SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

DRAFT

AIRCRAFT EMISSIONS INVENTORY

for South Coast Air Quality Management District

APRIL 2021

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1. Introduction

As part of the development of the 2022 Air Quality Management Plan (AQMP), the aircraft emissions inventory was evaluated and updated. Specifically, an updated aircraft emissions inventory was developed for the 2018 base year and 2023, 2031, and 2037 forecast years based on the latest available activity data and calculation methodologies. The inventory is presented herein for each airport by pollutant, including VOC, CO, NOx, SO2, PM10, and PM2.5. A comparison with aircraft emissions from the 2016 AQMP is presented in Appendix B.

2. Emissions Inventory Methodology

The overall methodology for estimating aircraft emissions involved: 1) identification of airports operating in the region, 2) collection of aircraft activity data from airports and FAA's databases and 3) application of FAA's Aviation Environmental Design Tool (AEDT) for airports with detailed aircraft activity data mainly for commercial air carrier/air taxi operations (i.e., number of operations by aircraft model). For most commercial airports, the detailed aircraft activity data did not include specific information regarding aircraft engine models. For these airports, for each aircraft type, an engine model was selected from the list of engines available in AEDT, generally selecting older engines for the base year and newer engines for future years, reflecting turnover in the aircraft fleet. The list of aircraft/engine combinations for the base and future years were then sent to each airport for review, validation, or correction of selected engines (to select the most common engine for each aircraft type for each airport). The selected engine models are provided in Appendix C. Specific mixing heights and airport-provided taxi times were also applied in the AEDT model. Only emissions up to the mixing height are considered in this analysis. The mixing height is defined as the maximum altitude of the mixed layer, a region of the lower troposphere where vigorous dispersion of pollutants occurs. The mixing height varies depending on temperature, convection, and other meteorological factors. Aircraft operational modes that occur below the mixing height include startup, taxi-out, takeoff, climb below mixing height, descent below mixing height, and taxi-in. Finally, the APU default assignments and usage times for each aircraft model in AEDT were utilized.

A reconciliation process was developed to address aircraft operations lacking detailed aircraft activity data. This was either because the airport did not provide detailed data or because the detailed data did not account for all operations when compared to the total aircraft operations by major aircraft type in FAA's databases. Emissions for these operations were quantified using EPA's average emission factors by major aircraft type

(i.e., commercial air carrier, air taxi, general aviation, and military).[1] For air taxi and general aviation (GA), the average piston/jet engine ratios from FAA's survey data were assumed. EPA's average emission factors along with FAA's engine type survey data are provided in Appendix A.

2.1. List of Airports

The list of airports identified in the previous aircraft inventory study was used as the basis for this inventory update.[2] Of the 43 airports included in the previous study, two permanently closed (Pines Airpark and Rialto-Miro Municipal). The remaining 41 airports are listed in Table 1.

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[1] 2017 National Emissions Inventory: Aviation Component, Appendix C, July 2019.
[2] South Coast Air Quality Management District, Aircraft Emissions Inventory for 2012 and 2040, August 2016.

Table 1. Airports in South Coast Air Quality Management District.

