL 1	14	TERMINAL 5	13	TBIT	18
TERMINAL 2	10	TERMINAL 6	13	MIDFIELD SATELLITE	29
TERMINAL 3	12	TERMINAL 7	12	COMMUTER POSITIONS	10
TERMINAL 4	13	TERMINAL 8	9	TOTAL GATES	153

Note: Aircraft parking positions are shown for illustrative purposes only; assuming flexibility in passenger loading bridge, fuel pit, and terminal access and locations, and including some tow in/tow out and segmented pushback operations.

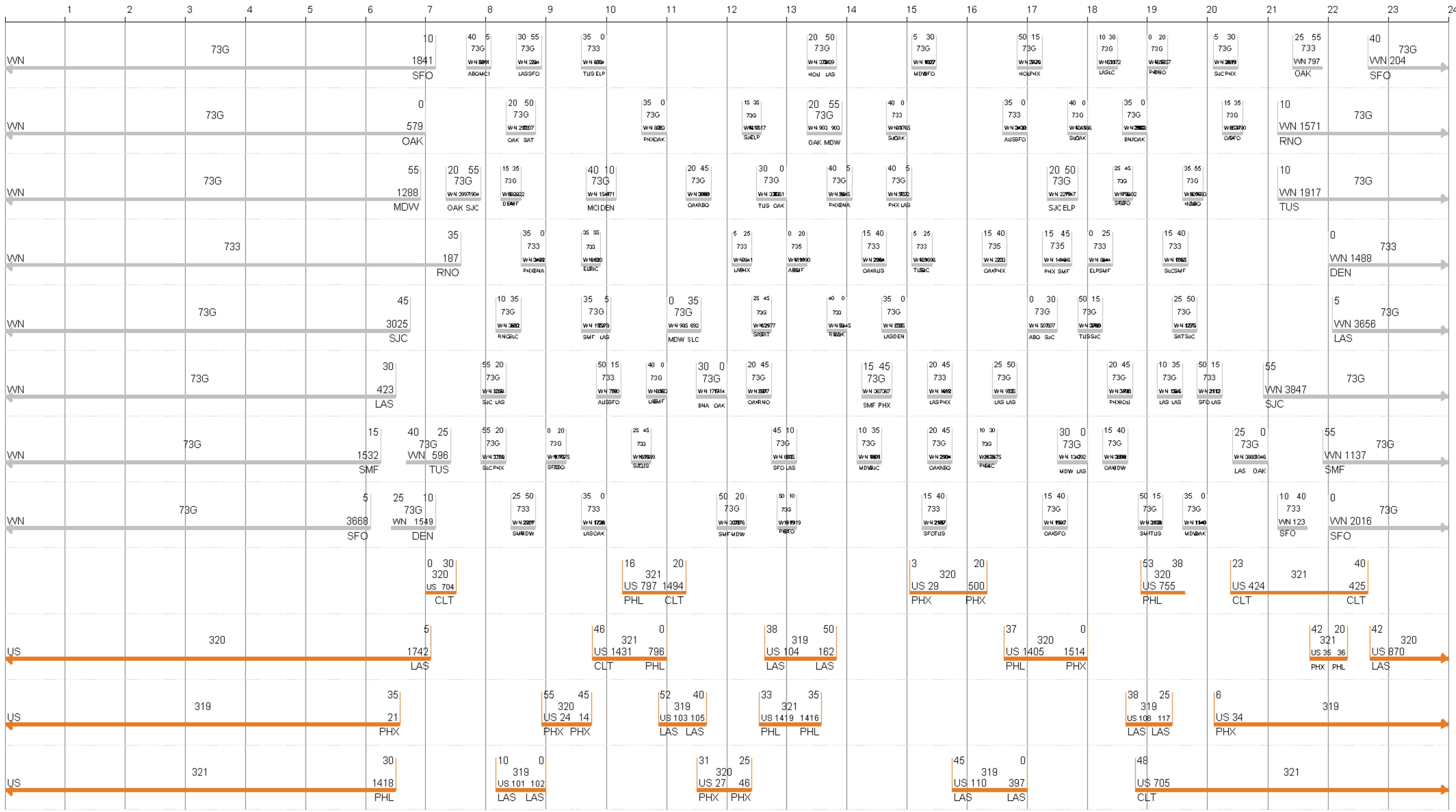
0 400 ft.
Scale north

Sources: LAWA, August 2010 (LAX Current Gate Positions for Central Terminal Area gates); Hatch Mott MacDonald, February 2010 (Bradley West Modernization Project, TBIT gates); Ricondo & Associates, Inc., September 2010 (Midfield Satellite Concourse conceptual gate layout).
Prepared by: Ricondo & Associates, Inc.; February 2012.

SPAS Alternative 4
Gate Positions

Figure
D

ATTACHMENT B
RAMP CHARTS



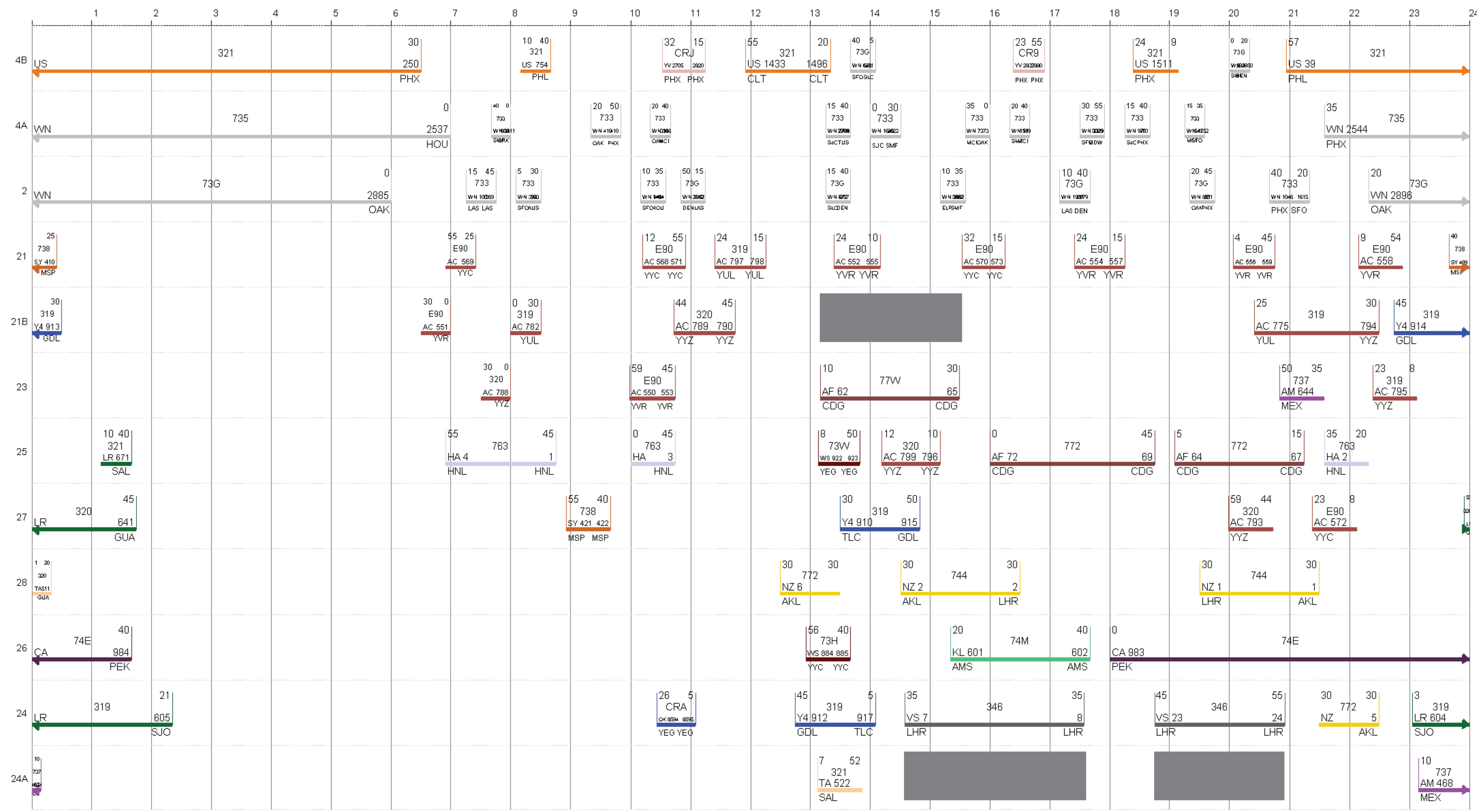
Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX Specific Plan Amendment Study Report

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure
1

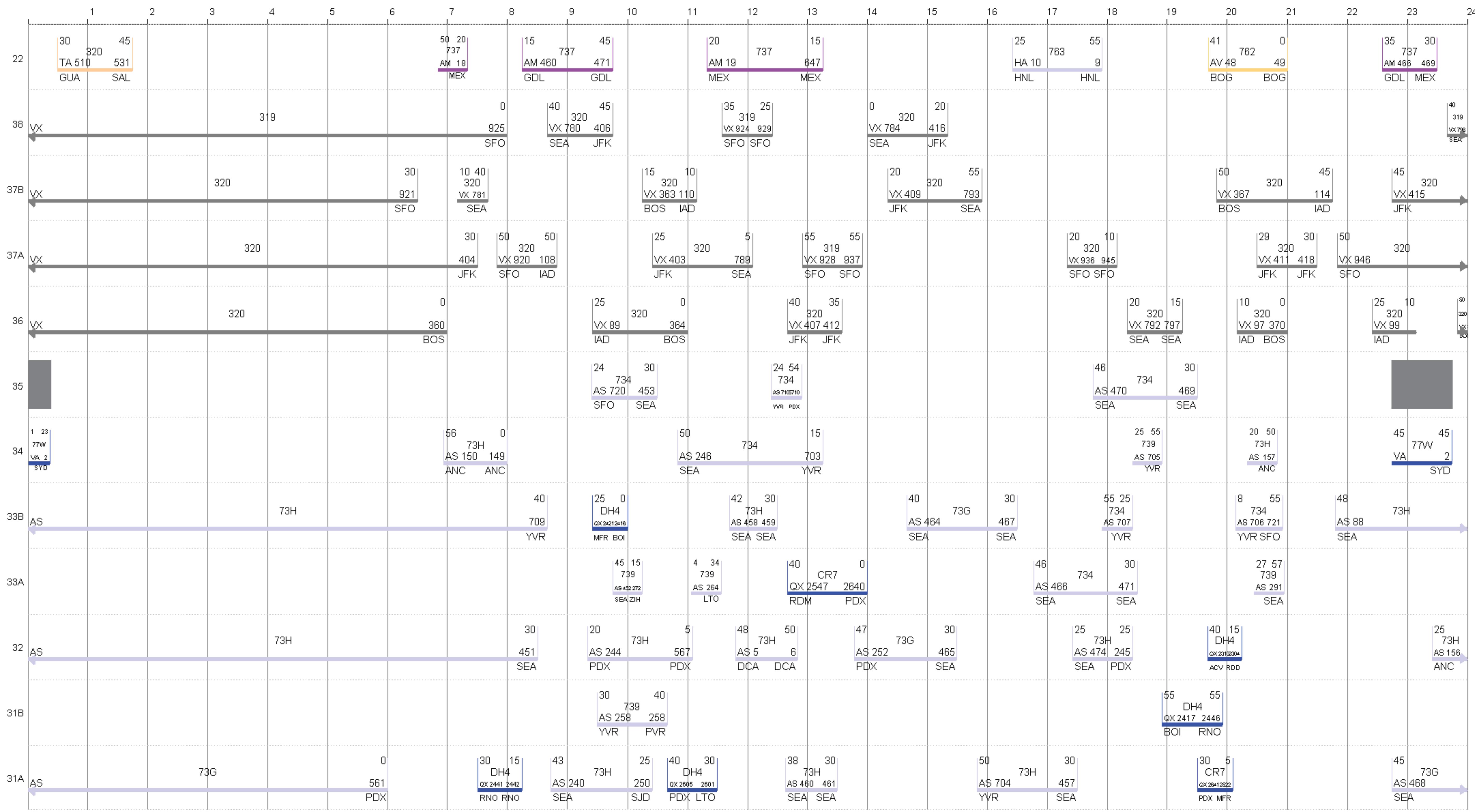


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure
2

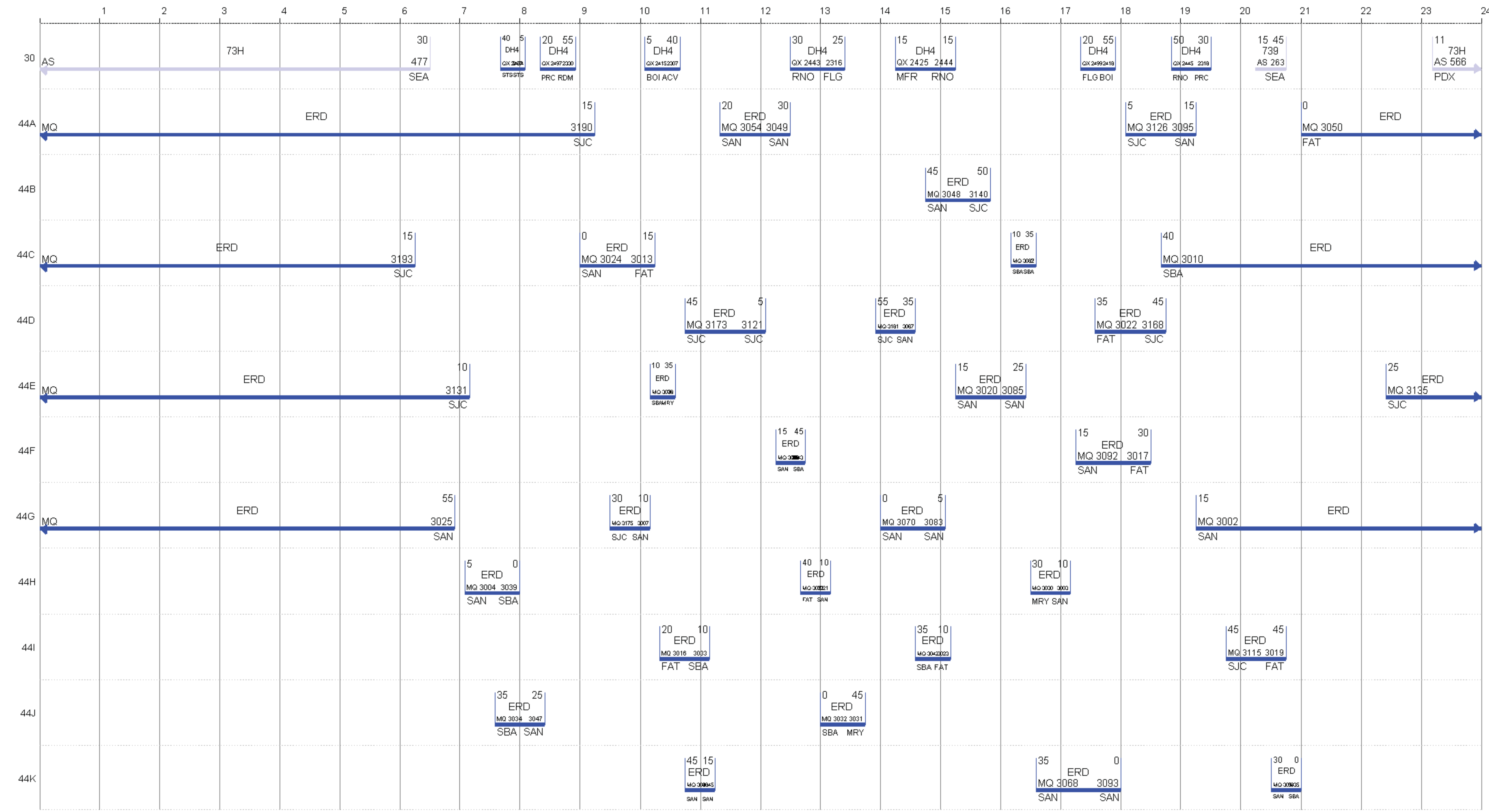


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

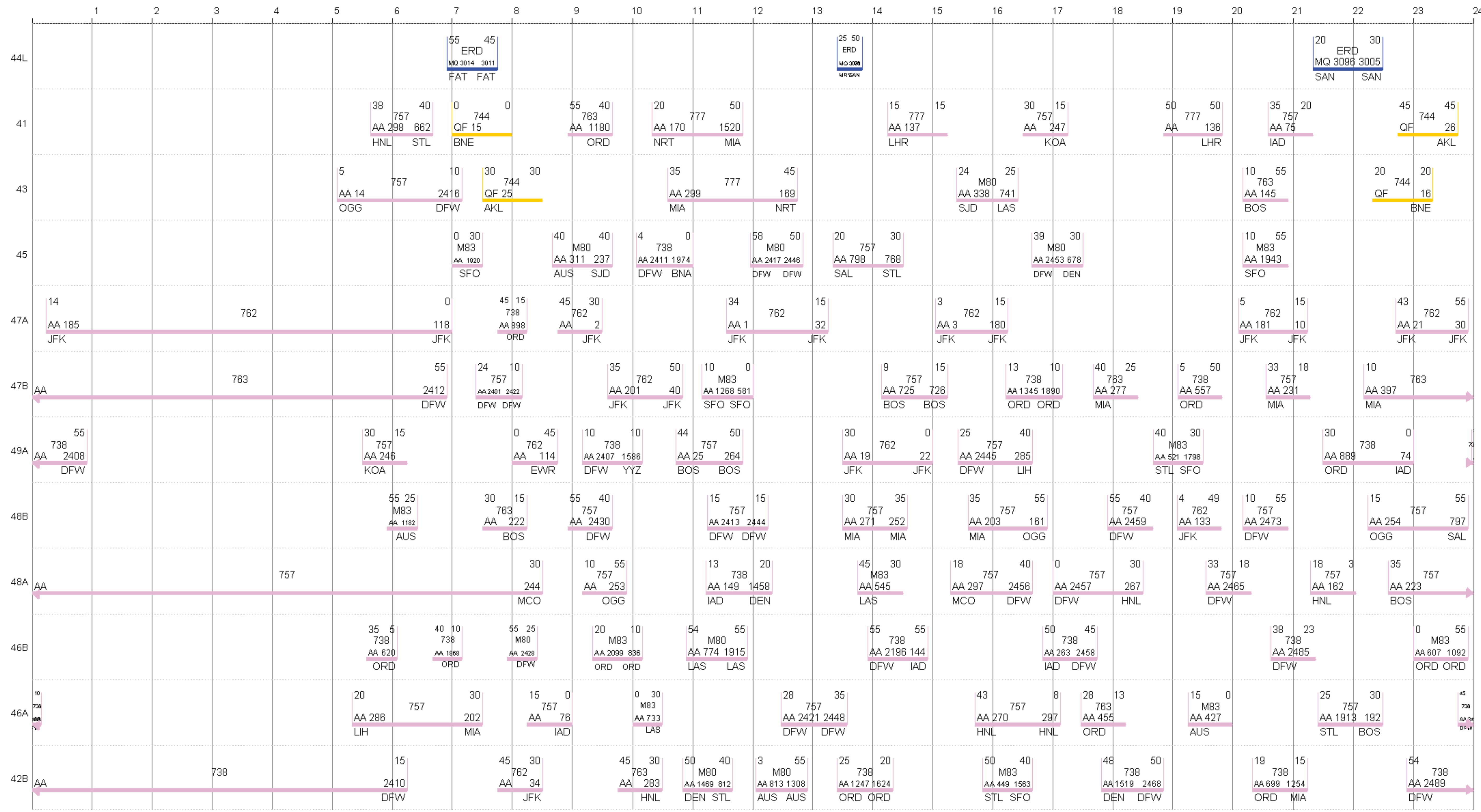
Figure
3



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX Specific Plan Amendment Study Report	LAX SPAS 2009 Baseline Conditions Ramp Chart	Figure 4