FAA ID	Facility Name	County	Owner[1]	Longitude	Latitude
L70	Agua Dulce Airpark	Los Angeles	PR/PU	-118.315	34.503
BNG	Banning Municipal Airport	Riverside	PU	-116.851	33.923
UDD	Bermuda Dunes	Riverside	PR/PU	-116.275	33.748
L35	Big Bear City	San Bernardino	PU	-116.854	34.264
BUR	Bob Hope Airport	Los Angeles	PU	-118.359	34.201
POC	Brackett Field	Los Angeles	PU	-117.782	34.092
CCB	Cable	San Bernardino	PR	-117.688	34.112
AVX	Catalina	Los Angeles	PR/PU	-118.416	33.405
CNO	Chino	San Bernardino	PU	-117.637	33.975
L77	Chiriaco Summit	Riverside	PU	-115.711	33.665
CPM	Compton/Woodley	Los Angeles	PU	-118.244	33.89
AJO	Corona Municipal Airport	Riverside	PU	-117.602	33.898
63CA	Desert Air Sky Ranch	Riverside	PR	-115.874	33.481
L64	Desert Center	Riverside	PU	-115.323	33.749
EMT	El Monte	Los Angeles	PU	-118.035	34.086
86CL	Ernst Field	Riverside	PR	-116.883	33.597
RIR	Flabob	Riverside	PR	-117.411	33.99
F70	French Valley	Riverside	PU	-117.128	33.576
FUL	Fullerton Municipal Airport	Orange	PU	-117.98	33.872
HMT	Hemet-Ryan	Riverside	PU	-117.023	33.734
HHR	Jack Northrop Field/Hawthorne Muni	Los Angeles	PU	-118.335	33.923
TRM	Jacqueline Cochran Regional Airport	Riverside	PU	-116.16	33.627
SNA	John Wayne Airport	Orange	PU	-117.868	33.676
54CL	Lake Riverside Estates	Riverside	PR	-116.797	33.521
LGB	Long Beach Airport	Los Angeles	PU	-118.152	33.818
SLI	Los Alamitos Army Air Base	Orange	MR	-118.052	33.79
LAX	Los Angeles International Airport	Los Angeles	PU	-118.408	33.943
RIV	March Air Force Base	Riverside	MA	-117.26	33.881
ONT	Ontario International Airport	San Bernardino	PU	-117.601	34.056
PSP	Palm Springs International Airport	Riverside	PU	-116.507	33.83
L65	Perris Valley	Riverside	PR	-117.218	33.761
CL46	Quail Lake Sky Park	Los Angeles	PR	-118.732	34.768
REI	Redlands Municipal Airport	San Bernardino	PU	-117.146	34.085
RAL	Riverside Municipal	Riverside	PU	-117.445	33.952
SBD	San Bernardino International Airport	San Bernardino	PU	-117.235	34.095
NUC	San Clemente Island Naval Air Station	Orange	MN	-118.587	33.023
SMO	Santa Monica Municipal Airport	Los Angeles	PU	-118.451	34.016
CA89	Skylark Field	Riverside	PR	-117.303	33.63
VNY	Van Nuys	Los Angeles	PU	-118.49	34.21
WHP	Whiteman	Los Angeles	PU	-118.413	34.259
TOA	Zamperini Field	Los Angeles	PU	-118.34	33.803

[1]PU = Public; PR = Private; MR = Military (Army); MA = Military (Air Force); MN = Military (Navy)

2.2. 2018 Aircraft Activity Data

The 2018 total number of aircraft operations by airport for air carrier, air taxi, GA, and military aircraft was obtained from FAA's databases (ATADS, TAF, and GCR).[3] The commercial airports[4] were contacted for detailed aircraft activity data for 2018 and were also requested to review the 2018 aircraft activity data (i.e., by aircraft model) retrieved from the Bureau of Transportation Statistics Form 41, Schedule T-100.[5] Two airports (LAX and Long Beach) provided their own aircraft operations and emissions. John Wayne, Burbank, Ontario, and Palm Springs Airports provided detailed aircraft activity data for 2018. San Bernardino Airport provided detailed aircraft data for 2017, which was assumed to be representative of the 2018 base year as the expanded cargo operations had not yet commenced.

Table 2 lists the airport-specific taxi times and mixing heights for commercial airports. Table 3 lists the total number of operations by major aircraft type and the corresponding data source(s) for each airport.

Table 2. Airport taxi times and mixing heights.

Airport	Taxi time (min)[1]		Mixing height (feet)
	In	Out	
LAX (2018)	12.18	19.24	1,800
LAX (2023)	13.26	21.01	1,800
LAX (2031)	15.76	24.97	1,800
LAX (2037)	17.91	28.39	1,800
LGB	4.39	13.17	1,800
SNA	5.75	9.63	1,900
BUR (pre-terminal)[2]	1.25	4.67	2,500
BUR (post-terminal)[3]	2.49	2.97	2,500
PSP	5	5	4,000
ONT	3.5	3.5	3,000
SBD	Default	Default	3,500

[1]For airports other than LAX and BUR, the taxi time is assumed to remain constant
[2]Pre-terminal replacement taxi times used for 2018 and 2023
[3]Post-terminal replacement taxi times used for 2031 and 2037

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[3] Federal Aviation Administration, Air Traffic Activity Data System (ATADS). https://aspm.faa.gov/opsnet/sys/Main.asp?force=atads
Federal Aviation Administration, Terminal Area Forecast (TAF). https://aspm.faa.gov/main/taf.asp
GCR Inc. https://www.airportiq5010.com/5010web/
[4] Commercial airports are Los Angeles International, Burbank, Ontario, Long Beach, Palm Springs, John Wayne, and San Bernardino
[5] Bureau of Transportation Statistics. http://www.transtats.bts.gov/

Table 3. Total operations by airport for 2018.

Facility Name	Air Carrier	Air Taxi	GA	Military	Total	Data Source
Agua Dulce Airpark	0	0	720	0	720	GCR
Banning Municipal Airport	0	0	3,624	0	3,624	TAF
Bermuda Dunes	0	0	14,000	30	14,030	GCR
Big Bear City	0	0	28,000	0	28,000	TAF
Bob Hope Airport	53,678	22,509	55,118	718	132,023	BTS/ATADS
Brackett Field	76	566	85,471	82	86,195	ATADS
Cable	0	0	92,189	0	92,189	TAF
Catalina	0	2,266	14,157	50	16,473	GCR
Chino	43	517	202,628	416	203,604	ATADS
Chiriaco Summit	0	0	6,000	0	6,000	GCR
Compton/Woodley	0	0	66,000	0	66,000	TAF
Corona Municipal Airport	0	0	50,000	0	50,000	TAF
Desert Air Sky Ranch	0	0	0	0	0	GCR
Desert Center	0	0	150	0	150	GCR
El Monte	0	0	85,807	0	85,807	ATADS
Ernst Field	0	0	0	0	0	TAF/GCR
Flabob	0	0	11,100	0	11,100	GCR
French Valley	0	0	62,733	0	62,733	TAF
Fullerton Municipal Airport	0	133	68,603	66	68,802	ATADS
Hemet-Ryan	0	0	75,444	0	75,444	TAF
Jack Northrop Field/Hawthorne Muni	12	7,086	69,738	88	76,924	ATADS
Jacqueline Cochran Regional Airport	0	500	75,000	1,000	76,500	TAF
John Wayne Airport	92,807	18,599	222,270	757	334,433	Airport/ATADS
Lake Riverside Estates	0	0	0	0	0	TAF/GCR
Long Beach Airport	34,820	8,220	212,351	863	256,254	Airport/ATADS
Los Alamitos Army Air Base	0	162	6,094	12,190	18,446	2016 AQMP
Los Angeles International Airport	649,092	40,310	17,940	491	707,833	Airport/ATADS
March Air Force Base	1,772	0	5,154	5,870	12,796	Airport
Ontario International Airport	74,348	13,397	16,499	334	104,578	Airport/ATADS
Palm Springs International Airport	21,228	10,872	23,788	1,626	57,514	Airport/ATADS
Perris Valley	0	0	27,500	50	27,550	GCR
Quail Lake Sky Park	0	0	0	0	0	TAF/GCR
Redlands Municipal Airport	0	0	44,000	0	44,000	TAF
Riverside Municipal	0	2,378	102,782	368	105,528	ATADS
San Bernardino International Airport	751	2,065	59,887	1,761	64,464	Airport
San Clemente Island Naval Air Station	4,330	0	1,437	5,034	10,801	Airport
Santa Monica Municipal Airport	5	3,935	68,197	96	72,233	ATADS
Skylark Field	0	0	0	0	0	TAF/GCR
Van Nuys	196	27,365	227,599	690	255,850	Airport/ATADS
Whiteman	0	7	82,774	0	82,781	ATADS
Zamperini Field	0	574	110,463	63	111,100	ATADS
Total Operations	933,158	161,461	2,295,217	32,643	3,422,479	

2.3.　2023, 2031, and 2037 Activity Data

FAA's TAF was used to forecast aircraft operations unless the airport provided its own projections or the airport was not covered by TAF. In the latter case, which mainly affected smaller GA airports, operations were carried over from the base year and held constant. Tables 4 - 6 provide the operations by major aircraft type for each airport in 2023, 2031, and 2037, respectively, along with the corresponding data source(s).

Table 4. Total aircraft operations by airport for 2023.