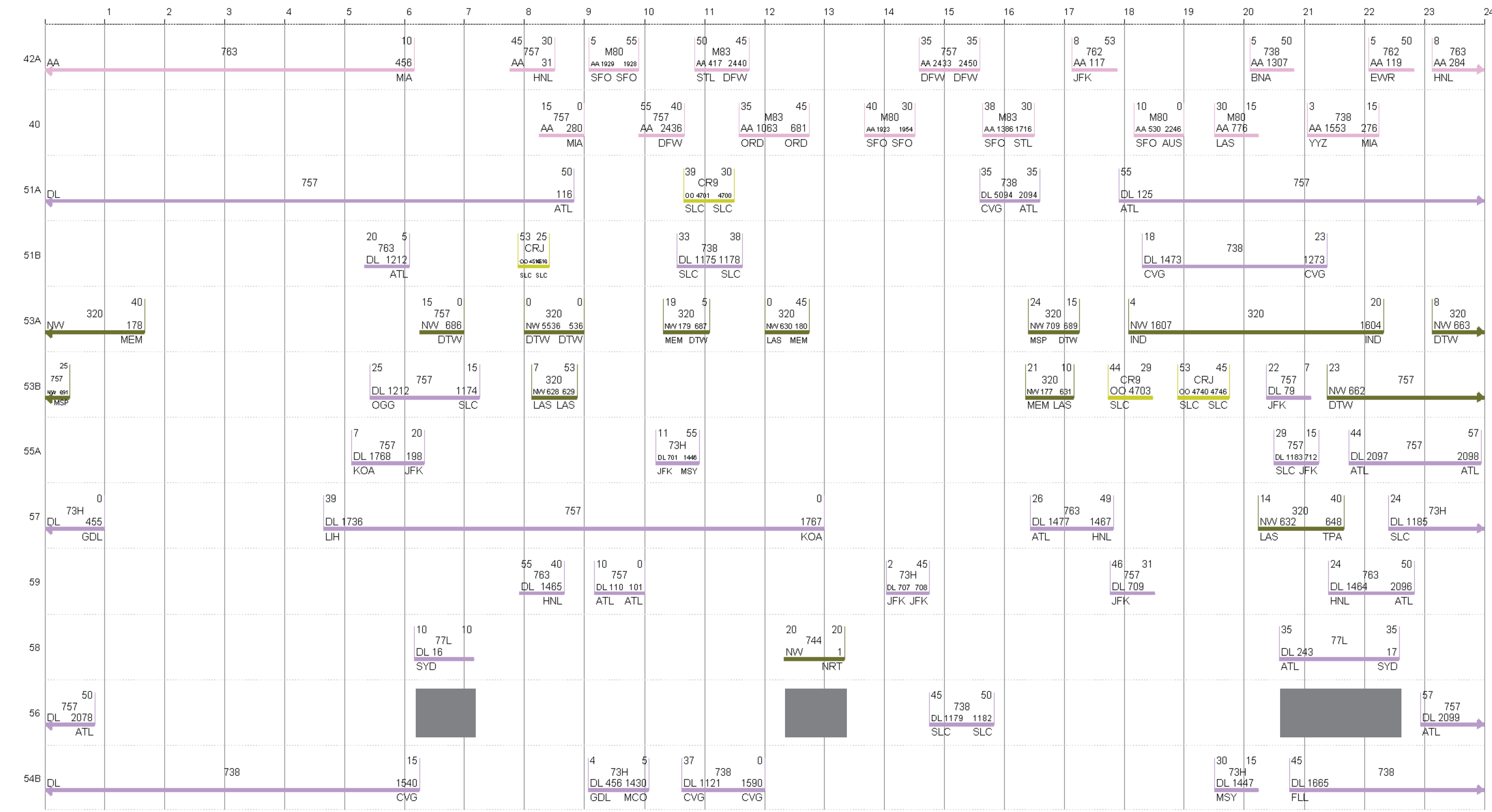


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure 5

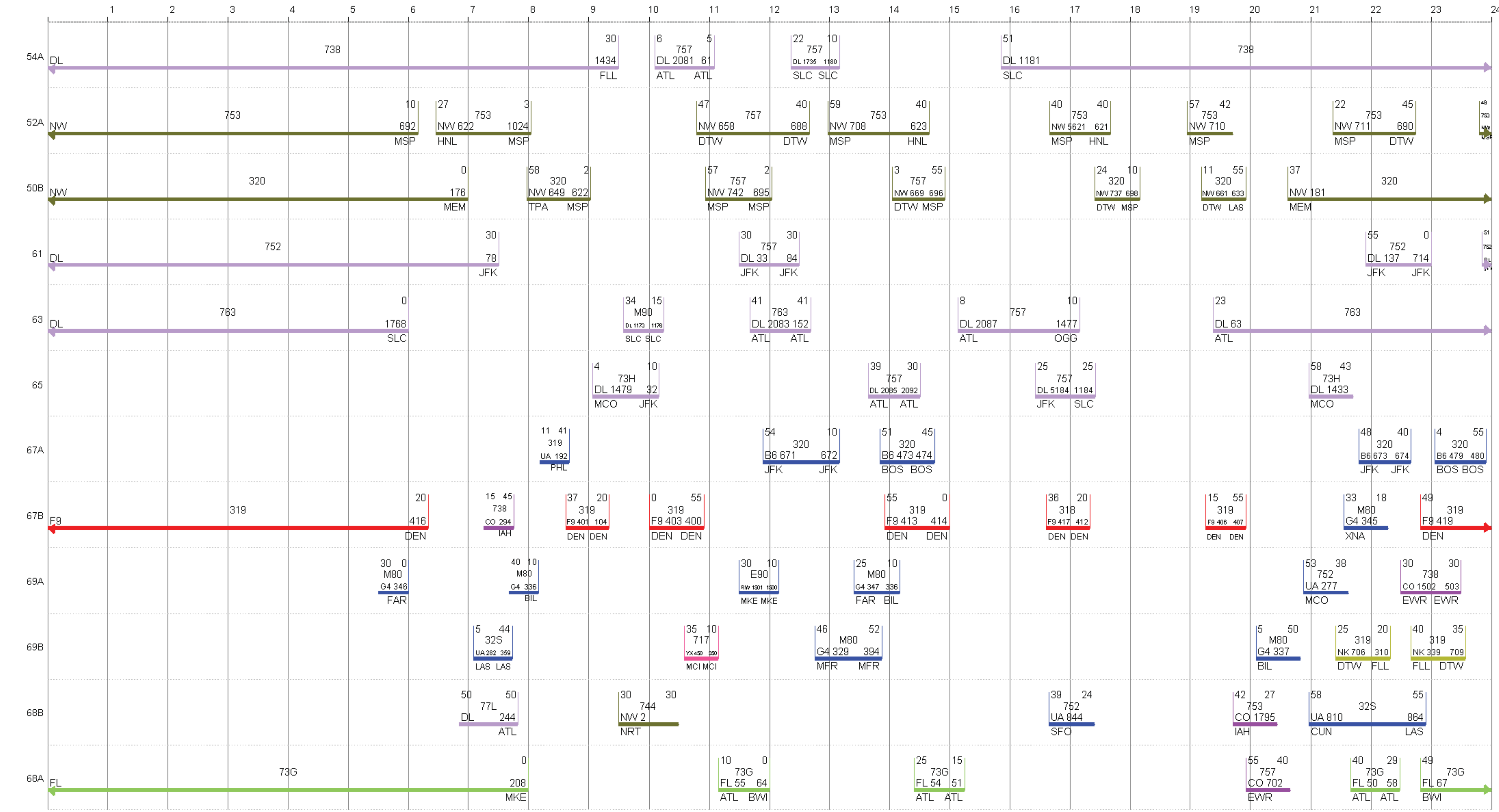


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure
6

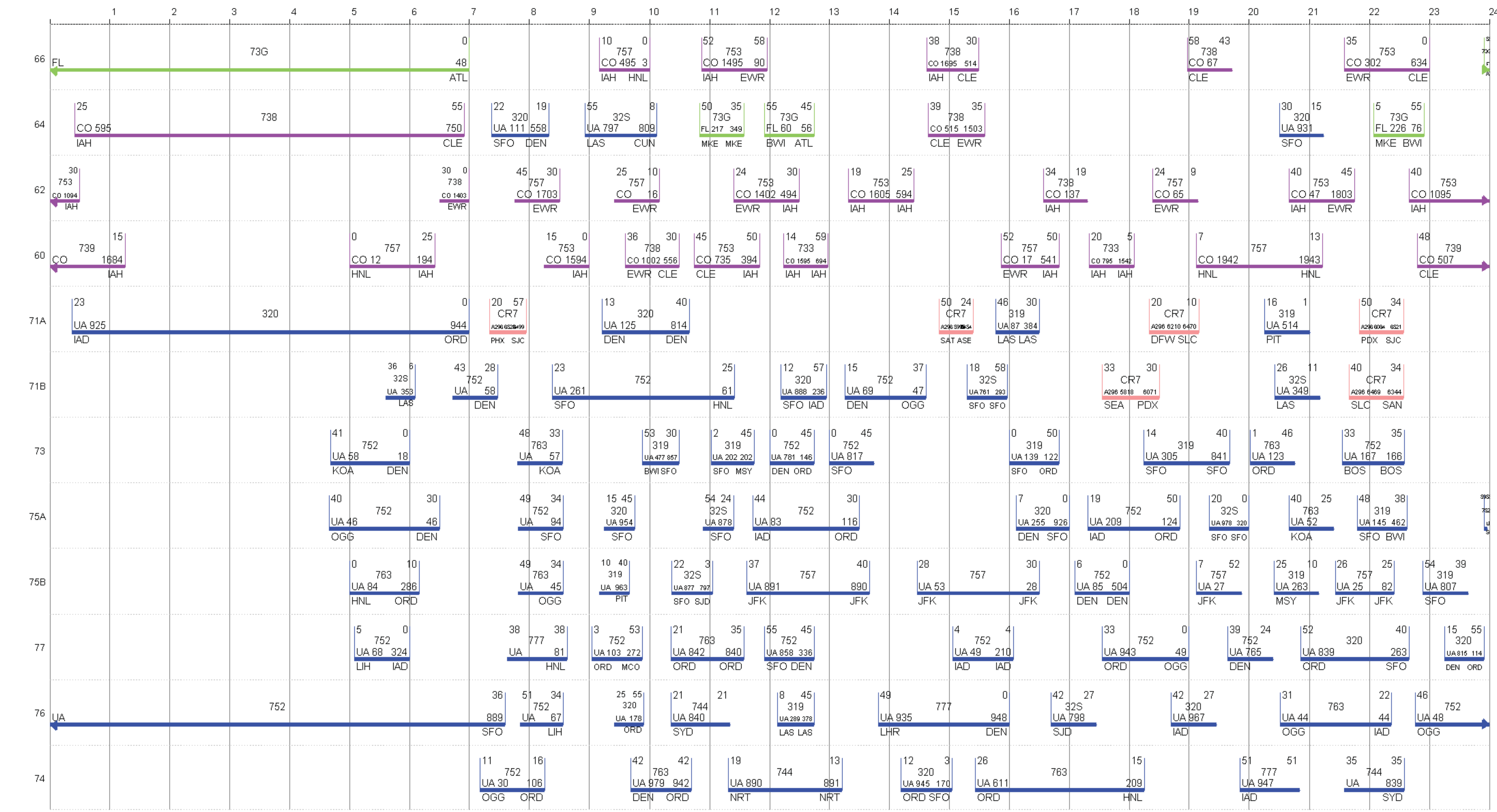


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure 7

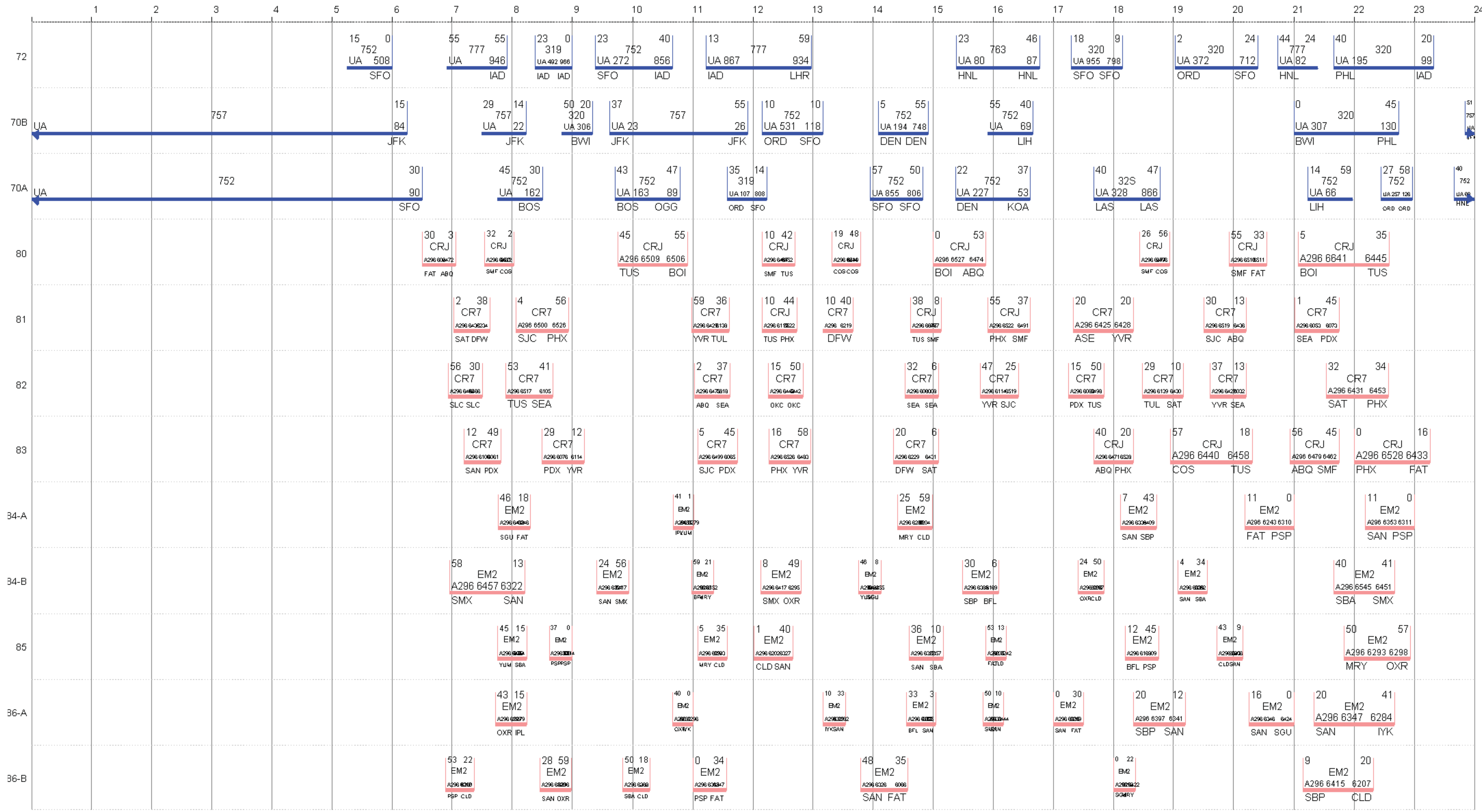


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure 8

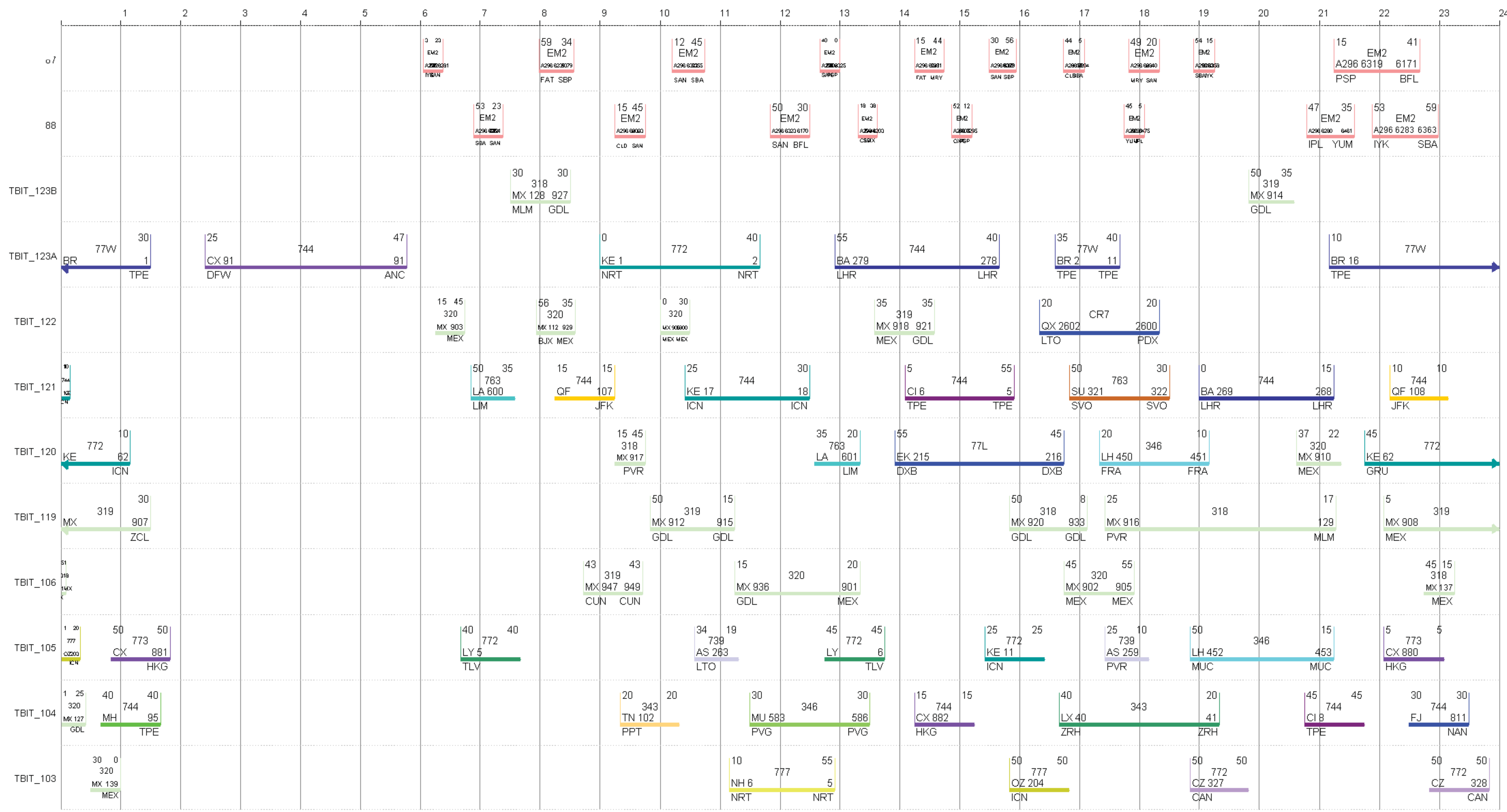


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure
9

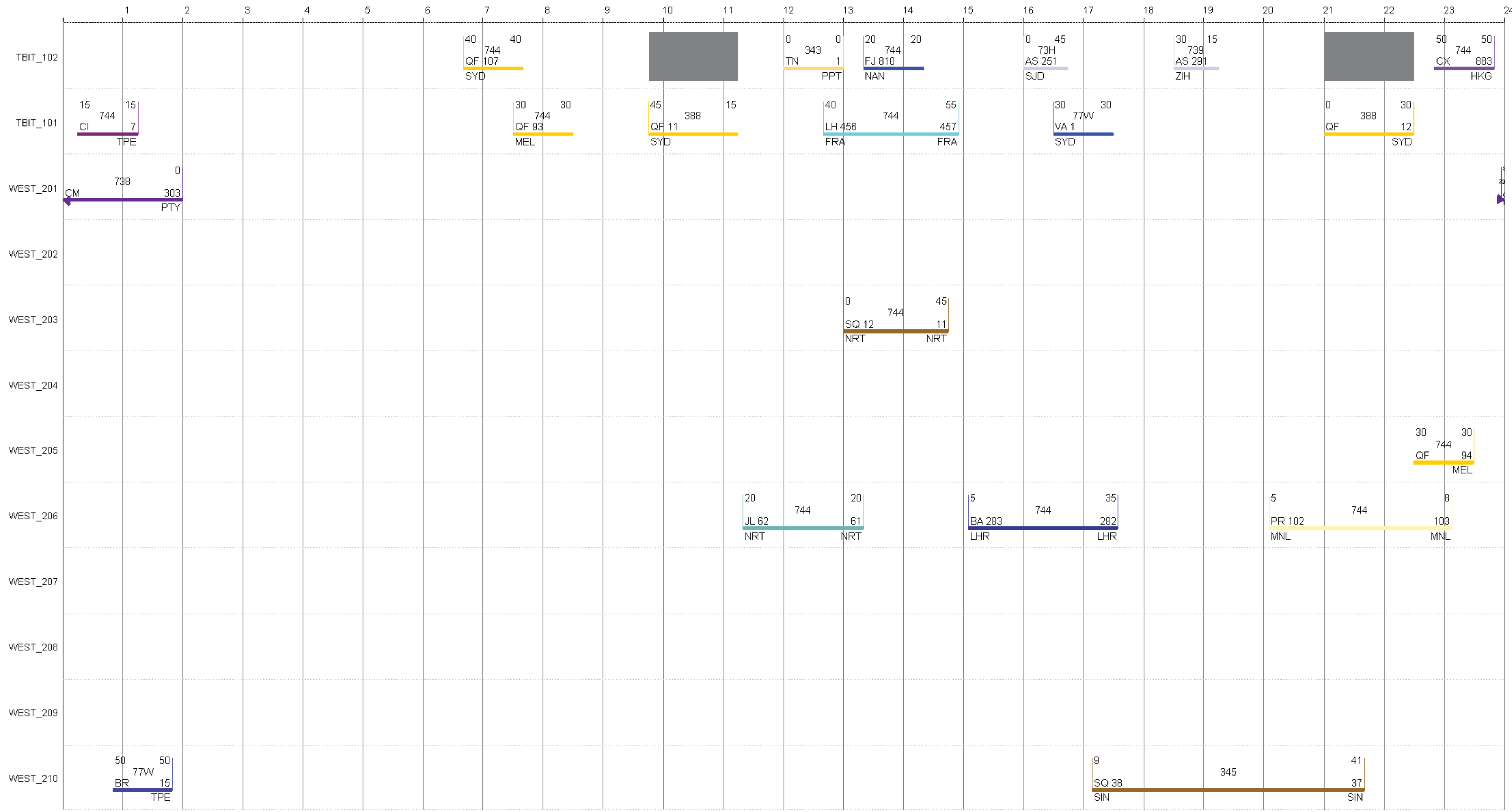


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure 10

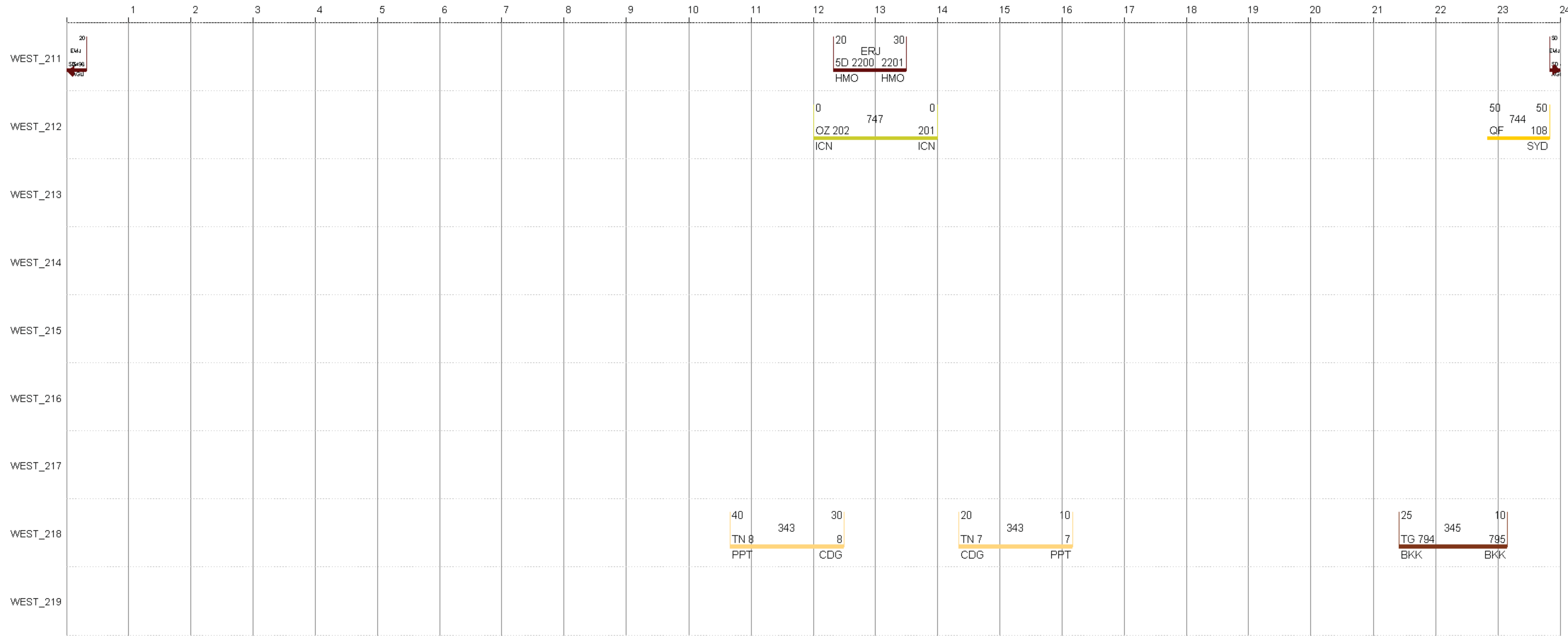


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure
11

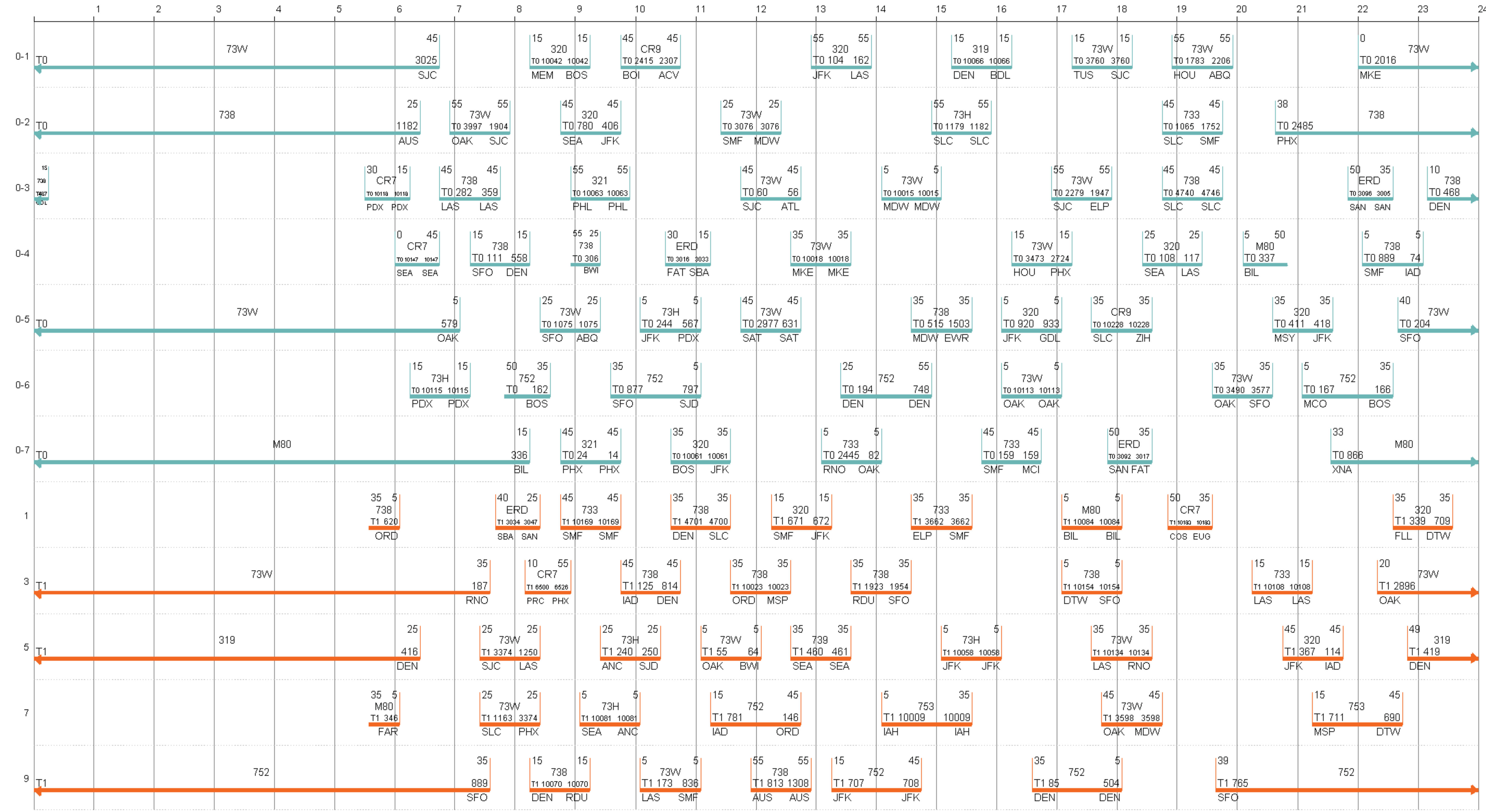


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS 2009 Baseline Conditions Ramp Chart