Facility Name	Air Carrier	Air Taxi	GA	Military	Total	Data Source
Agua Dulce Airpark	0	0	720	0	720	TAF
Banning Municipal Airport	0	0	3,624	0	3,624	TAF
Bermuda Dunes	0	0	14,000	30	14,030	TAF
Big Bear City	0	0	28,000	2,000	30,000	TAF
Bob Hope Airport	76,893	22,839	58,624	504	158,860	Airport/TAF
Brackett Field	59	542	81,715	132	82,448	TAF
Cable	0	0	92,189	0	92,189	TAF
Catalina	0	2,266	14,157	50	16,473	TAF
Chino	27	463	210,194	1,268	211,952	TAF
Chiriaco Summit	0	0	6,000	0	6,000	TAF
Compton/Woodley	0	0	66,000	0	66,000	TAF
Corona Municipal Airport	0	0	50,000	0	50,000	TAF
Desert Air Sky Ranch	0	0	0	0	0	TAF
Desert Center	0	0	150	0	150	TAF
El Monte	1	217	88,418	51	88,687	TAF
Ernst Field	0	0	0	0	0	TAF
Flabob	0	0	11,100	0	11,100	TAF
French Valley	0	0	62,733	47	62,780	TAF
Fullerton Municipal Airport	3	105	69,556	85	69,749	TAF
Hemet-Ryan	0	0	75,444	0	75,444	TAF
Jack Northrop Field/Hawthorne Muni	3	4,469	71,303	260	76,035	TAF
Jacqueline Cochran Regional Airport	0	500	75,000	1,000	76,500	TAF
John Wayne Airport	89,810	16,117	218,748	934	325,609	Airport/TAF
Lake Riverside Estates	0	0	0	0	0	TAF
Long Beach Airport	37,037	8,583	254,229	663	300,512	Airport/TAF
Los Alamitos Army Air Base	0	162	6,094	12,190	18,446	2016 AQMP
Los Angeles International Airport	698,942	29,851	18,804	403	748,000	Airport/TAF
March Air Force Base	1,772	0	5,154	5,870	12,796	TAF
Ontario International Airport	96,422	8,177	6,069	291	110,959	Airport/TAF
Palm Springs International Airport	26,615	11,932	24,182	1,316	64,045	TAF
Perris Valley	0	0	27,500	50	27,550	TAF
Quail Lake Sky Park	0	0	0	0	0	TAF
Redlands Municipal Airport	0	0	44,000	0	44,000	TAF
Riverside Municipal	0	2,378	102,782	368	105,528	TAF
San Bernardino International Airport	17,729	2,180	63,204	1,859	84,972	Airport
San Clemente Island Naval Air Station	4,665	0	1,548	5,423	11,636	Airport
Santa Monica Municipal Airport	0	3,948	70,071	96	74,115	TAF
Skylark Field	0	0	0	0	0	TAF
Van Nuys	95	29,932	189,976	532	220,535	TAF
Whiteman	107	4	84,637	11	84,759	TAF
Zamperini Field	0	654	119,057	99	119,810	TAF
Total Operations	1,050,179	145,319	2,314,982	35,532	3,546,013	

Table 5. Total aircraft operations by airport for 2031.

Facility Name	Air Carrier	Air Taxi	GA	Military	Total	Data Source
Agua Dulce Airpark	0	0	720	0	720	TAF
Banning Municipal Airport	0	0	3,624	0	3,624	TAF
Bermuda Dunes	0	0	14,000	30	14,030	TAF
Big Bear City	0	0	28,000	2,000	30,000	TAF
Bob Hope Airport	88,324	24,494	62,343	504	175,665	Airport/TAF
Brackett Field	59	542	83,123	132	83,856	TAF
Cable	0	0	92,189	0	92,189	TAF
Catalina	0	2,266	14,157	50	16,473	TAF
Chino	27	463	210,194	1,268	211,952	TAF
Chiriaco Summit	0	0	6,000	0	6,000	TAF
Compton/Woodley	0	0	66,000	0	66,000	TAF
Corona Municipal Airport	0	0	50,000	0	50,000	TAF
Desert Air Sky Ranch	0	0	0	0	0	TAF
Desert Center	0	0	150	0	150	TAF
El Monte	1	217	91,125	51	91,394	TAF
Ernst Field	0	0	0	0	0	TAF
Flabob	0	0	11,100	0	11,100	TAF
French Valley	0	0	62,733	47	62,780	TAF
Fullerton Municipal Airport	3	105	71,756	85	71,949	TAF
Hemet-Ryan	0	0	75,444	0	75,444	TAF
Jack Northrop Field/Hawthorne Muni	3	4,838	74,192	260	79,293	TAF
Jacqueline Cochran Regional Airport	0	500	75,000	1,000	76,500	TAF
John Wayne Airport	95,369	17,004	222,756	934	336,063	Airport/TAF
Lake Riverside Estates	0	0	0	0	0	TAF
Long Beach Airport	41,938	9,294	255,889	663	307,784	Airport/TAF
Los Alamitos Army Air Base	0	162	6,094	12,190	18,446	2016 AQMP
Los Angeles International Airport	768,714	27,850	18,080	356	815,000	Airport/TAF
March Air Force Base	1,772	0	5,154	5,870	12,796	TAF
Ontario International Airport	127,437	11,613	7,006	291	146,347	Airport/TAF
Palm Springs International Airport	34,596	13,792	24,414	1,316	74,118	TAF
Perris Valley	0	0	27,500	50	27,550	TAF
Quail Lake Sky Park	0	0	0	0	0	TAF
Redlands Municipal Airport	0	0	44,000	0	44,000	TAF
Riverside Municipal	0	2,378	102,782	368	105,528	TAF
San Bernardino International Airport	18,879	2,321	67,305	1,980	90,485	Airport
San Clemente Island Naval Air Station	5,255	0	1,744	6,109	13,108	Airport
Santa Monica Municipal Airport	0	4,278	70,071	96	74,445	TAF
Skylark Field	0	0	0	0	0	TAF
Van Nuys	95	35,079	189,976	532	225,682	TAF
Whiteman	107	4	84,637	11	84,759	TAF
Zamperini Field	0	654	119,057	99	119,810	TAF
Total Operations	1,182,579	157,854	2,338,315	36,291	3,715,039	