Figure
12

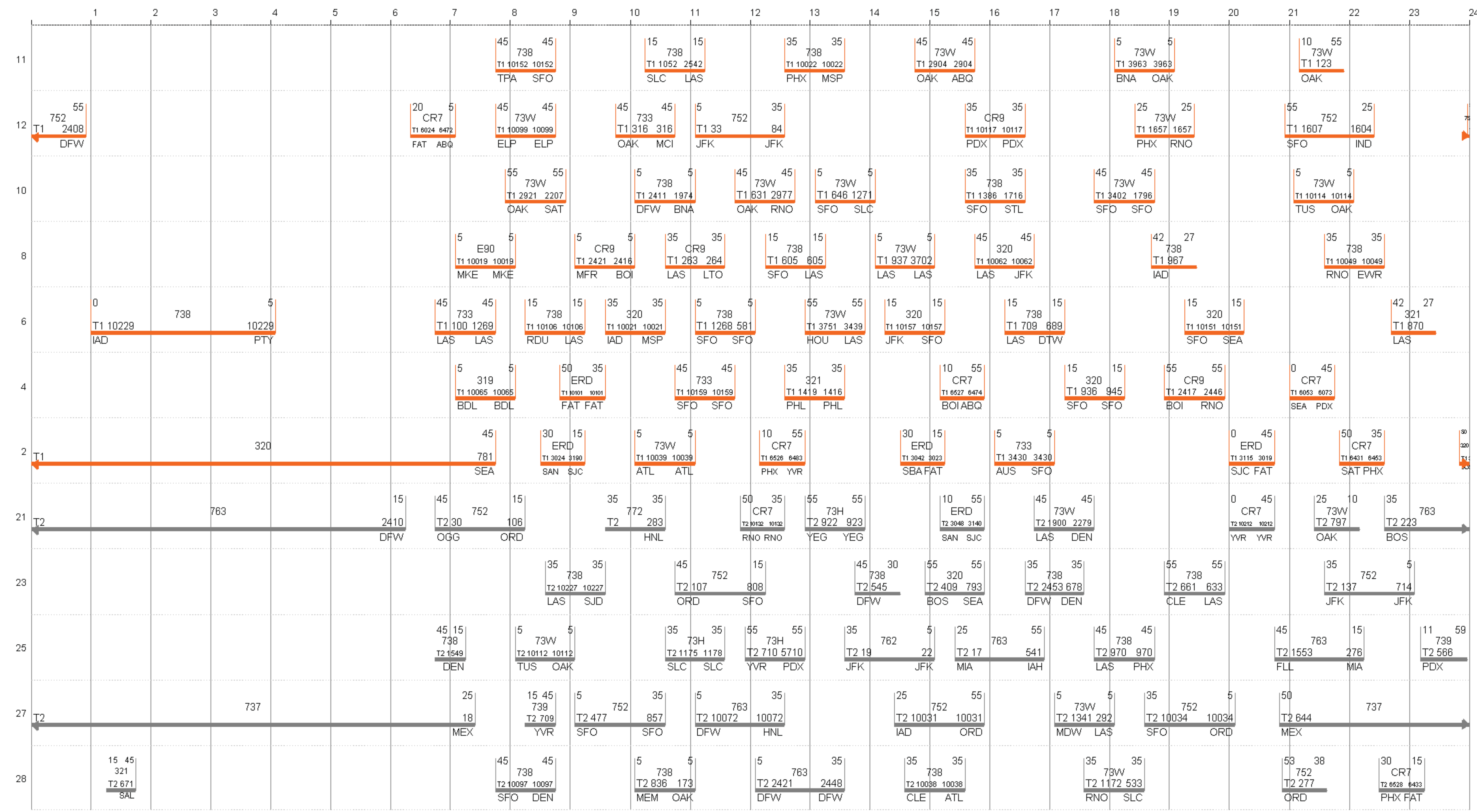


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure
13

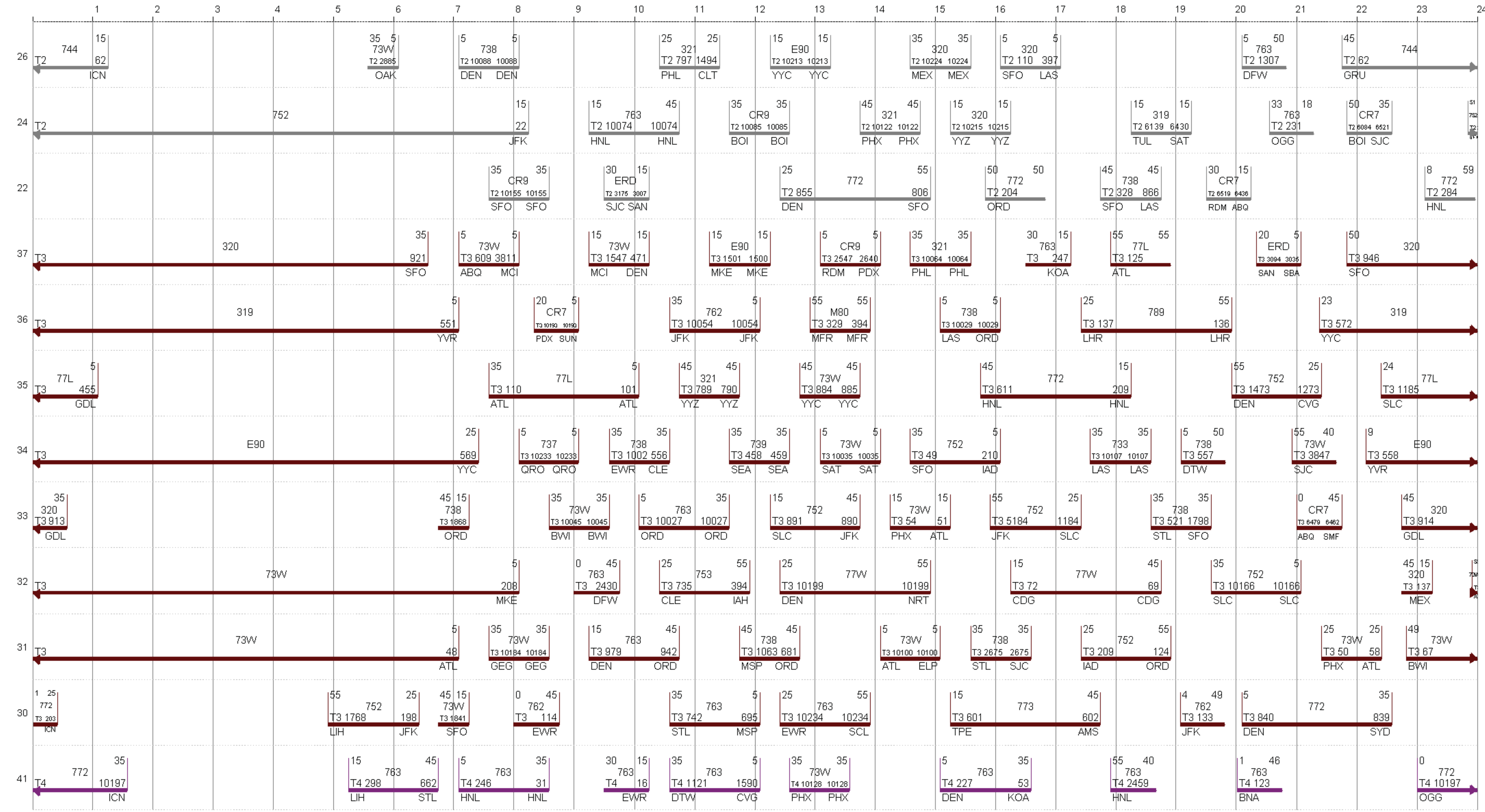


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

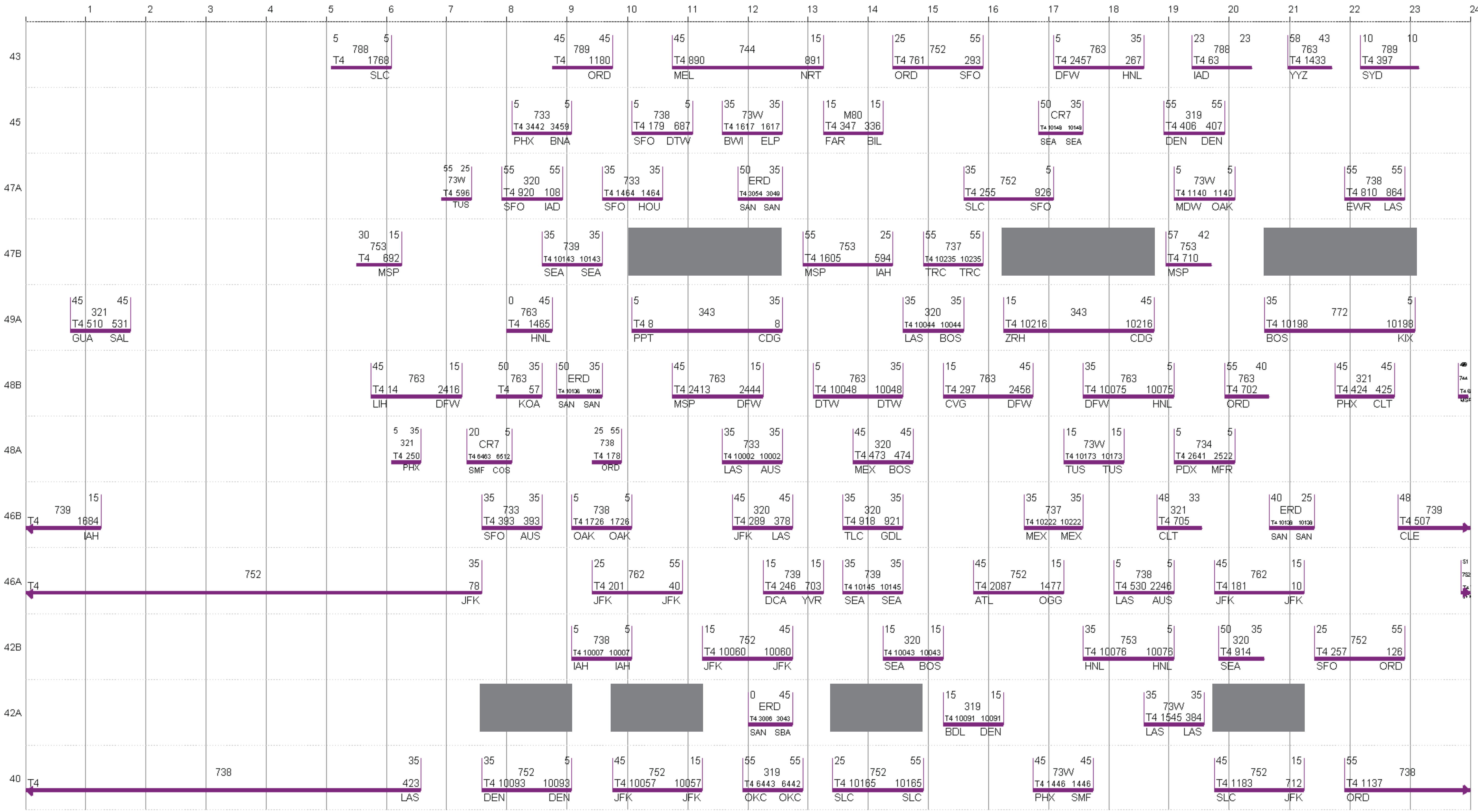
LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure
14