Table 6. Total aircraft operations by airport for 2037.

Facility Name	Air Carrier	Air Taxi	GA	Military	Total	Data Source
Agua Dulce Airpark	0	0	720	0	720	TAF
Banning Municipal Airport	0	0	3,624	0	3,624	TAF
Bermuda Dunes	0	0	14,000	30	14,030	TAF
Big Bear City	0	0	28,000	2,000	30,000	TAF
Bob Hope Airport	98,991	25,997	65,305	504	190,797	Airport/TAF
Brackett Field	59	542	84,200	132	84,933	TAF
Cable	0	0	92,189	0	92,189	TAF
Catalina	0	2,266	14,157	50	16,473	TAF
Chino	27	463	210,194	1,268	211,952	TAF
Chiriaco Summit	0	0	6,000	0	6,000	TAF
Compton/Woodley	0	0	66,000	0	66,000	TAF
Corona Municipal Airport	0	0	50,000	0	50,000	TAF
Desert Air Sky Ranch	0	0	0	0	0	TAF
Desert Center	0	0	150	0	150	TAF
El Monte	1	217	93,216	51	93,485	TAF
Ernst Field	0	0	0	0	0	TAF
Flabob	0	0	11,100	0	11,100	TAF
French Valley	0	0	62,733	47	62,780	TAF
Fullerton Municipal Airport	3	105	73,458	85	73,651	TAF
Hemet-Ryan	0	0	75,444	0	75,444	TAF
Jack Northrop Field/Hawthorne Muni	3	5,133	76,433	260	81,829	TAF
Jacqueline Cochran Regional Airport	0	500	75,000	1,000	76,500	TAF
John Wayne Airport	95,369	17,004	225,815	934	339,122	Airport/TAF
Lake Riverside Estates	0	0	0	0	0	TAF
Long Beach Airport	46,544	9,867	257,143	663	314,217	Airport/TAF
Los Alamitos Army Air Base	0	162	6,094	12,190	18,446	2016 AQMP
Los Angeles International Airport	791,472	26,872	16,846	310	835,500	Airport/TAF
March Air Force Base	1,772	0	5,154	5,870	12,796	TAF
Ontario International Airport	160,075	15,406	7,770	291	183,542	Airport/TAF
Palm Springs International Airport	41,103	15,346	24,588	1,316	82,353	TAF
Perris Valley	0	0	27,500	50	27,550	TAF
Quail Lake Sky Park	0	0	0	0	0	TAF
Redlands Municipal Airport	0	0	44,000	0	44,000	TAF
Riverside Municipal	0	2,378	102,782	368	105,528	TAF
San Bernardino International Airport	19,046	2,342	67,899	1,997	91,285	Airport
San Clemente Island Naval Air Station	5,746	0	1,907	6,680	14,332	Airport
Santa Monica Municipal Airport	0	4,542	70,071	96	74,709	TAF
Skylark Field	0	0	0	0	0	TAF
Van Nuys	95	39,506	189,976	532	230,109	TAF
Whiteman	107	4	84,637	11	84,759	TAF
Zamperini Field	0	654	119,057	99	119,810	TAF
Total Operations	1,260,413	169,306	2,353,162	36,834	3,819,715	

3. Emissions Inventory

Tables 7 - 10 present the 2018, 2023, 2031, and 2037 aircraft emissions by pollutant for all airports. The 2018 base year and future year AEDT runs were performed for Burbank, Ontario, John Wayne, and San Bernardino Airports based on airport-provided 2018 operations and future forecasts. The same reconciliation process described for the base year was applied to future years based on FAA's TAF, except for Palm Springs, John Wayne, and San Bernardino Airports. LAX and Long Beach Airport provided emissions for the base and future years.

AEDT emissions for Palm Springs in 2018 were scaled based on Air Carrier and Air Taxi operations in FAA's TAF for future years. Future Air Carrier and Air Taxi operations at John Wayne Airport were constrained by the airport's 2014 settlement agreement.[6] San Bernardino Airport's emissions were calculated based on the information available in the airport's cargo expansion environmental assessment report.[7] Base year emissions were calculated based on 2017 detailed aircraft activity data. AEDT emissions for 2023 were determined by linear interpolation of the 2019 and 2024 activity data. Finally, 2031 and 2037 emissions were scaled based on total operations forecasts provided in Appendix F of the environmental assessment. Figure 1 provides a summary of total emissions by pollutant for all inventoried years.

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[6] 2014 Settlement Agreement Amendment. https://www.ocair.com/communityrelations/settlementagreement/
[7] SBD Eastgate Air Cargo Final EA. www.sbiaa.org

Table 7. 2018 aircraft emissions (tons per year) by airport.

Facility Name	VOC	CO	NOx	SO2	PM10	PM2.5
Agua Dulce Airpark	0.06	2.02	0.03	0.01	0.04	0.03
Banning Municipal Airport	0.30	10.16	0.14	0.03	0.21	0.17
Bermuda Dunes	1.23	39.43	0.69	0.12	0.84	0.66
Big Bear City	2.30	78.47	1.05	0.22	1.66	1.30
Bob Hope Airport	110.00	1,211.00	188.00	41.00	4.00	4.00
Brackett Field	7.48	241.49	4.12	0.76	5.19	4.09
Cable	7.57	258.36	3.47	0.71	5.46	4.28
Catalina	1.80	43.99	1.20	0.22	1.20	0.99
Chino	17.94	571.72	10.23	1.83	12.23	9.63
Chiriaco Summit	0.49	16.82	0.23	0.05	0.36	0.28
Compton/Woodley	5.42	184.97	2.48	0.51	3.91	3.06
Corona Municipal Airport	4.10	140.13	1.88	0.39	2.96	2.32
Desert Air Sky Ranch	0.00	0.00	0.00	0.00	0.00	0.00
Desert Center	0.01	0.42	0.01	0.00	0.01	0.01
El Monte	7.04	240.48	3.23	0.66	5.08	3.98
Ernst Field	0.00	0.00	0.00	0.00	0.00	0.00
Flabob	0.91	31.11	0.42	0.09	0.66	0.52
French Valley	5.15	175.81	2.36	0.49	3.71	2.91
Fullerton Municipal Airport	5.84	192.92	2.97	0.57	4.10	3.23
Hemet-Ryan	6.19	211.43	2.84	0.58	4.47	3.50
Jack Northrop Field/Hawthorne Muni	7.56	208.56	4.39	0.84	5.23	4.27
Jacqueline Cochran Regional Airport	8.98	217.56	8.49	1.13	4.86	3.89
John Wayne Airport	101.25	1,037.85	368.05	38.44	21.92	18.95
Lake Riverside Estates	0.00	0.00	0.00	0.00	0.00	0.00
Long Beach Airport	131.83	1,043.75	193.22	25.77	4.30	4.30
Los Alamitos Army Air Base	33.65	96.48	68.34	6.48	4.63	4.45
Los Angeles International Airport	636.34	4,433.47	4,606.75	409.35	46.53	46.53
March Air Force Base	6.00	93.94	72.89	6.72	17.08	11.90
Ontario International Airport	70.77	319.42	462.40	35.19	6.63	6.35
Palm Springs International Airport	24.62	167.18	111.31	10.09	4.47	4.09
Perris Valley	2.39	77.39	1.31	0.24	1.65	1.29
Quail Lake Sky Park	0.00	0.00	0.00	0.00	0.00	0.00
Redlands Municipal Airport	3.61	123.31	1.65	0.34	2.60	2.04
Riverside Municipal	9.96	294.63	6.33	1.07	6.57	5.23
San Bernardino International Airport	7.18	160.35	13.52	1.49	3.36	2.69
San Clemente Island Naval Air Station	29.34	138.19	133.05	8.07	68.16	68.16
Santa Monica Municipal Airport	6.74	198.71	3.80	0.72	4.67	3.75
Skylark Field	0.00	0.00	0.00	0.00	0.00	0.00
Van Nuys	26.94	691.63	18.04	3.18	17.89	14.70
Whiteman	6.80	231.99	3.11	0.64	4.90	3.84
Zamperini Field	9.37	311.00	4.60	0.91	6.65	5.23
Total	1,307.18	13,496.13	6,306.59	598.91	288.20	256.63

Table 8. 2023 aircraft emissions (tpy) by airport.