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

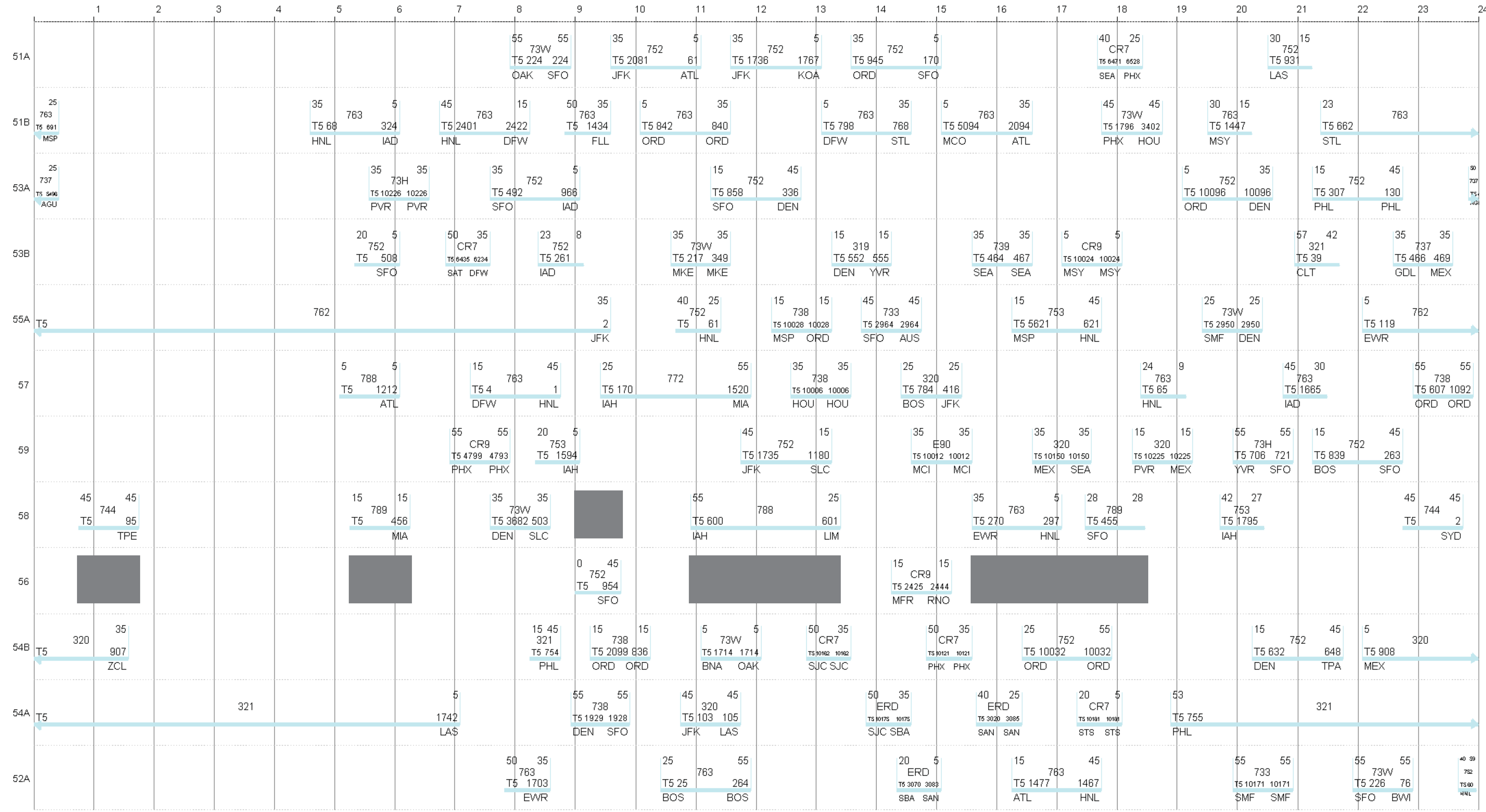


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure
16

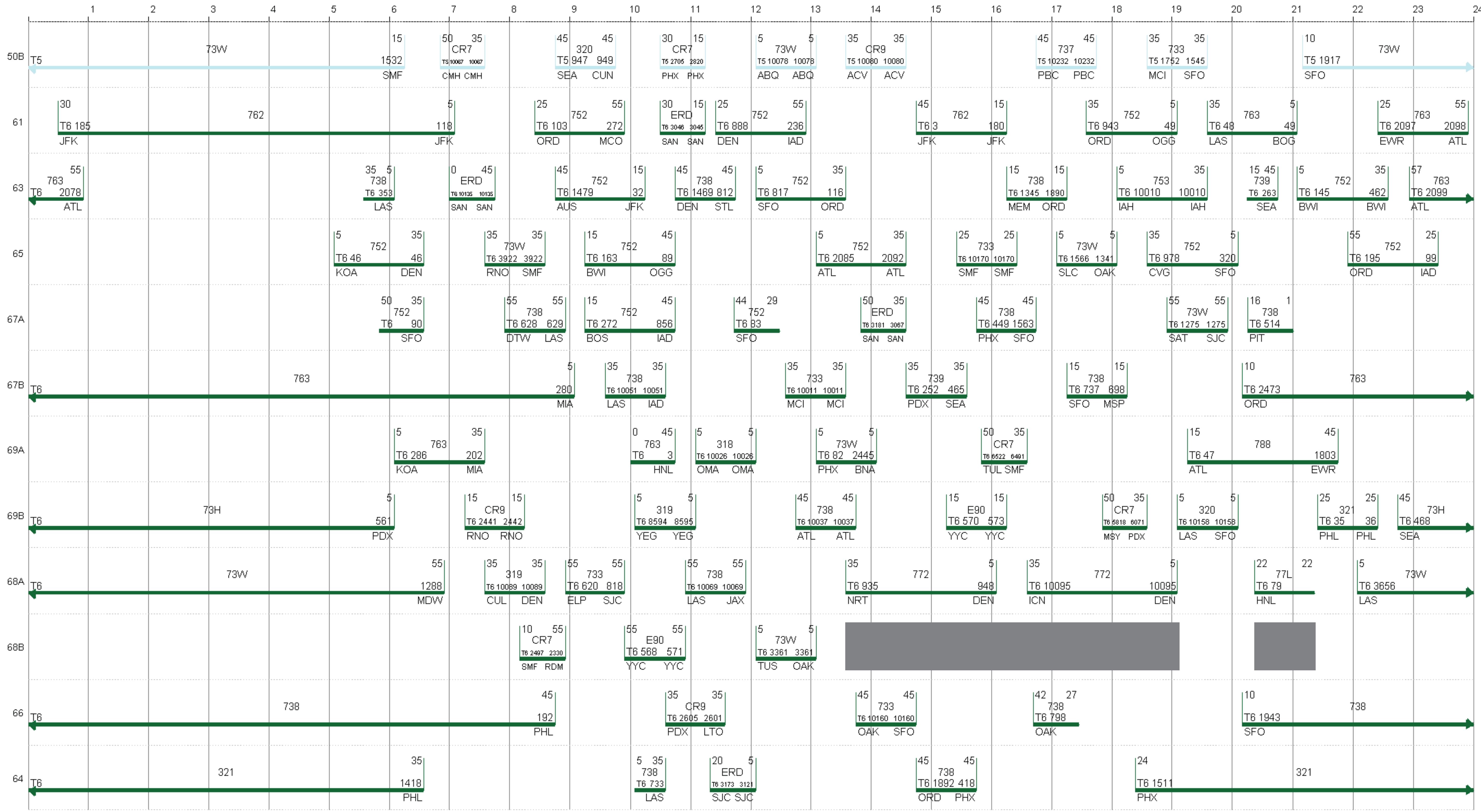


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure
17

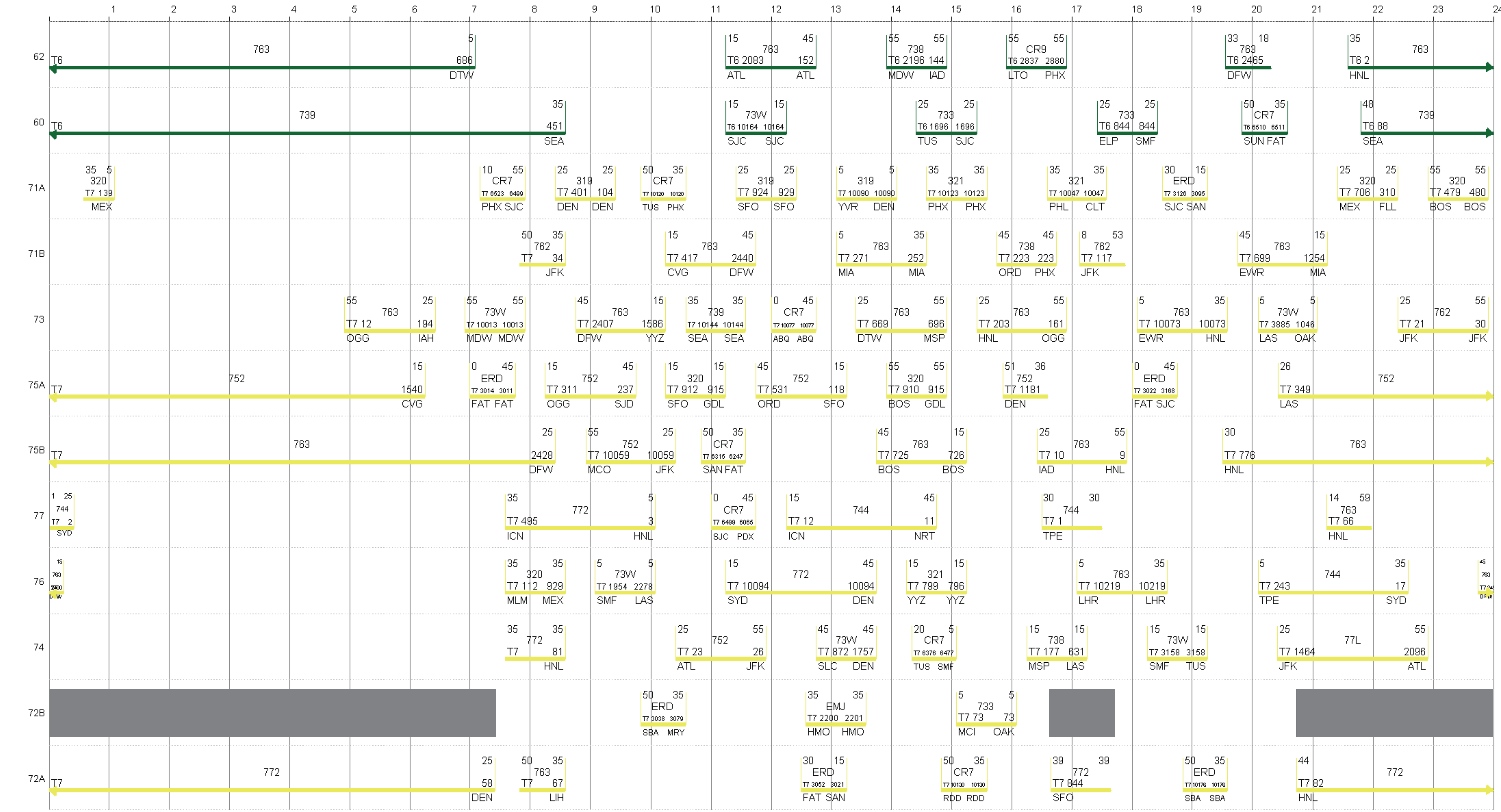


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure 18

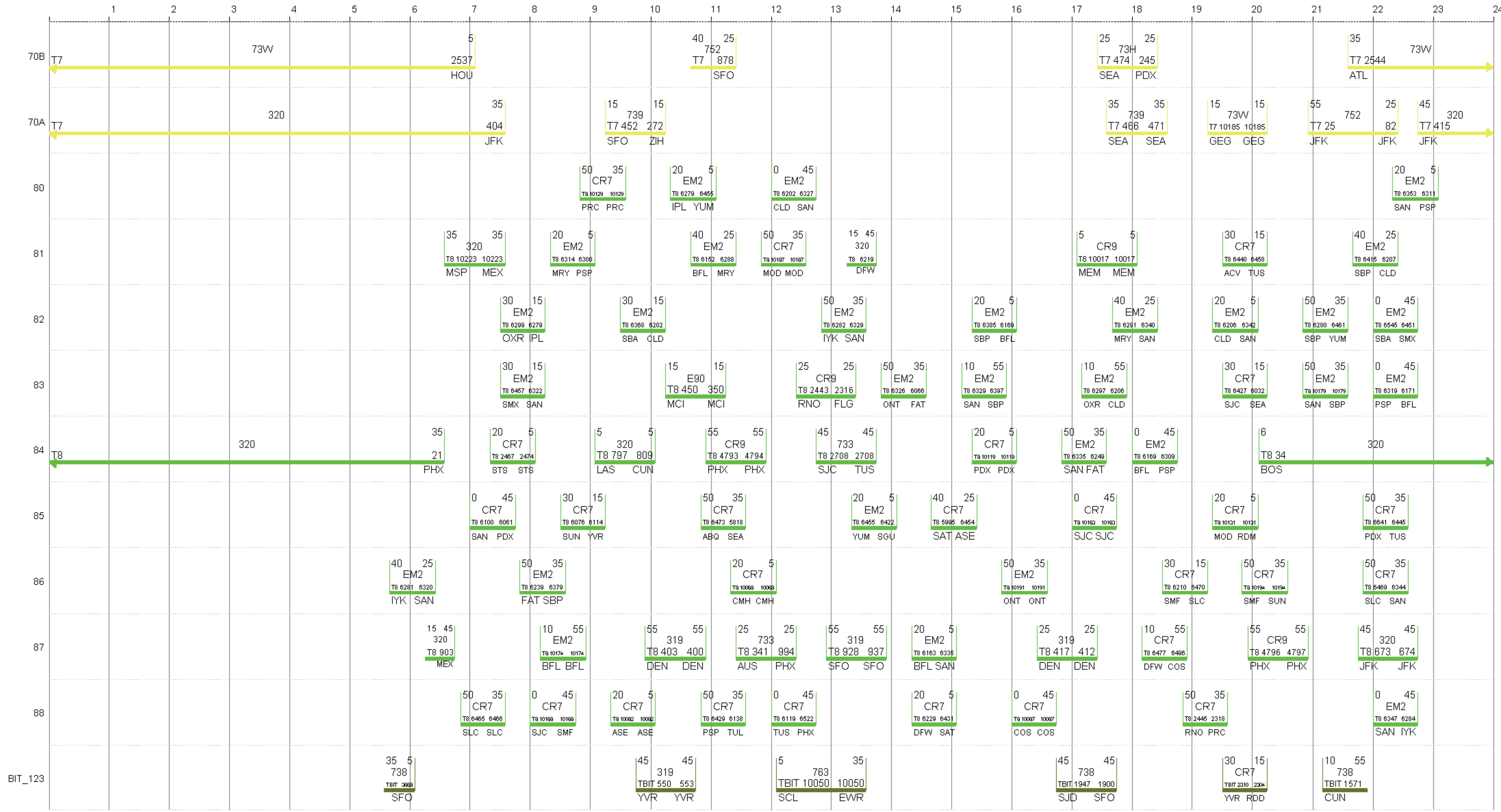


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure
19

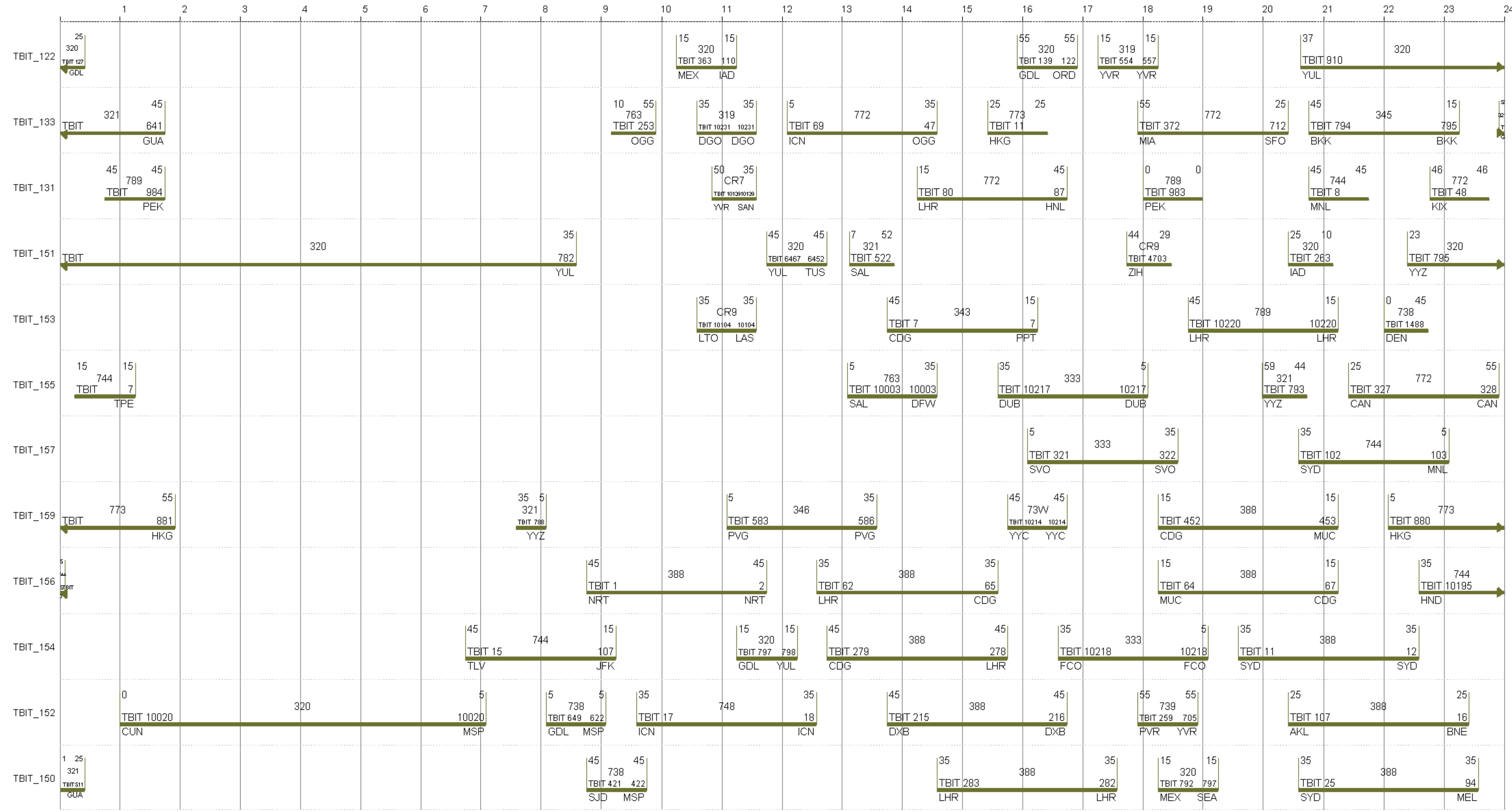


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

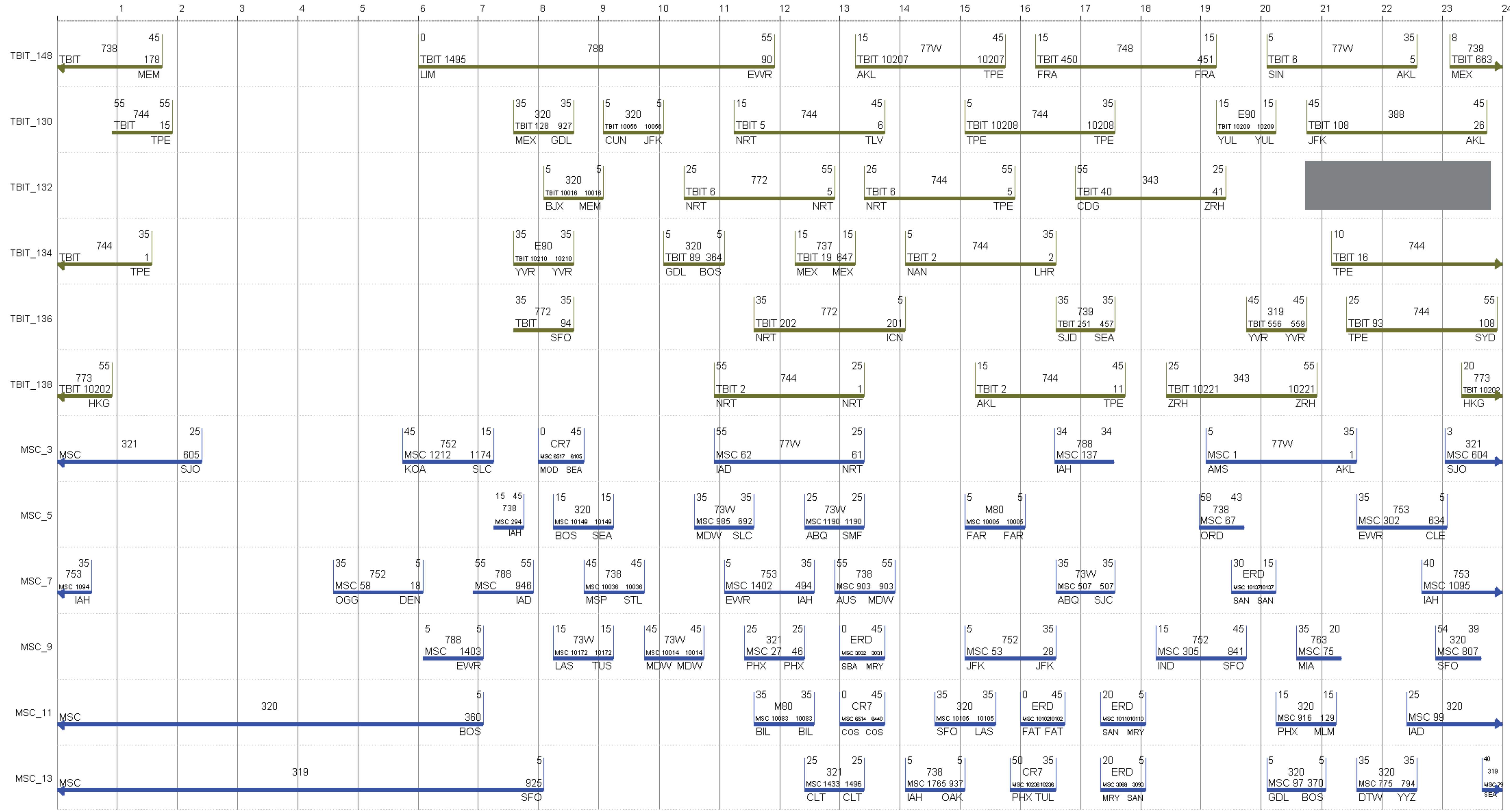
LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure
20



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

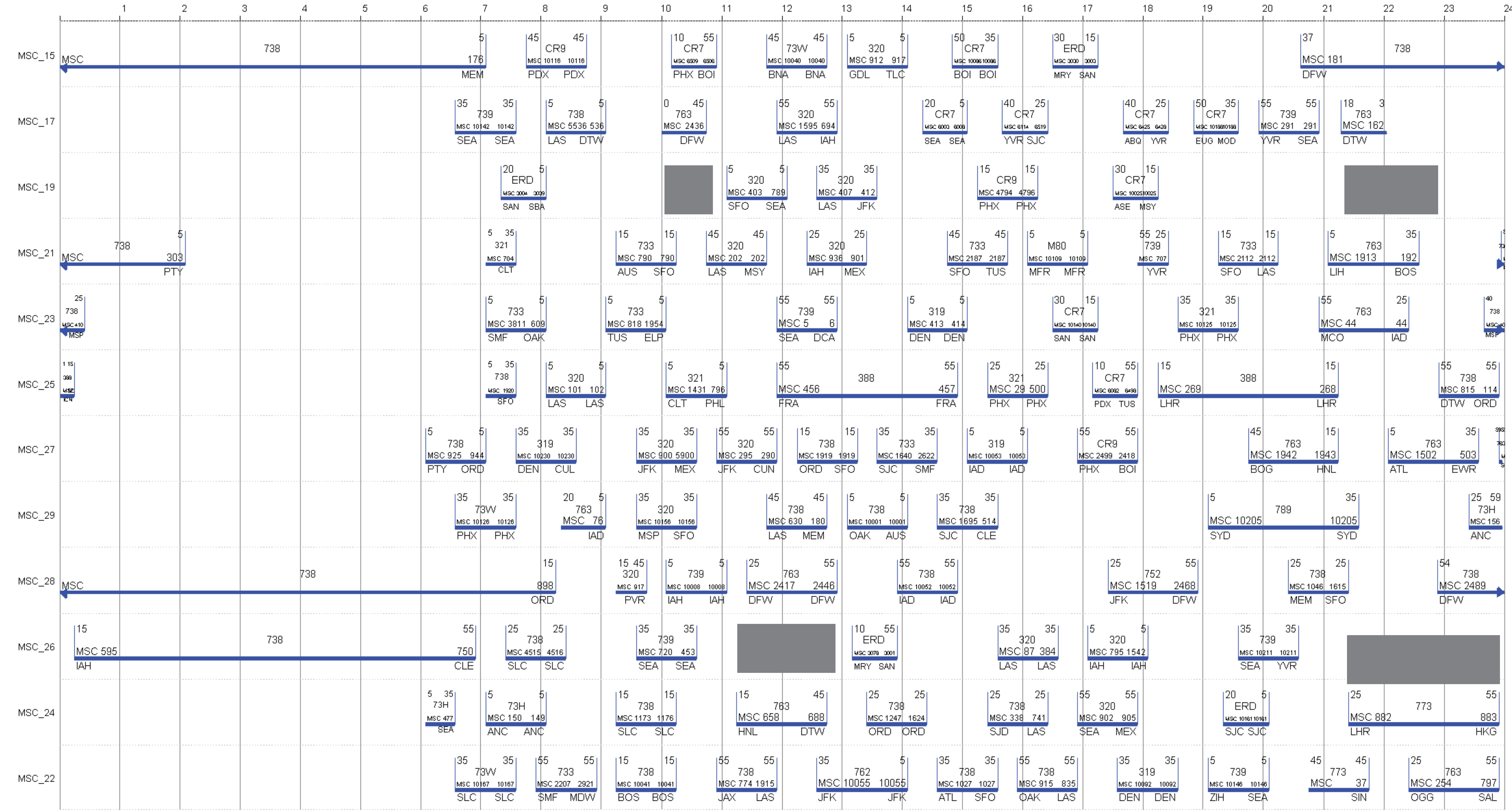


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

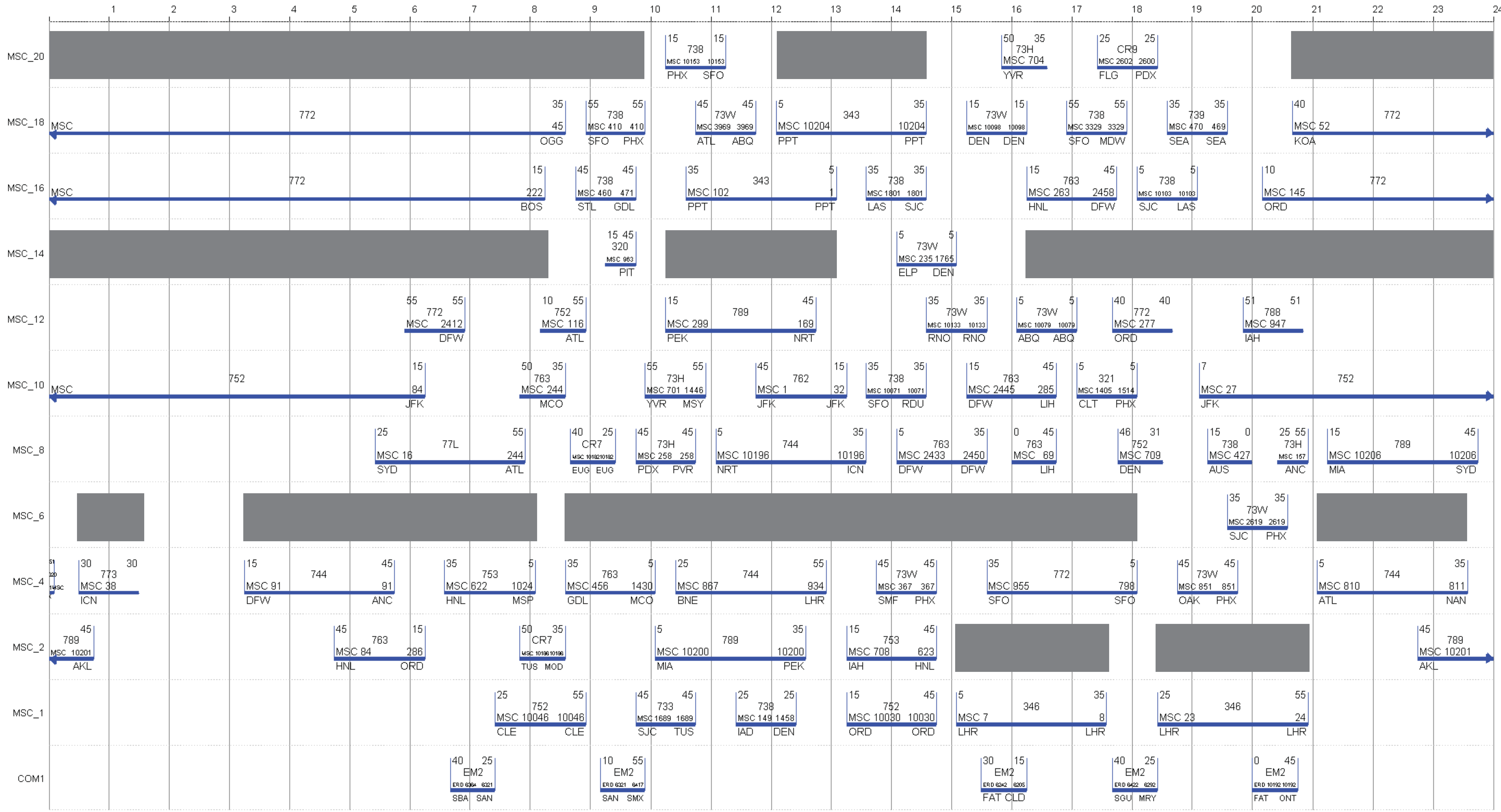
LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure
22



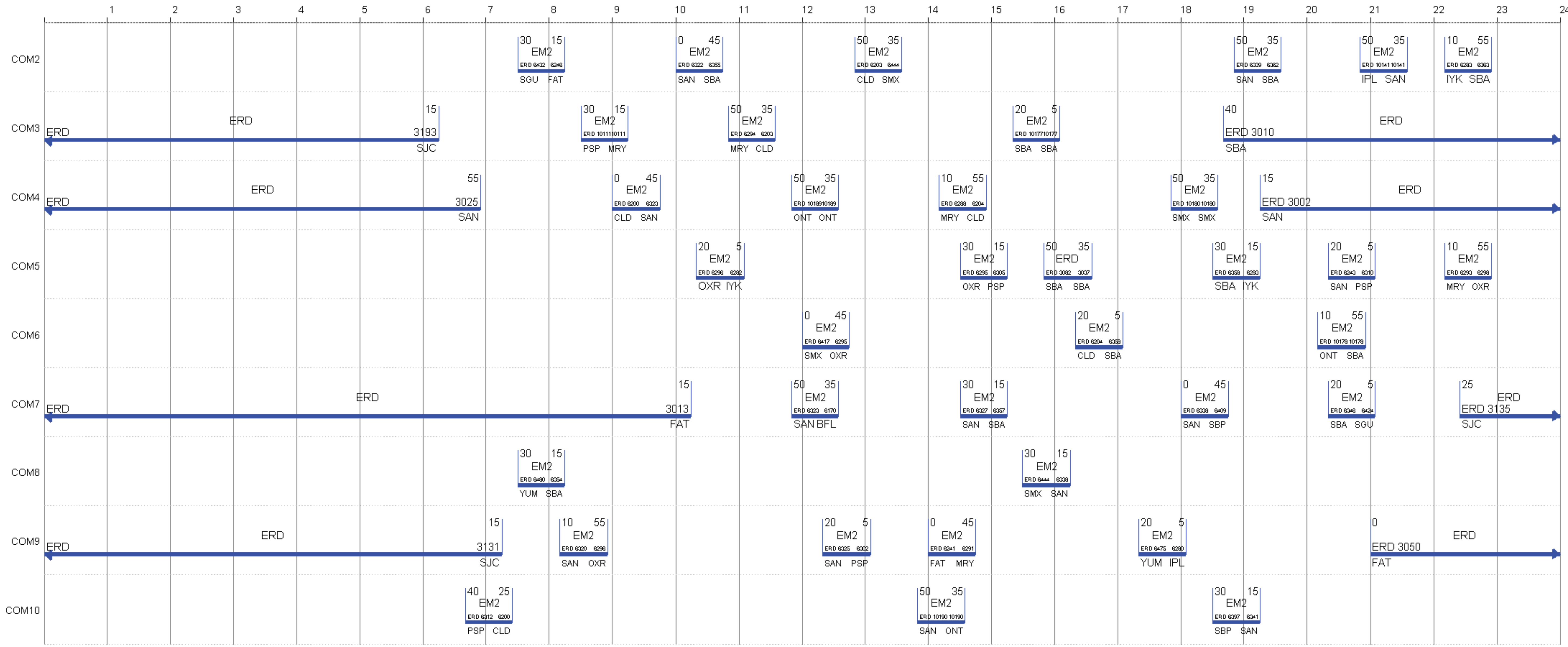
Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

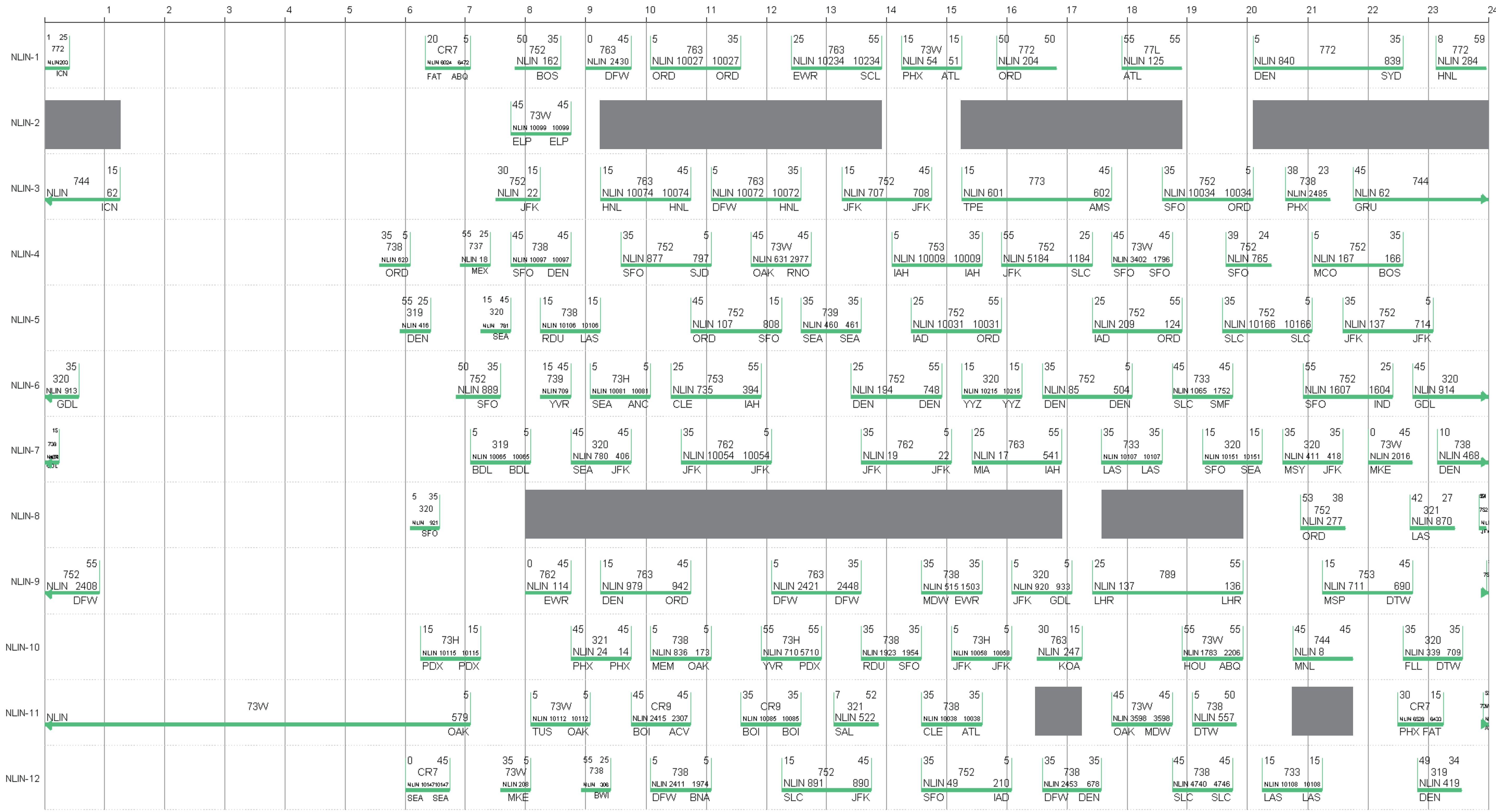


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternatives 1 and 2 Scenarios Ramp Chart