Facility Name	VOC	CO	NOx	SO2	PM10	PM2.5
Agua Dulce Airpark	0.06	2.02	0.03	0.01	0.04	0.03
Banning Municipal Airport	0.30	10.16	0.14	0.03	0.21	0.17
Bermuda Dunes	1.23	39.43	0.69	0.12	0.84	0.66
Big Bear City	7.73	91.45	12.22	1.27	2.35	1.98
Bob Hope Airport	86.00	1,468.00	404.00	45.00	5.00	5.00
Brackett Field	7.28	231.15	4.18	0.75	4.98	3.93
Cable	7.57	258.36	3.47	0.71	5.46	4.28
Catalina	1.80	43.99	1.20	0.22	1.20	0.99
Chino	20.84	598.27	15.19	2.33	12.96	10.26
Chiriaco Summit	0.49	16.82	0.23	0.05	0.36	0.28
Compton/Woodley	5.42	184.97	2.48	0.51	3.91	3.06
Corona Municipal Airport	4.10	140.13	1.88	0.39	2.96	2.32
Desert Air Sky Ranch	0.00	0.00	0.00	0.00	0.00	0.00
Desert Center	0.01	0.42	0.01	0.00	0.01	0.01
El Monte	7.45	248.51	3.65	0.72	5.29	4.15
Ernst Field	0.00	0.00	0.00	0.00	0.00	0.00
Flabob	0.91	31.11	0.42	0.09	0.66	0.52
French Valley	5.28	176.12	2.62	0.51	3.73	2.93
Fullerton Municipal Airport	5.97	195.69	3.12	0.59	4.16	3.27
Hemet-Ryan	6.19	211.43	2.84	0.58	4.47	3.50
Jack Northrop Field/Hawthorne Muni	7.56	209.41	4.92	0.85	4.99	4.03
Jacqueline Cochran Regional Airport	8.98	217.56	8.49	1.13	4.86	3.89
John Wayne Airport	116.42	1,122.64	330.30	40.72	10.45	9.65
Lake Riverside Estates	0.00	0.00	0.00	0.00	0.00	0.00
Long Beach Airport	157.15	1,240.88	212.16	29.03	4.89	4.89
Los Alamitos Army Air Base	33.65	96.48	68.34	6.48	4.63	4.45
Los Angeles International Airport	627.49	5,001.77	5,110.80	450.74	49.48	49.48
March Air Force Base	6.00	93.94	72.89	6.72	17.08	11.90
Ontario International Airport	83.77	333.15	545.74	43.93	6.04	5.96
Palm Springs International Airport	23.80	165.79	124.28	11.03	3.52	3.20
Perris Valley	2.39	77.39	1.31	0.24	1.65	1.29
Quail Lake Sky Park	0.00	0.00	0.00	0.00	0.00	0.00
Redlands Municipal Airport	3.61	123.31	1.65	0.34	2.60	2.04
Riverside Municipal	9.96	294.63	6.33	1.07	6.57	5.23
San Bernardino International Airport	25.05	297.95	220.48	17.36	5.89	5.06
San Clemente Island Naval Air Station	31.54	148.56	143.02	8.67	73.27	73.27
Santa Monica Municipal Airport	6.89	203.95	3.85	0.73	4.78	3.84
Skylark Field	0.00	0.00	0.00	0.00	0.00	0.00
Van Nuys	23.84	589.12	15.71	2.86	15.97	13.24
Whiteman	7.14	237.87	3.74	0.71	5.04	3.96
Zamperini Field	10.19	335.46	5.14	1.00	7.18	5.65
Total	1,354.06	14,737.87	7,337.52	677.49	287.49	258.39

Table 9. 2031 aircraft emissions (tpy) by airport.