Figure 25

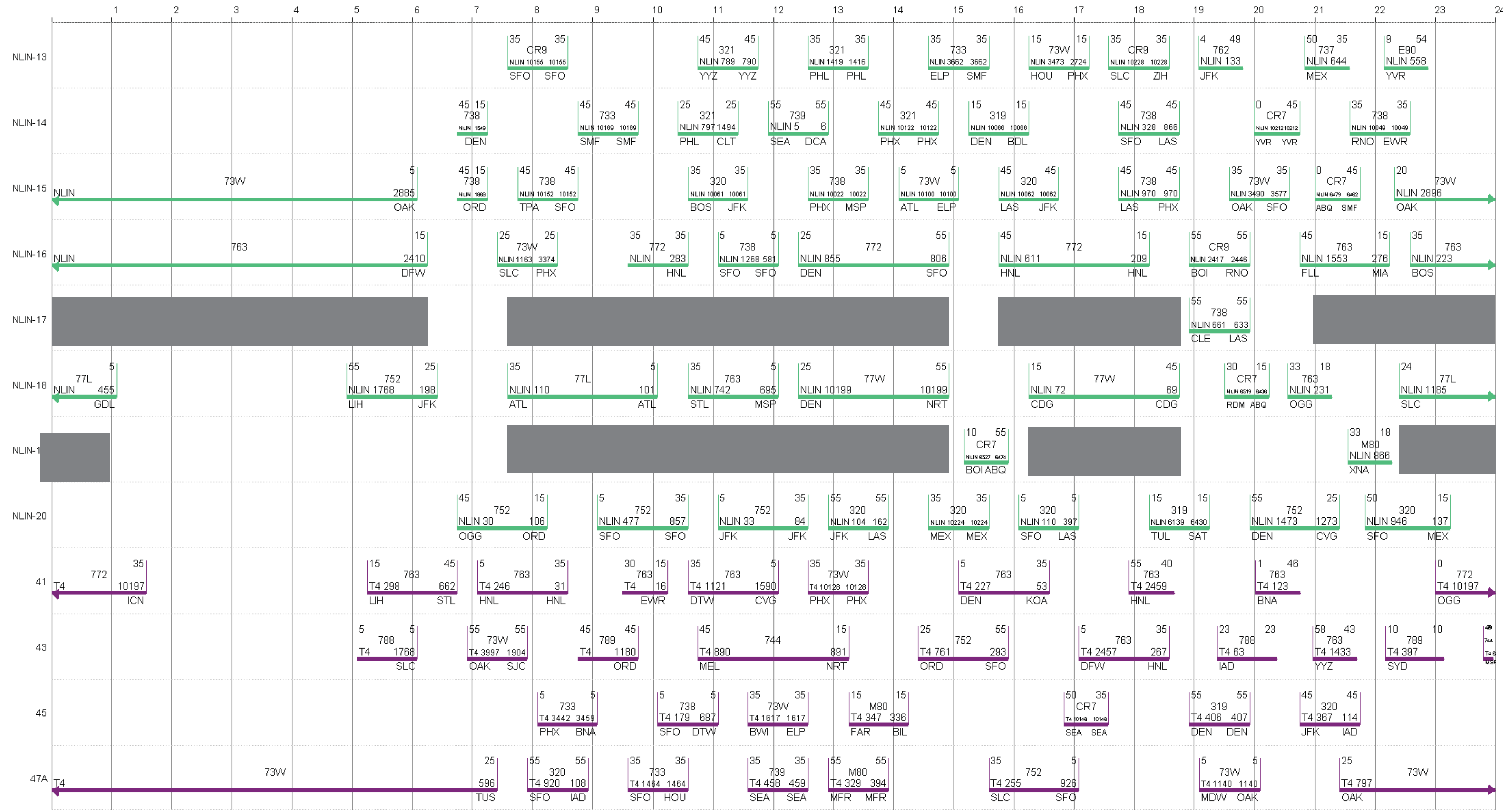


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 3 Ramp Chart

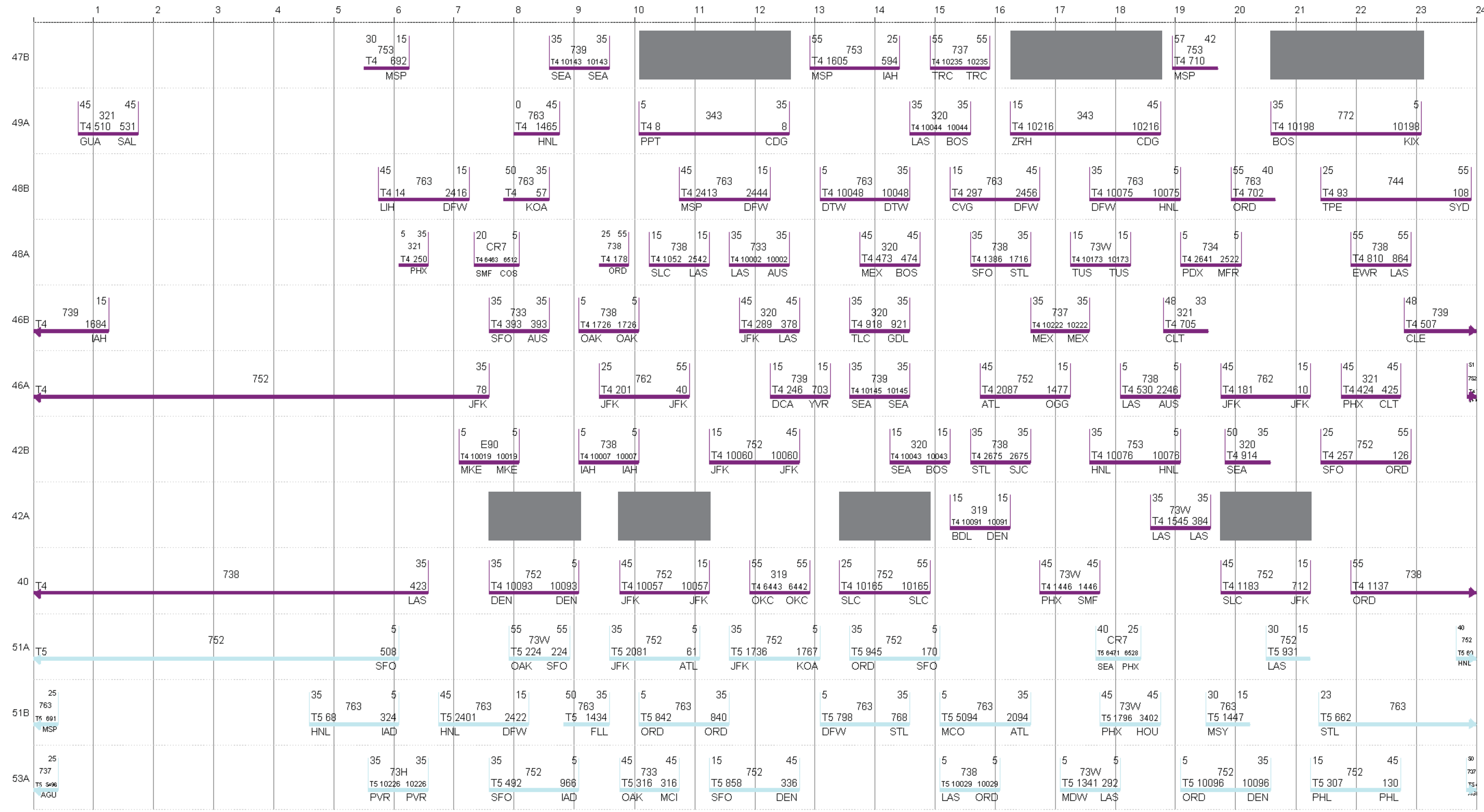
Figure
26



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX Specific Plan Amendment Study Report	LAX SPAS Alternative 3 Ramp Chart	Figure 27

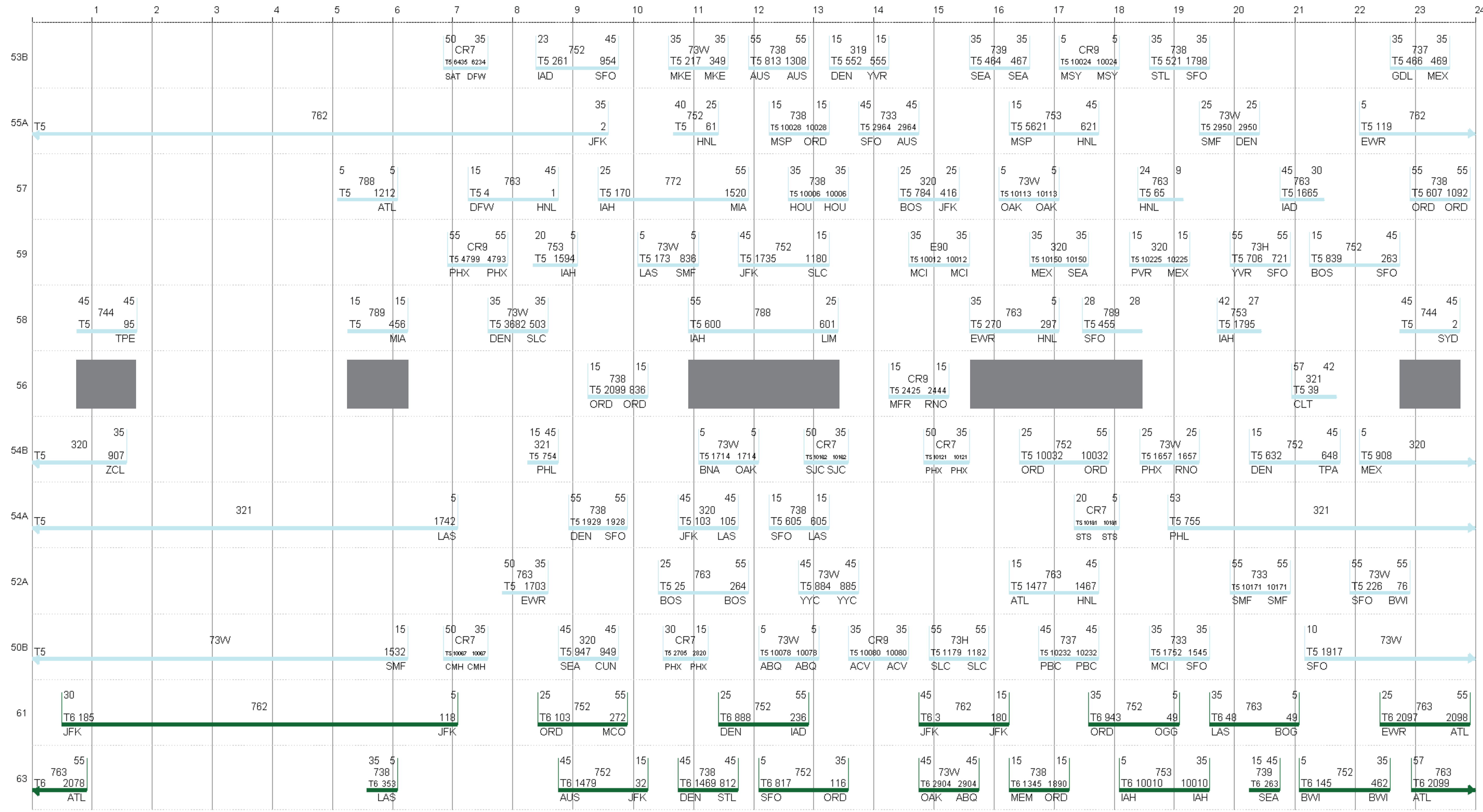


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 3 Ramp Chart

Figure 28



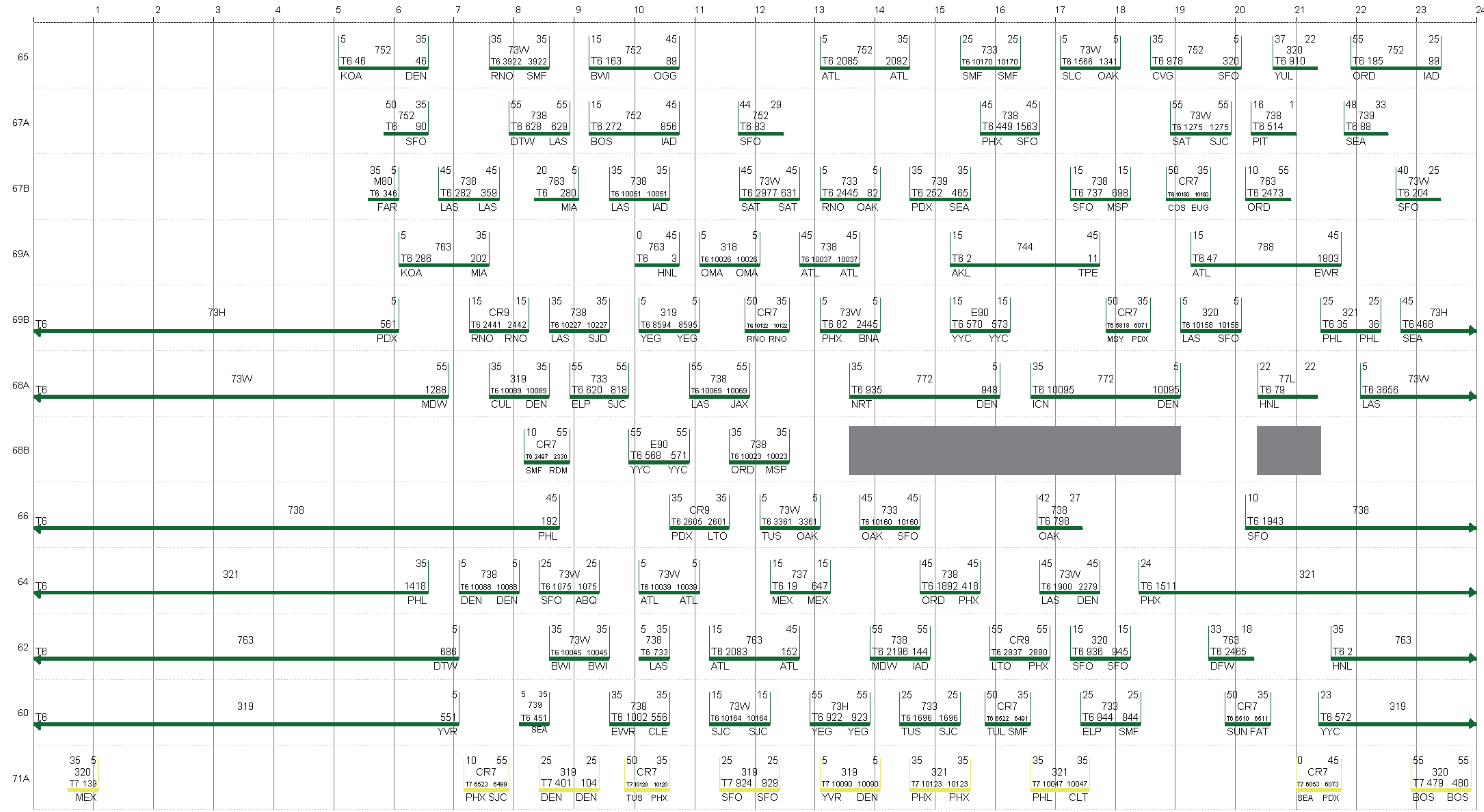
11 9:41 AM

Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

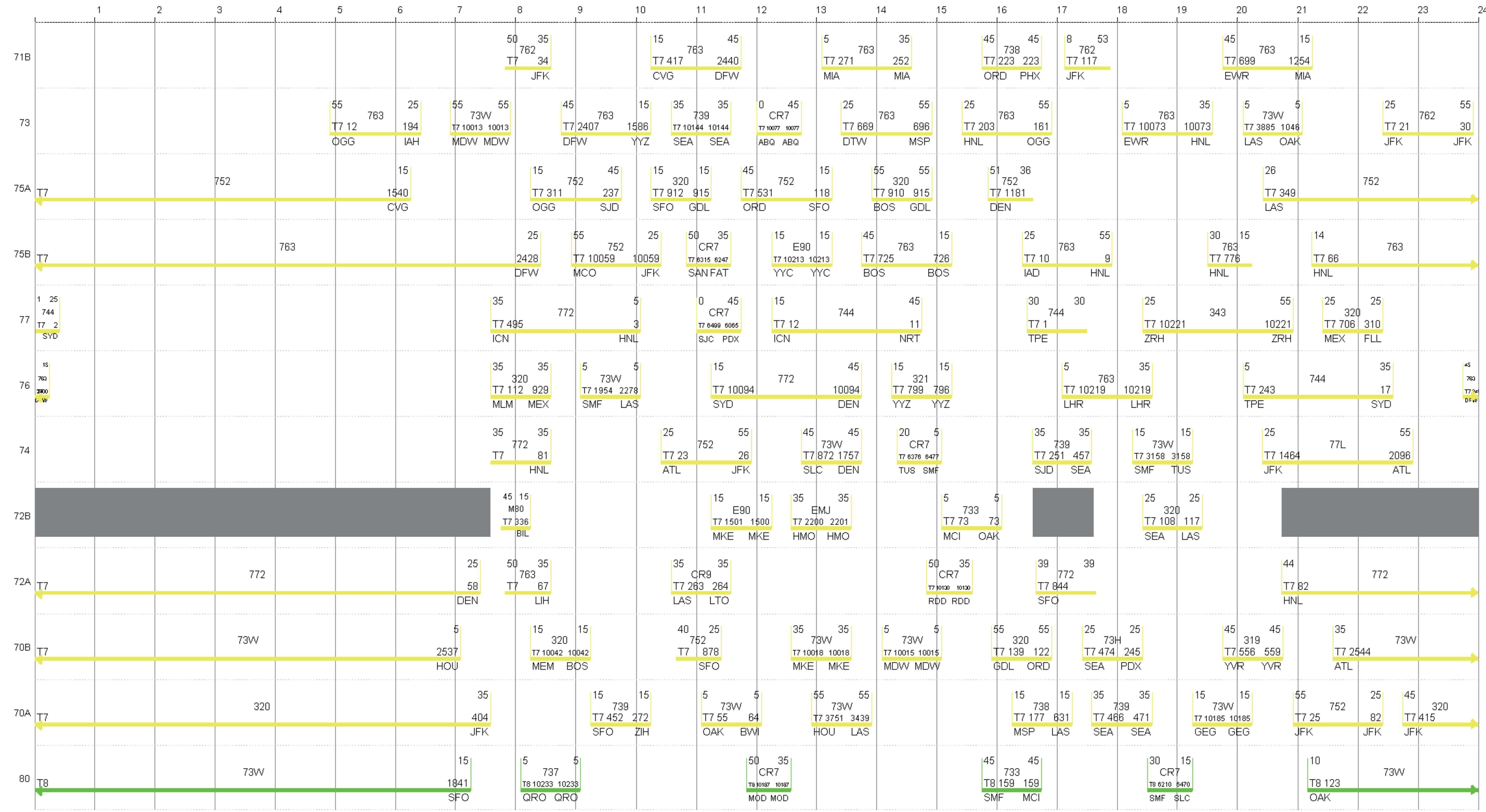
LAX SPAS Alternative 3 Ramp Chart

Figure
29



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

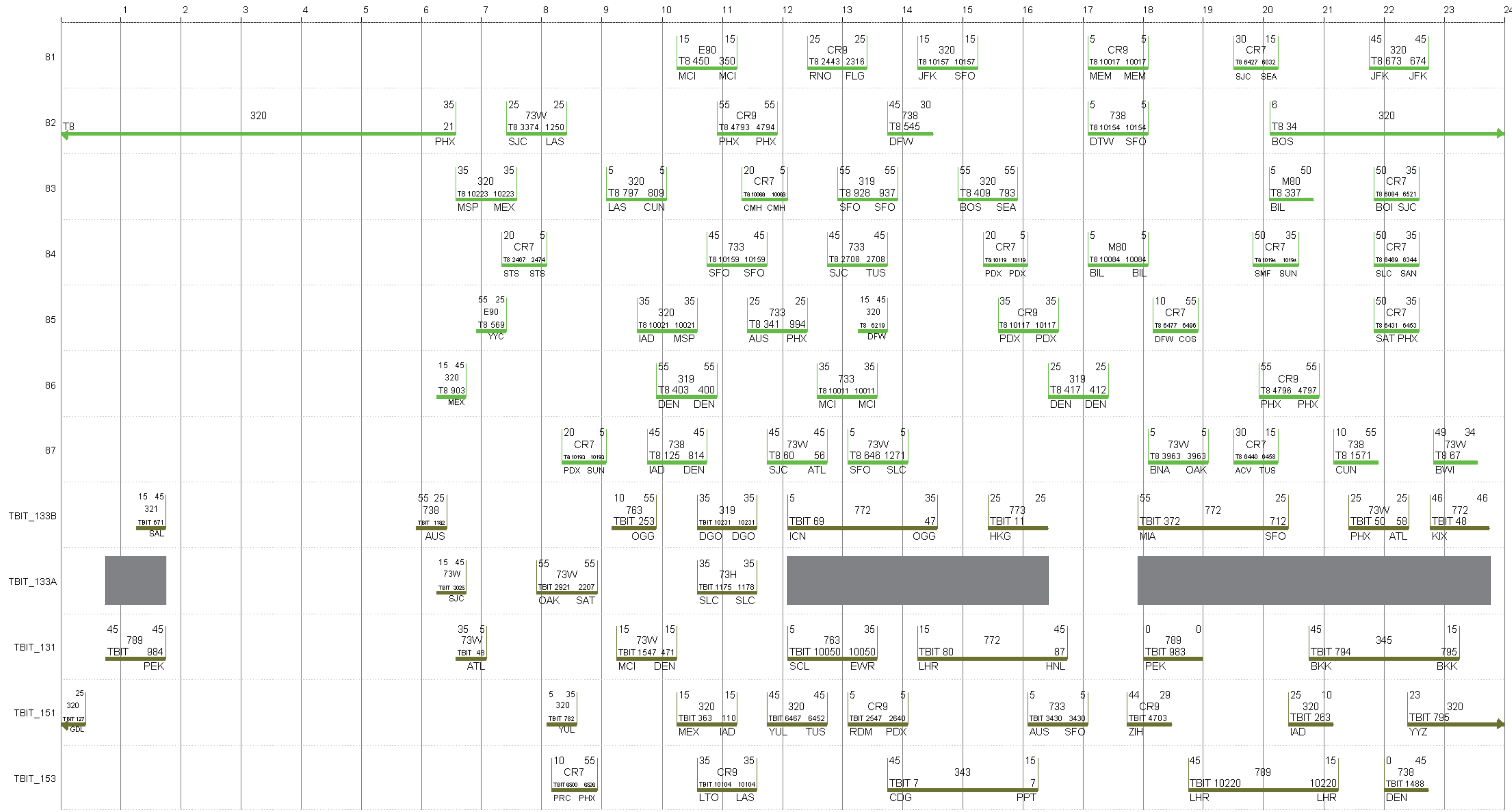


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 3 Ramp Chart

Figure
31

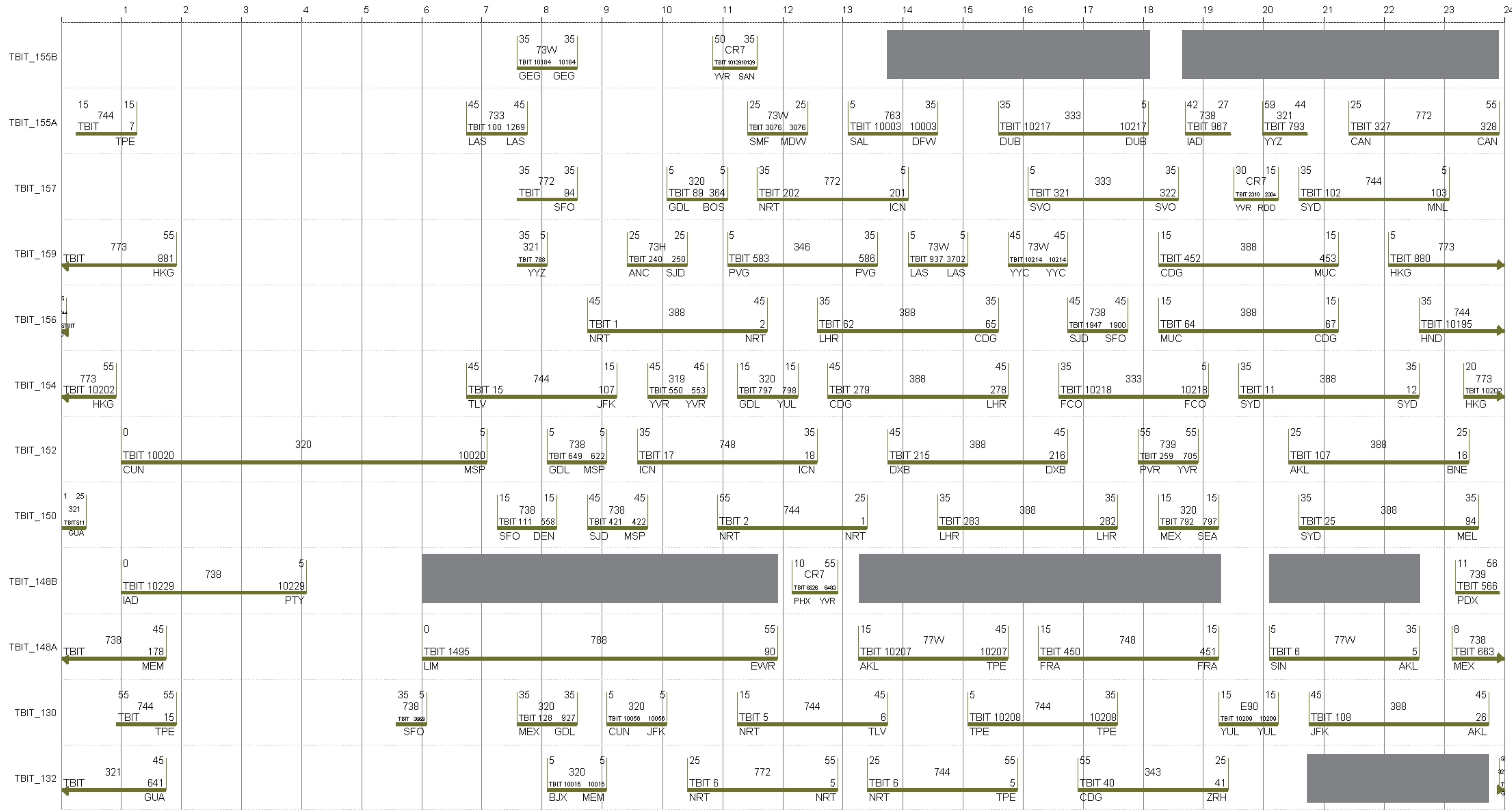


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 3 Ramp Chart

Figure
32

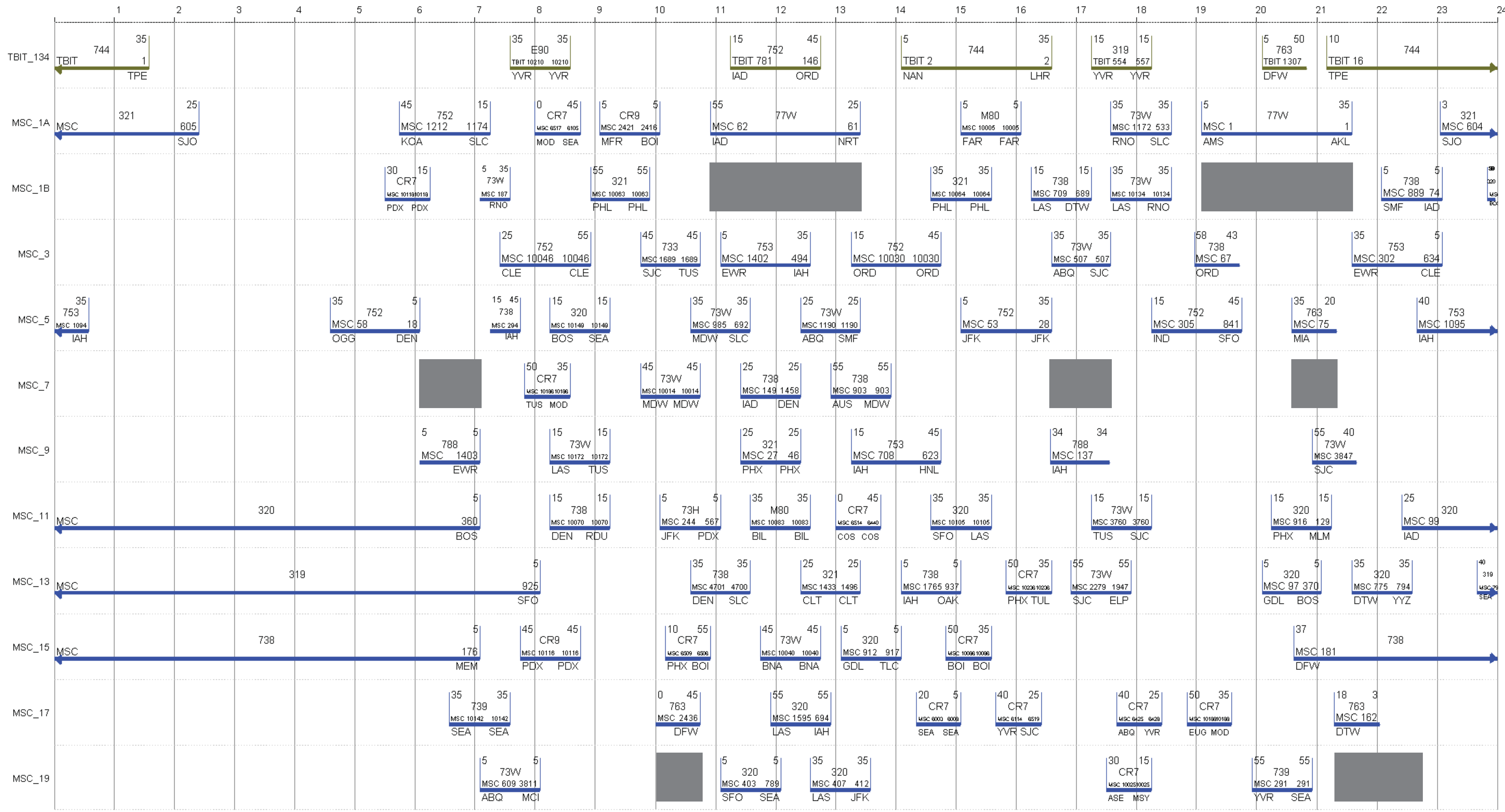


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 3 Ramp Chart

Figure
33

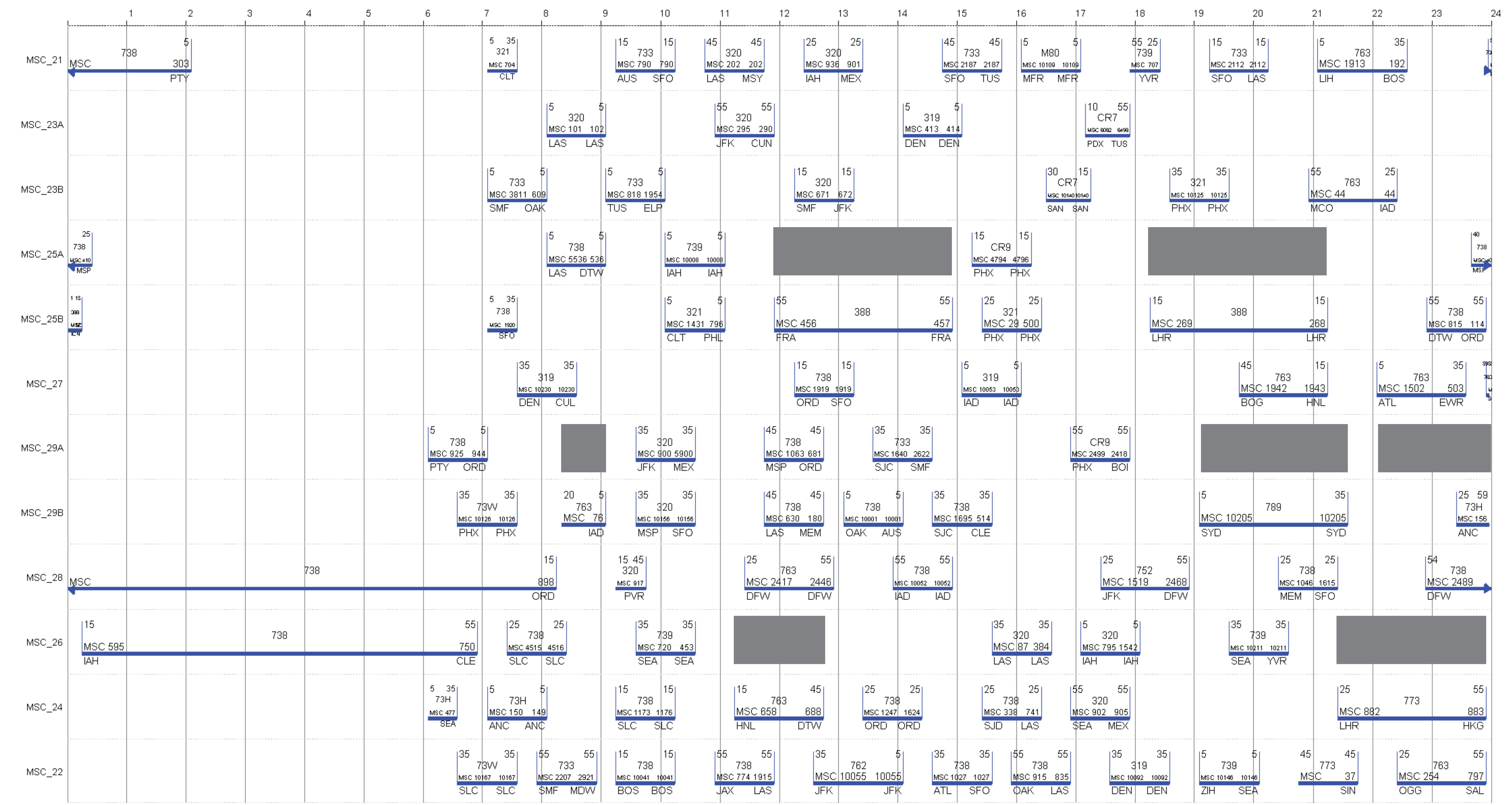


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 3 Ramp Chart

Figure
34



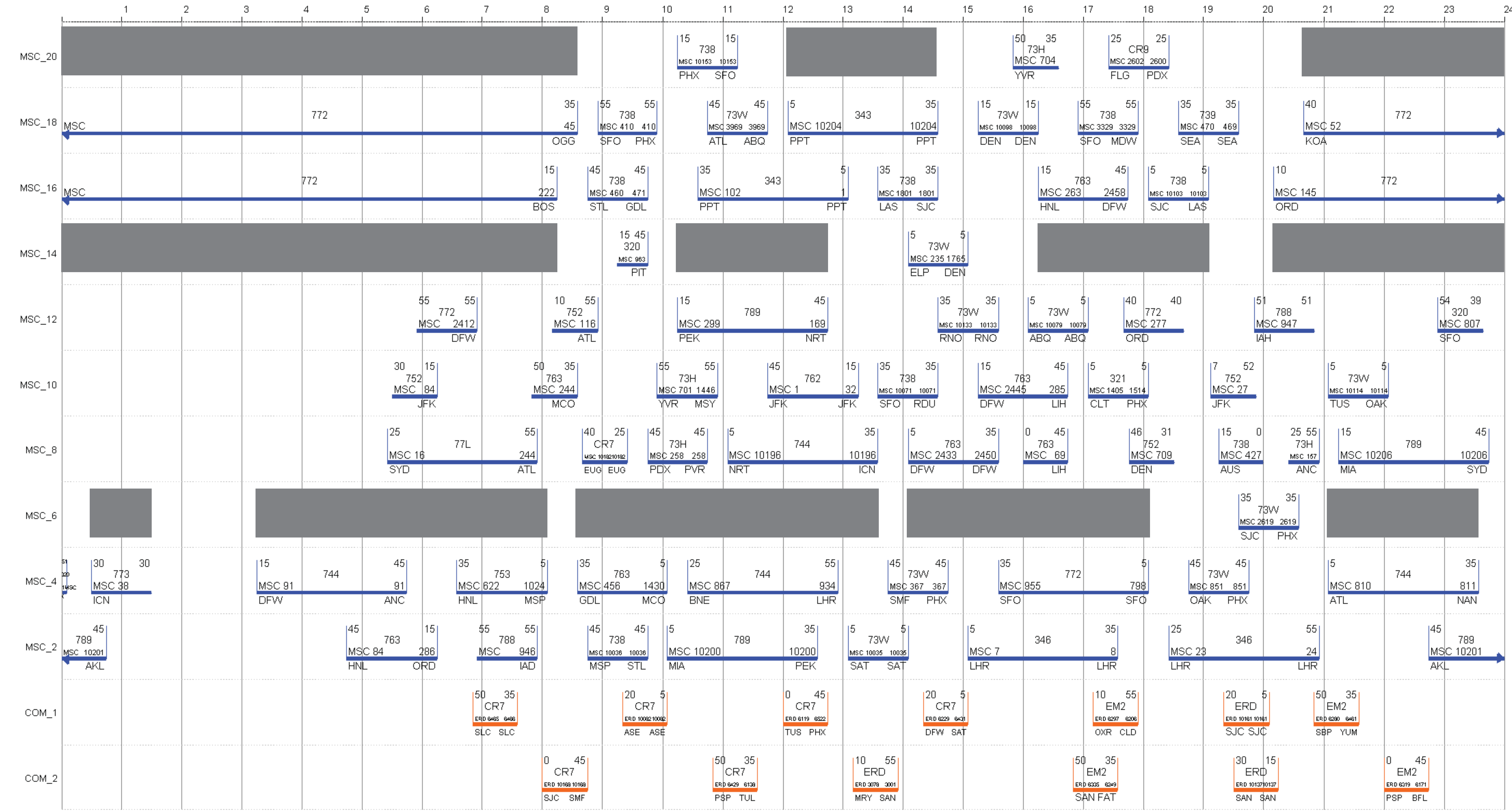
Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX Specific Plan Amendment Study Report

LAX SPAS Alternative 3 Ramp Chart

Figure
35

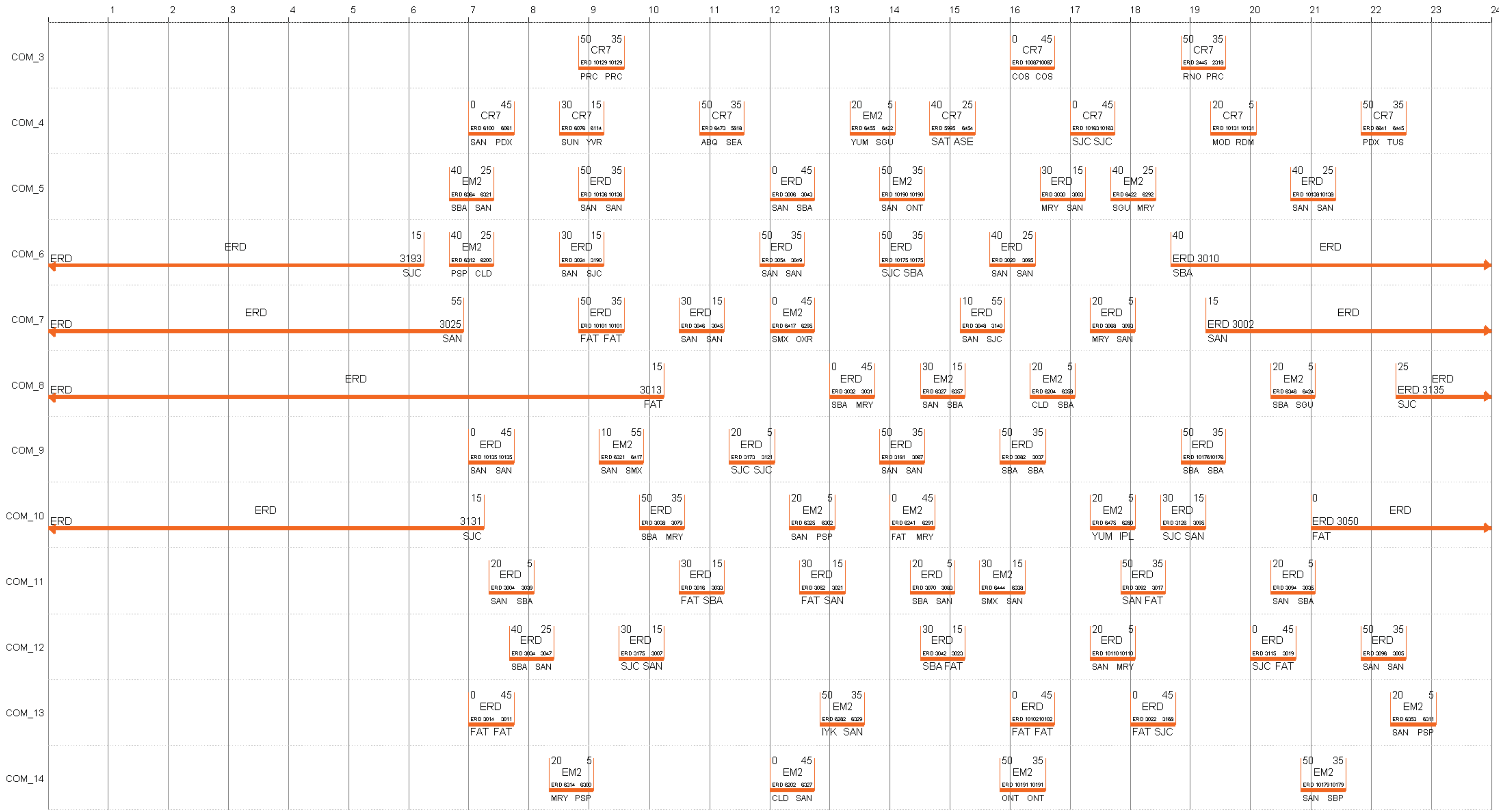


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 3 Ramp Chart

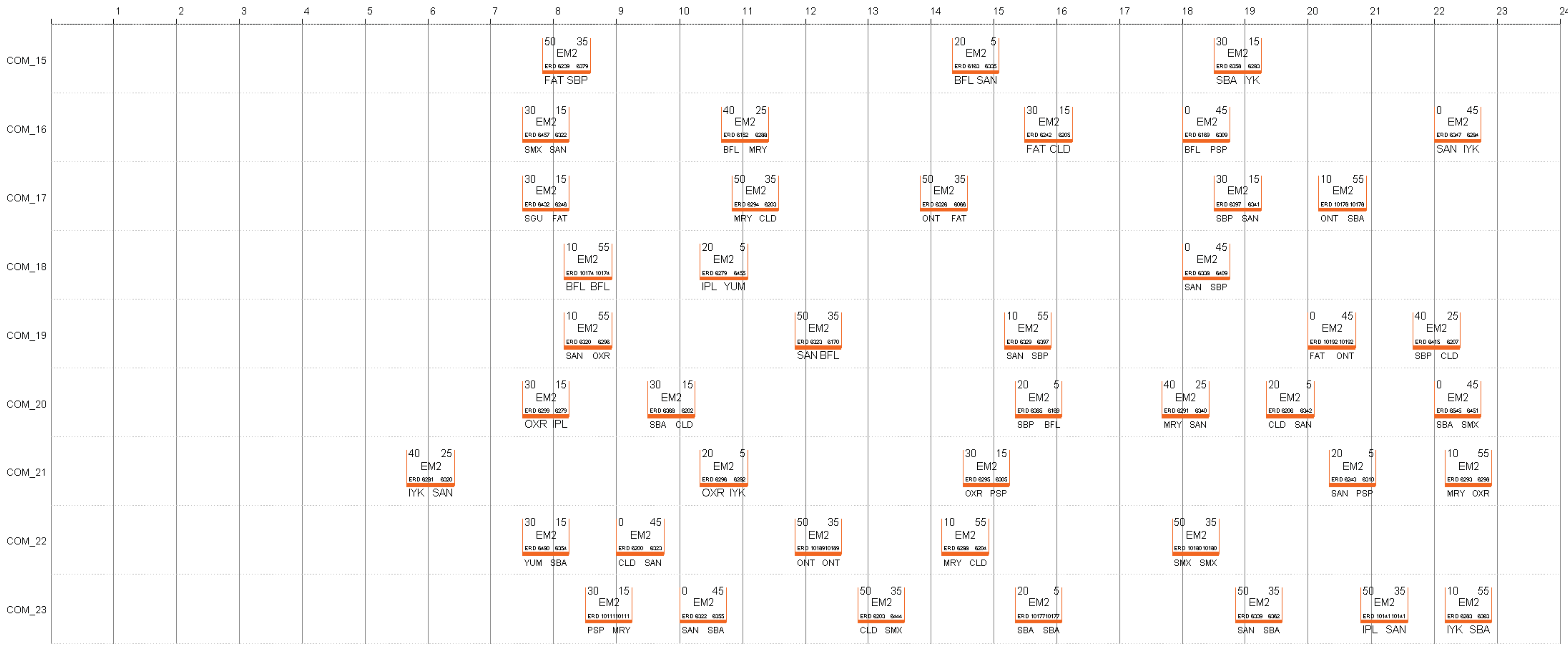
Figure
36



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX Specific Plan Amendment Study Report	LAX SPAS Alternative 3 Ramp Chart	Figure 37

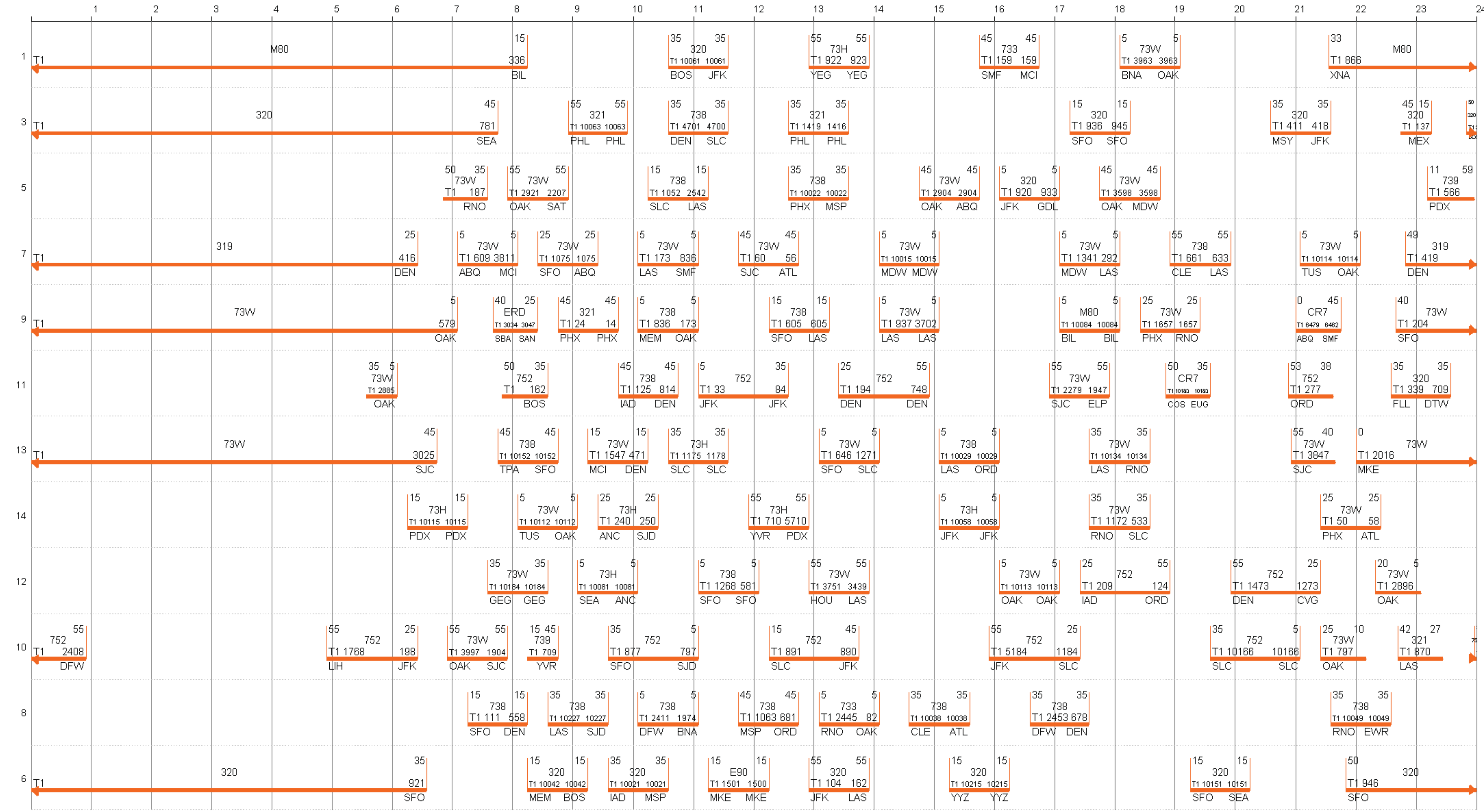


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 3 Ramp Chart

Figure
38

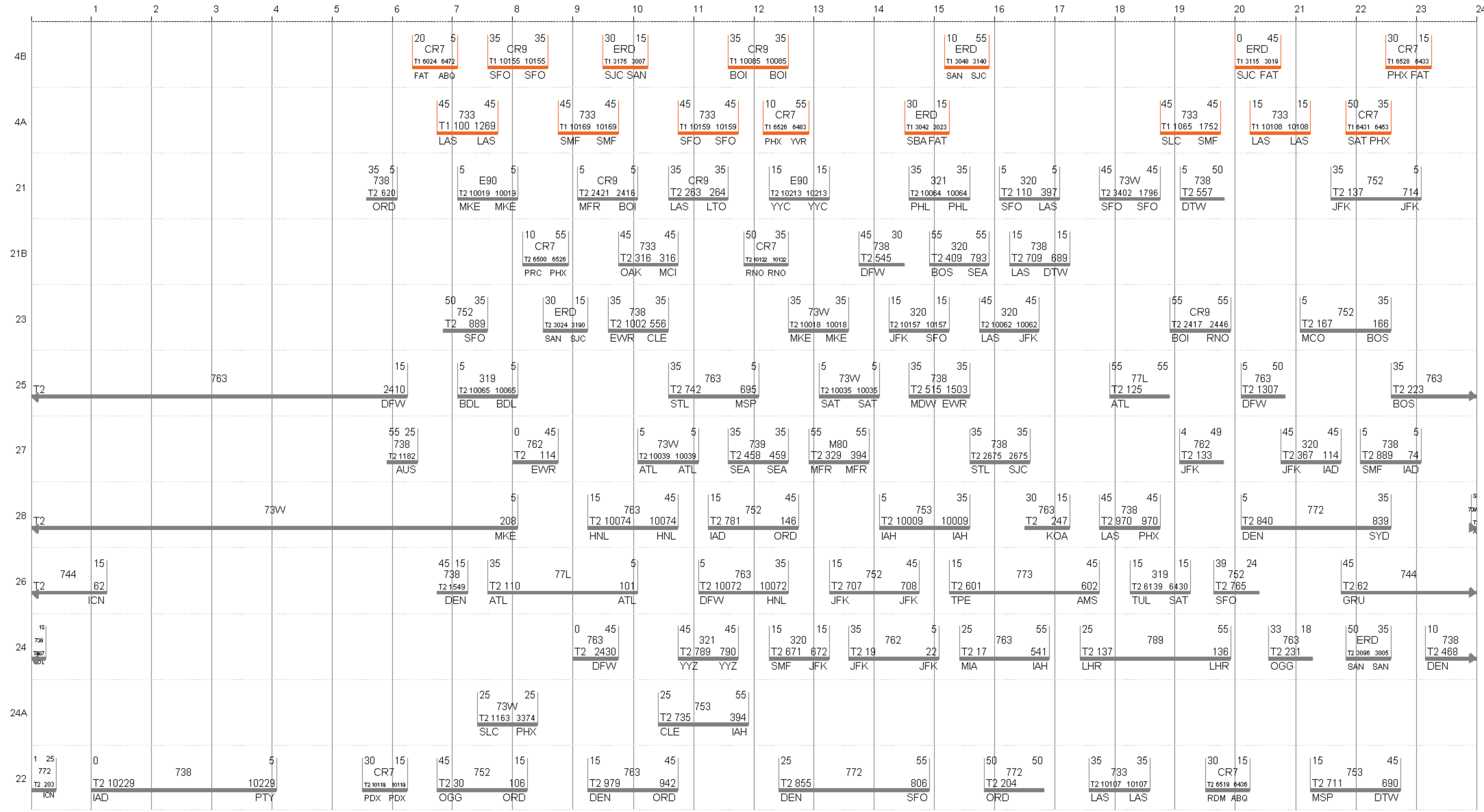


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 4 Ramp Chart

Figure
39

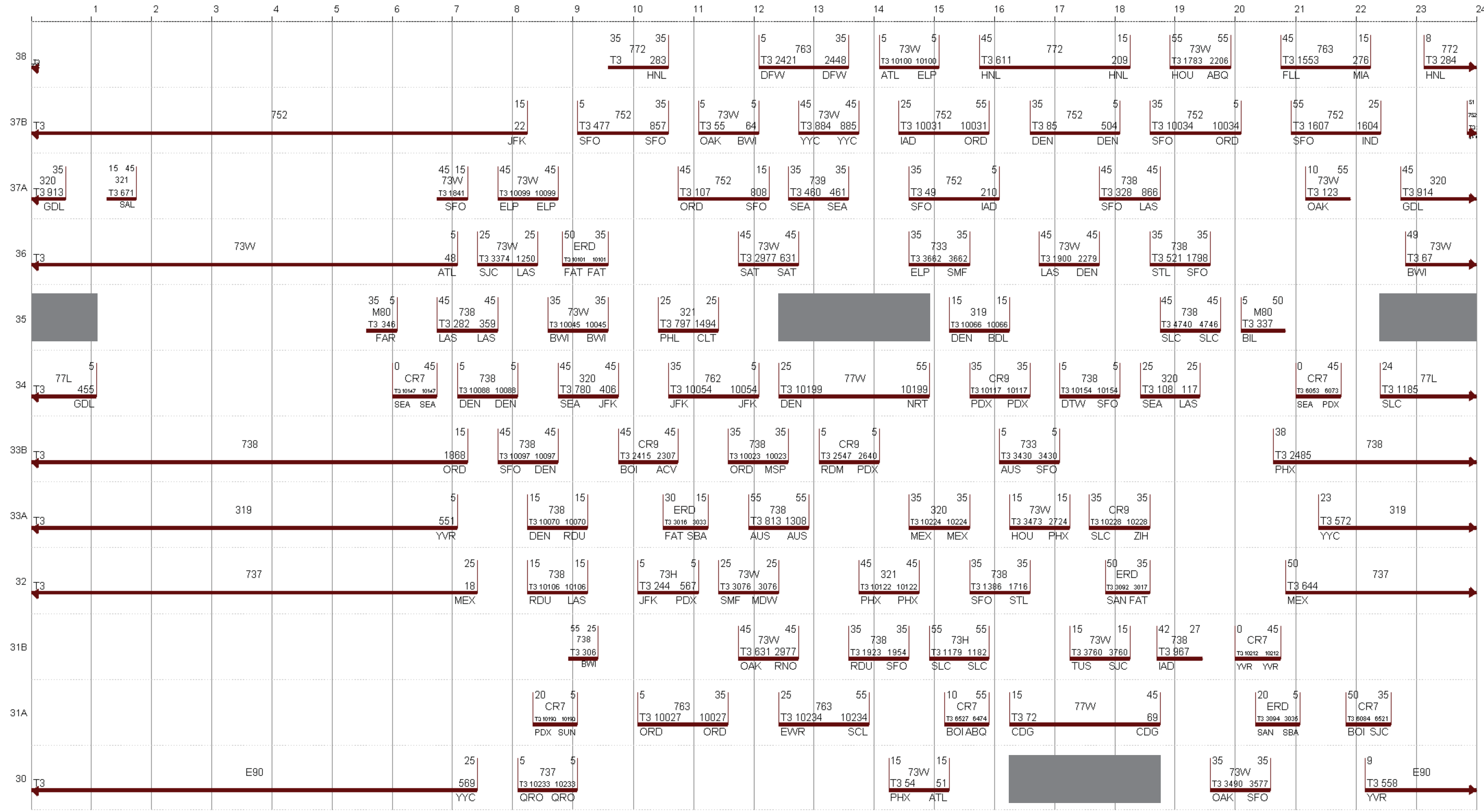


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 4 Ramp Chart

Figure
40

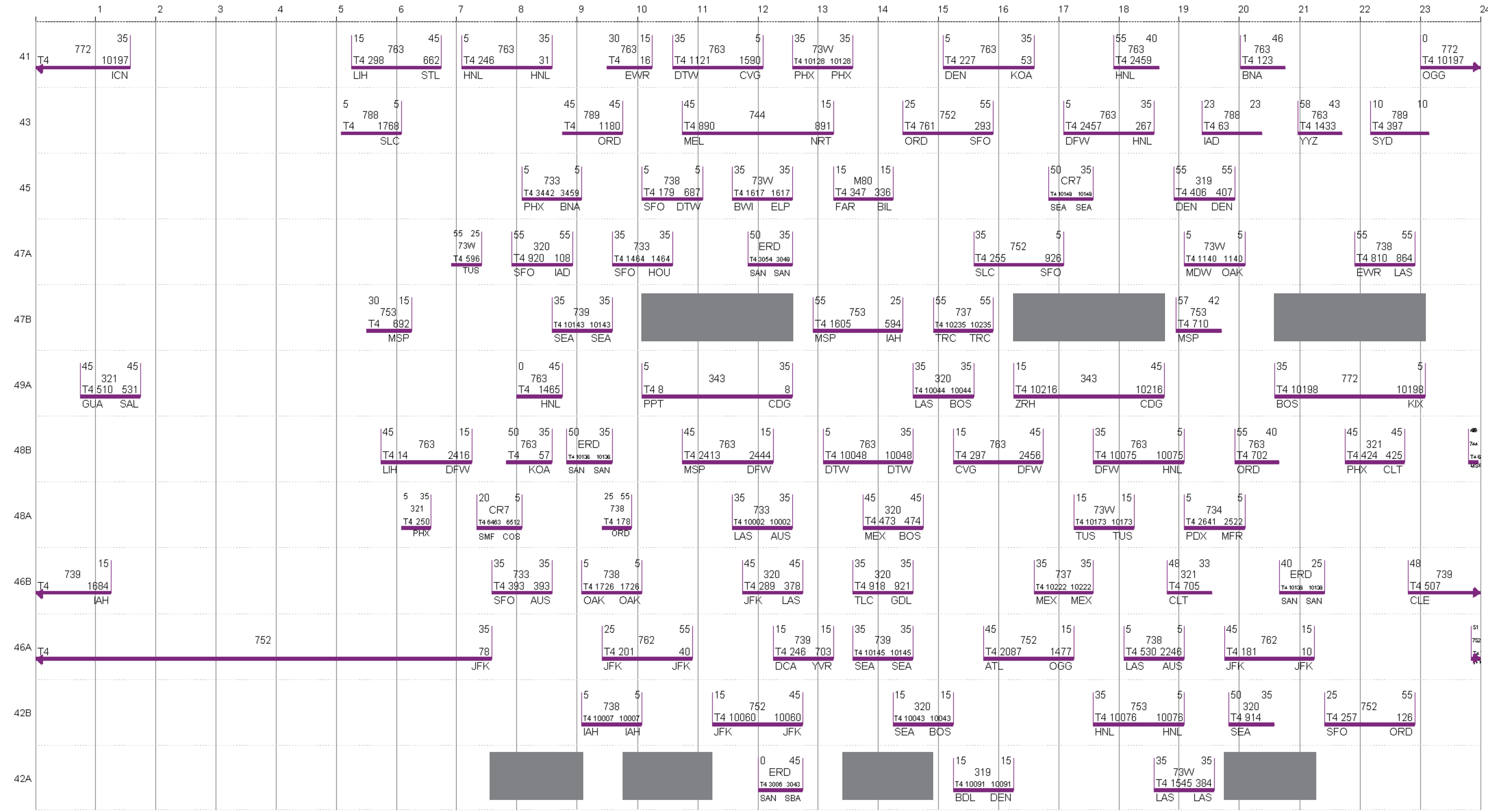


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 4 Ramp Chart

Figure 41

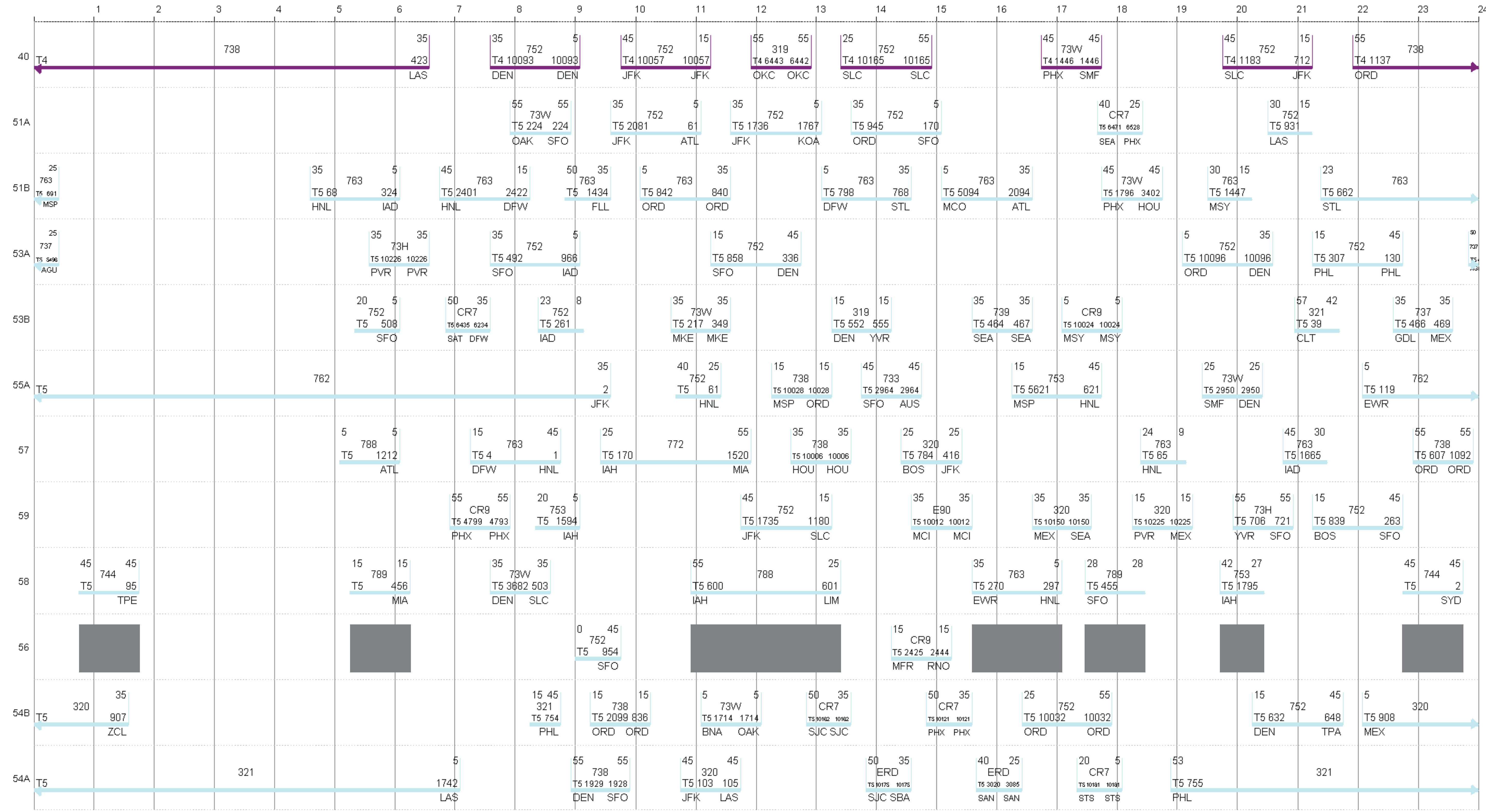


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 4 Ramp Chart

Figure
42

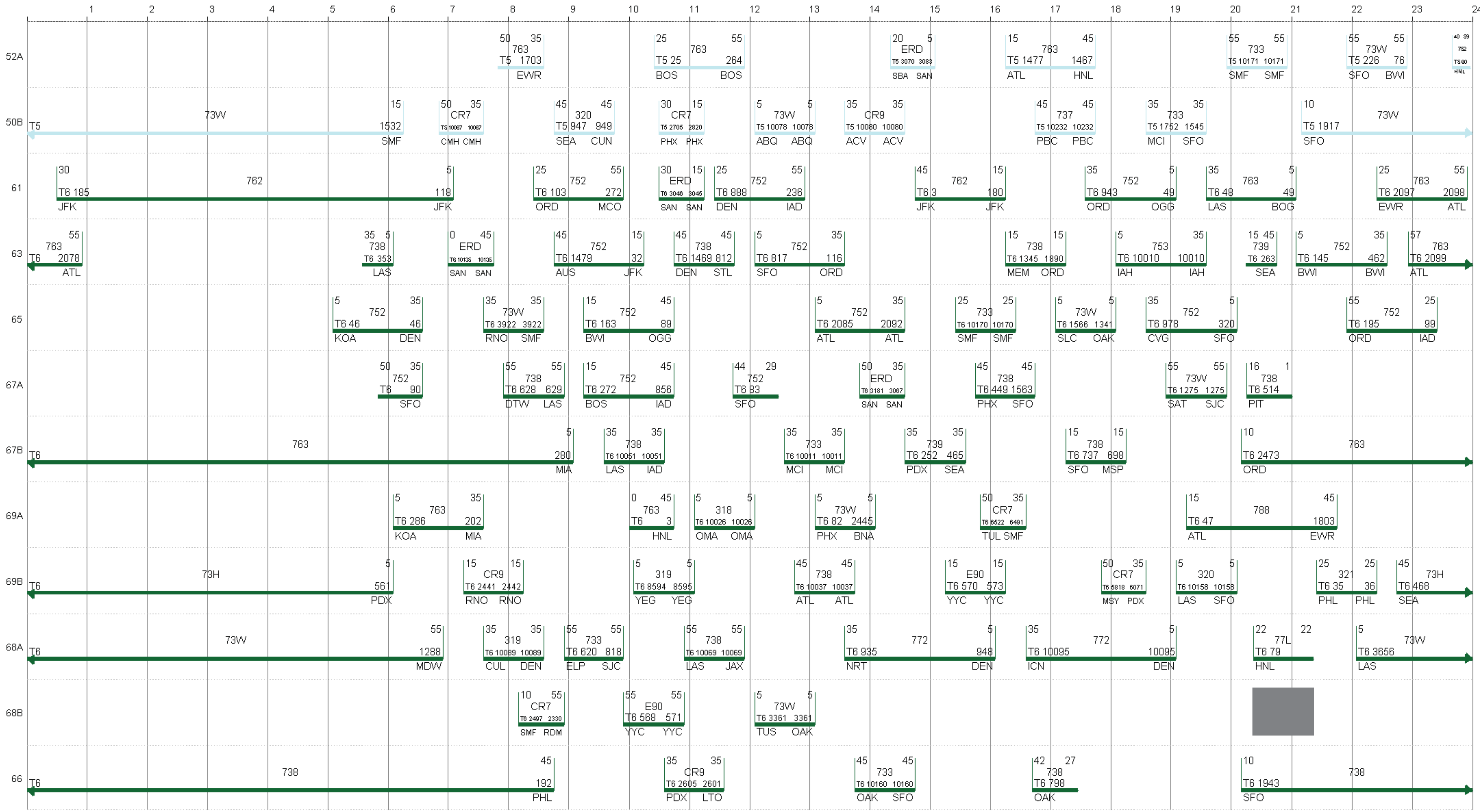


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 4 Ramp Chart

Figure
43

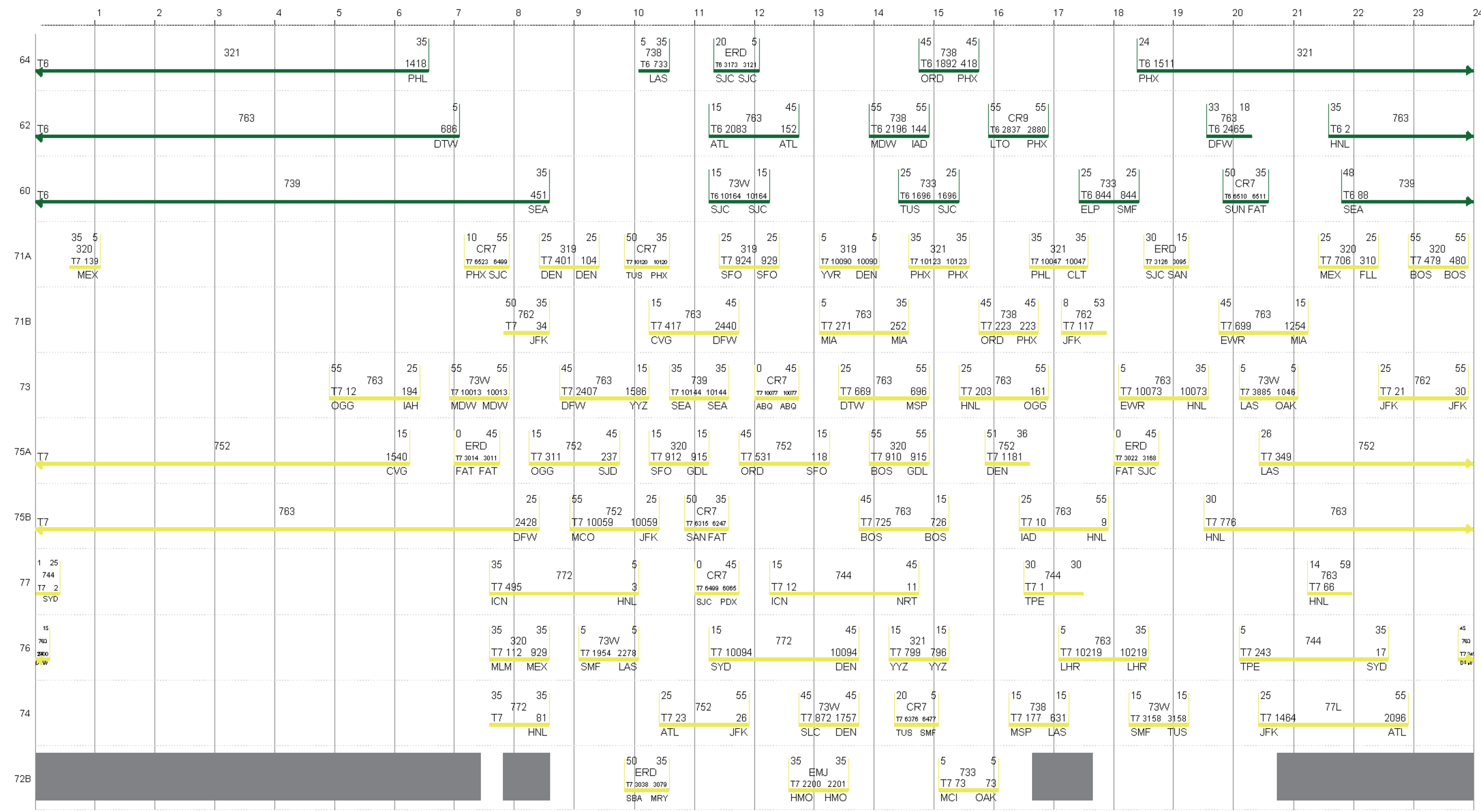


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

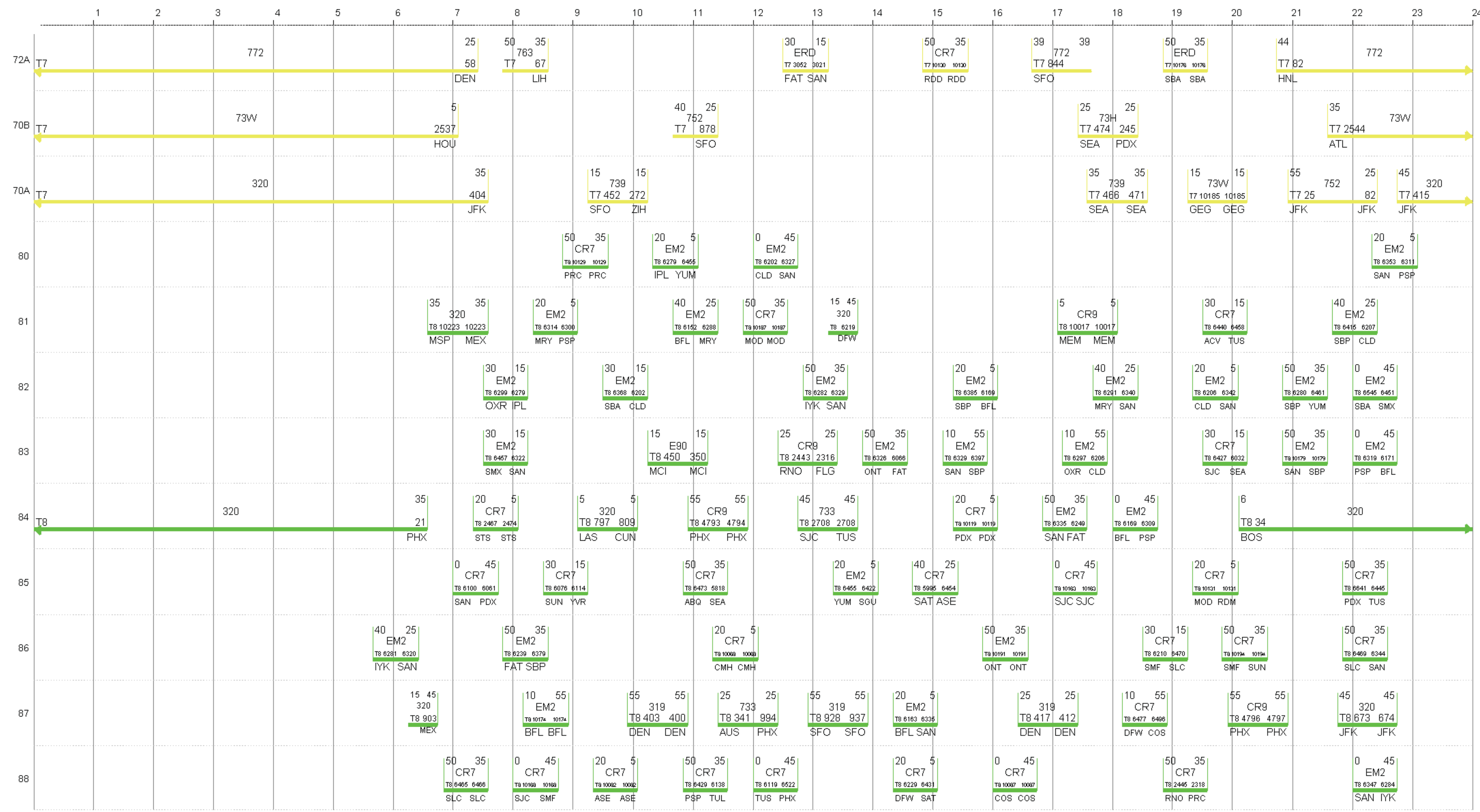
LAX SPAS Alternative 4 Ramp Chart

Figure
44



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.



Source: Ricondo & Associates, Inc., September 2011.
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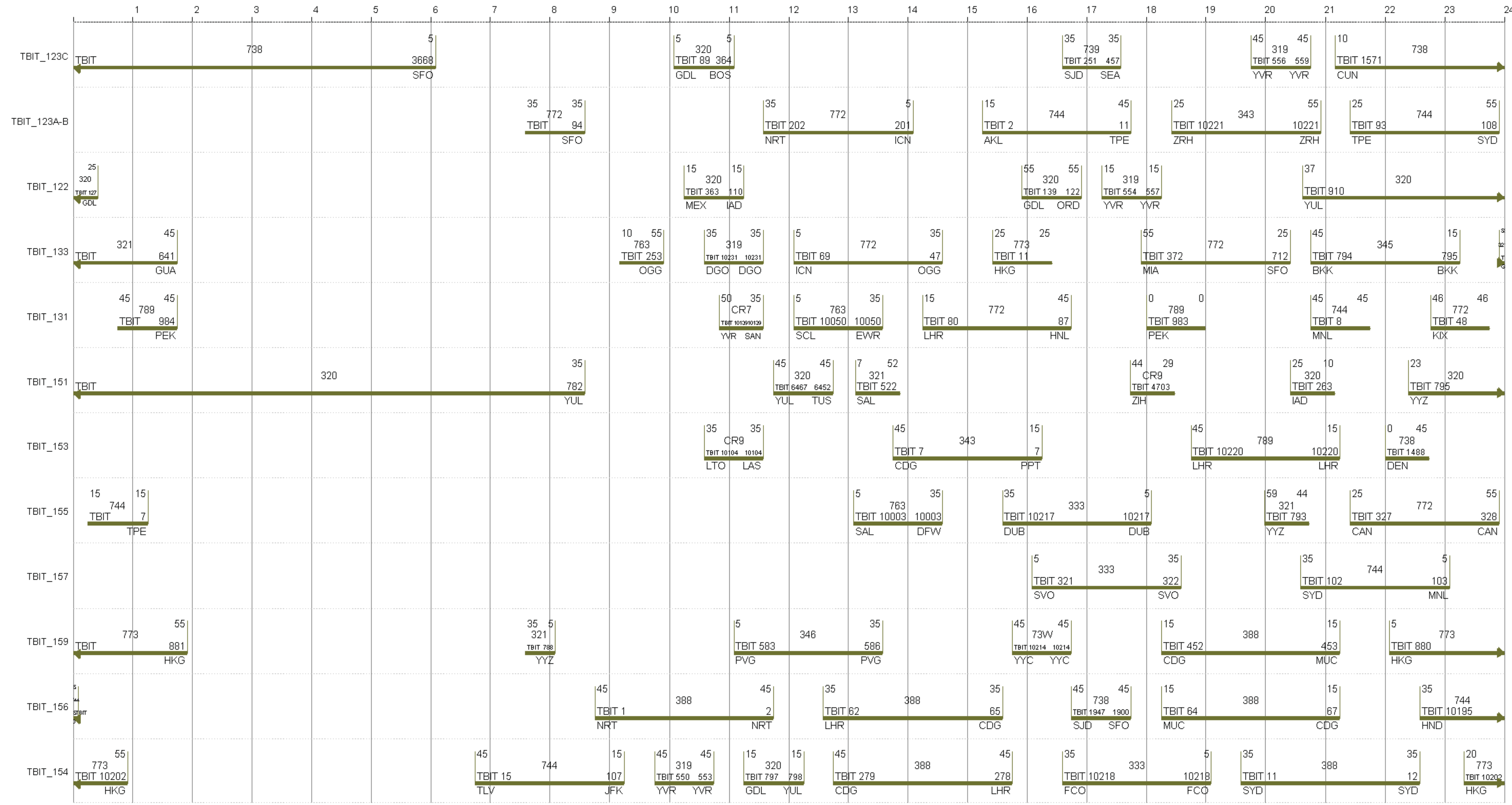
Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.



Source: Ricondo & Associates, Inc., September 2011.
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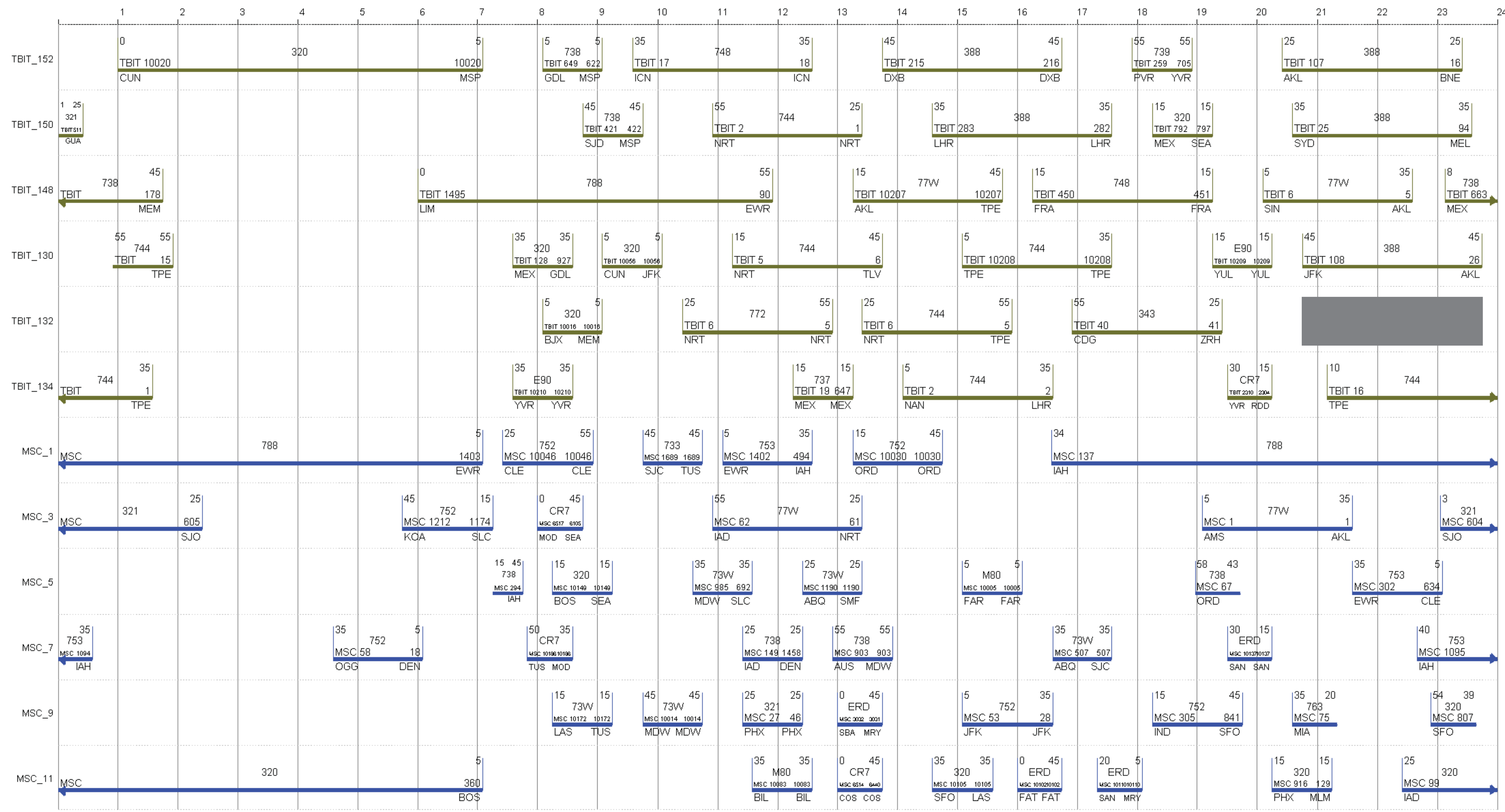

Source: Ricondo & Associates, Inc., September 2011.
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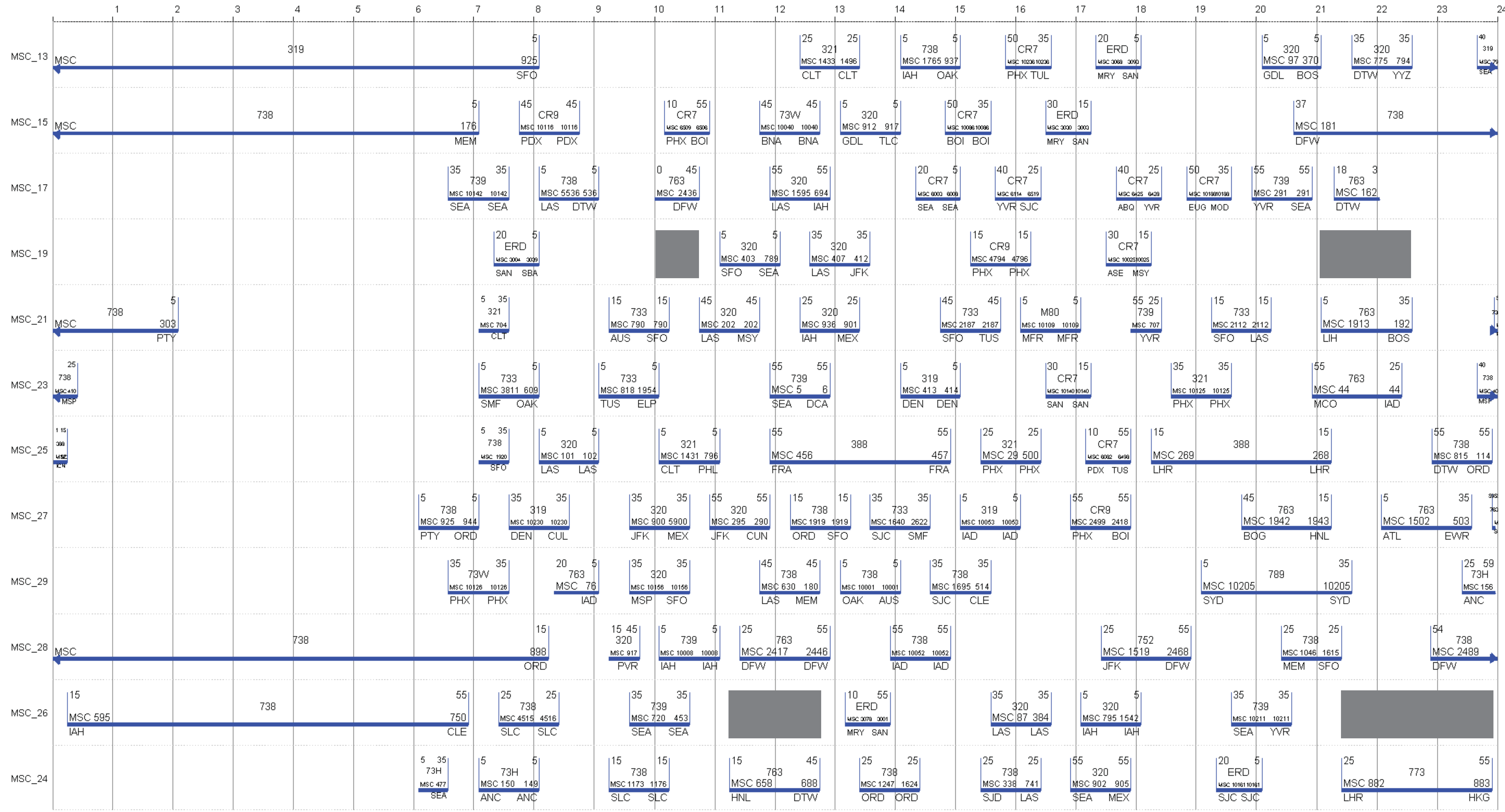
Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX Specific Plan Amendment Study Report	LAX SPAS Alternative 4 Ramp Chart	Figure 48

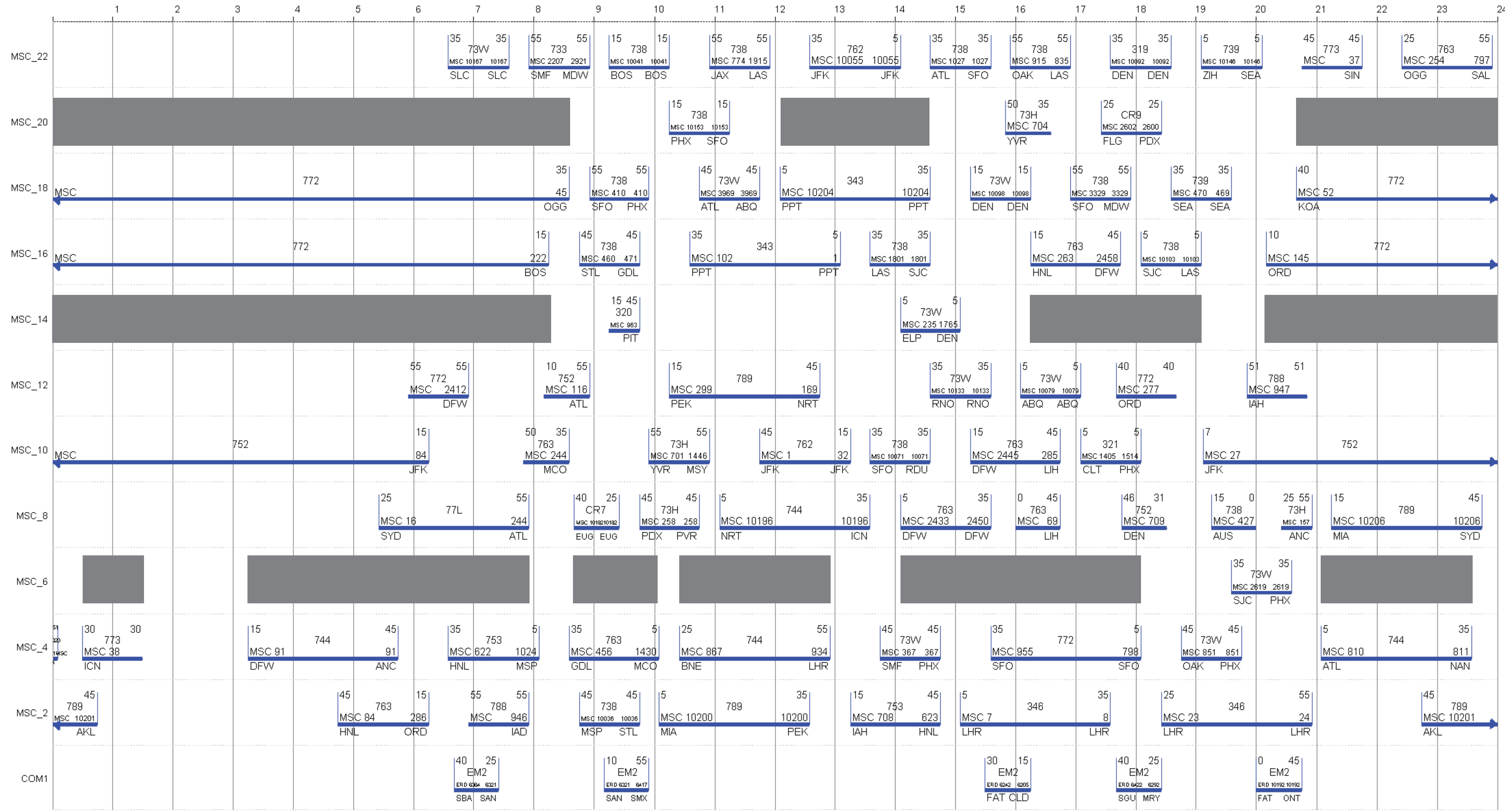


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 4 Ramp Chart

Figure
49

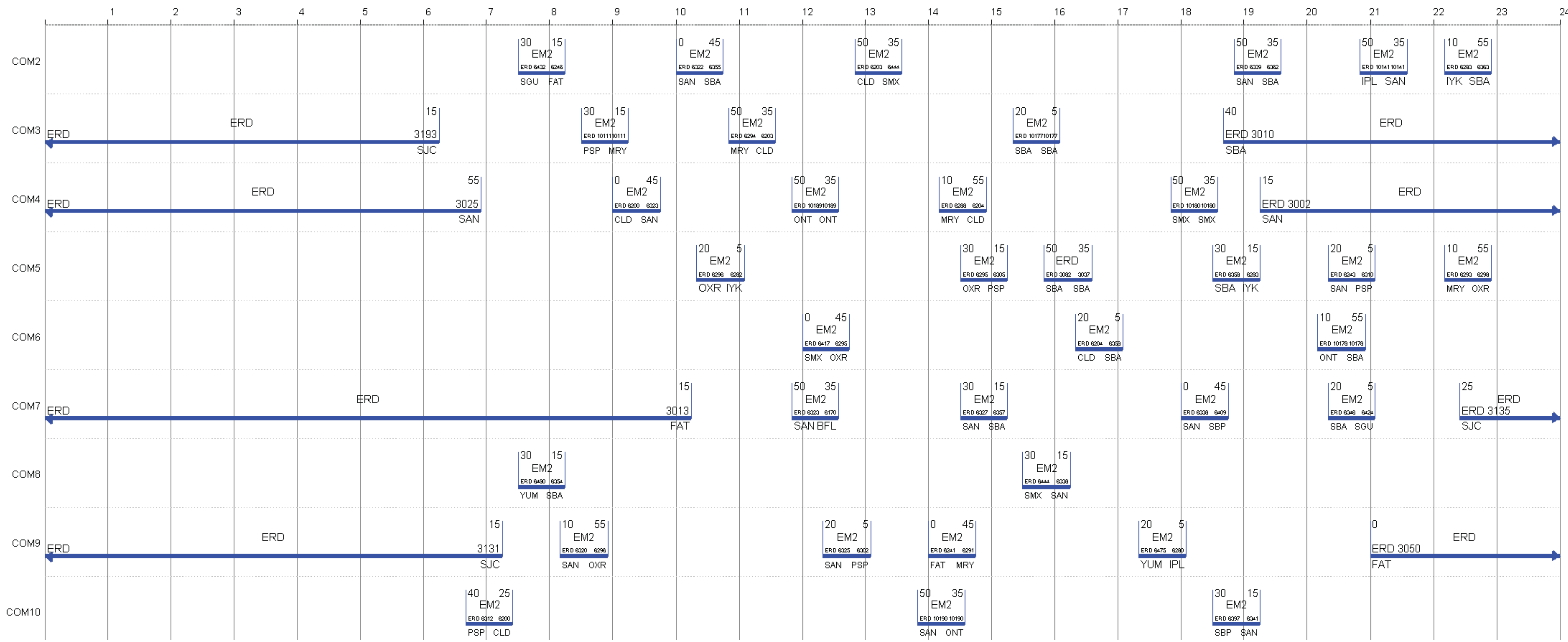


Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.

LAX SPAS Alternative 4 Ramp Chart

Figure
50



Source: Ricondo & Associates, Inc., September 2011.
Prepared by: Ricondo & Associates, Inc., September 2011.

Note: Although different assignments of flights could be considered, the ramp charts are meant to depict the results of one iteration in the gating model that allowed for all flights to be gated based on given assumptions.