Facility Name	VOC	CO	NOx	SO2	PM10	PM2.5
Agua Dulce Airpark	0.06	2.02	0.03	0.01	0.04	0.03
Banning Municipal Airport	0.30	10.16	0.14	0.03	0.21	0.17
Bermuda Dunes	1.23	39.43	0.69	0.12	0.84	0.66
Big Bear City	7.73	91.45	12.22	1.27	2.35	1.98
Bob Hope Airport	63.00	1,469.00	482.00	42.00	5.00	5.00
Brackett Field	7.39	235.10	4.23	0.76	5.06	3.99
Cable	7.57	258.36	3.47	0.71	5.46	4.28
Catalina	1.80	43.99	1.20	0.22	1.20	0.99
Chino	20.84	598.27	15.19	2.33	12.96	10.26
Chiriaco Summit	0.49	16.82	0.23	0.05	0.36	0.28
Compton/Woodley	5.42	184.97	2.48	0.51	3.91	3.06
Corona Municipal Airport	4.10	140.13	1.88	0.39	2.96	2.32
Desert Air Sky Ranch	0.00	0.00	0.00	0.00	0.00	0.00
Desert Center	0.01	0.42	0.01	0.00	0.01	0.01
El Monte	7.67	256.10	3.75	0.74	5.45	4.28
Ernst Field	0.00	0.00	0.00	0.00	0.00	0.00
Flabob	0.91	31.11	0.42	0.09	0.66	0.52
French Valley	5.28	176.12	2.62	0.51	3.73	2.93
Fullerton Municipal Airport	6.15	201.85	3.20	0.61	4.29	3.37
Hemet-Ryan	6.19	211.43	2.84	0.58	4.47	3.50
Jack Northrop Field/Hawthorne Muni	7.88	218.15	5.09	0.88	5.21	4.21
Jacqueline Cochran Regional Airport	8.98	217.56	8.49	1.13	4.86	3.89
John Wayne Airport	121.41	1,149.95	349.12	42.92	11.68	10.66
Lake Riverside Estates	0.00	0.00	0.00	0.00	0.00	0.00
Long Beach Airport	163.68	1,280.14	234.39	31.64	5.24	5.24
Los Alamitos Army Air Base	33.65	96.48	68.34	6.48	4.63	4.45
Los Angeles International Airport	656.60	6,162.99	5,824.22	525.48	55.21	55.21
March Air Force Base	6.00	93.94	72.89	6.72	17.08	11.90
Ontario International Airport	106.65	424.59	689.64	56.05	7.76	7.67
Palm Springs International Airport	28.91	191.58	158.31	13.95	3.99	3.67
Perris Valley	2.39	77.39	1.31	0.24	1.65	1.29
Quail Lake Sky Park	0.00	0.00	0.00	0.00	0.00	0.00
Redlands Municipal Airport	3.61	123.31	1.65	0.34	2.60	2.04
Riverside Municipal	9.96	294.63	6.33	1.07	6.57	5.23
San Bernardino International Airport	28.38	329.80	260.98	20.46	6.45	5.57
San Clemente Island Naval Air Station	35.06	165.14	158.99	9.64	81.45	81.45
Santa Monica Municipal Airport	6.96	204.53	3.91	0.75	4.83	3.89
Skylark Field	0.00	0.00	0.00	0.00	0.00	0.00
Van Nuys	24.98	598.19	16.60	3.04	16.75	13.96
Whiteman	7.14	237.87	3.74	0.71	5.04	3.96
Zamperini Field	10.19	335.46	5.14	1.00	7.18	5.65
Total	1,408.59	16,168.42	8,405.74	773.41	307.14	277.58

Table 10. 2037 aircraft emissions (tpy) by airport.

Facility Name	VOC	CO	NOx	SO2	PM10	PM2.5
Agua Dulce Airpark	0.06	2.02	0.03	0.01	0.04	0.03
Banning Municipal Airport	0.30	10.16	0.14	0.03	0.21	0.17
Bermuda Dunes	1.23	39.43	0.69	0.12	0.84	0.66
Big Bear City	7.73	91.45	12.22	1.27	2.35	1.98
Bob Hope Airport	67.00	1,570.00	515.00	45.00	6.00	6.00
Brackett Field	7.48	238.11	4.27	0.77	5.13	4.04
Cable	7.57	258.36	3.47	0.71	5.46	4.28
Catalina	1.80	43.99	1.20	0.22	1.20	0.99
Chino	20.84	598.27	15.19	2.33	12.96	10.26
Chiriaco Summit	0.49	16.82	0.23	0.05	0.36	0.28
Compton/Woodley	5.42	184.97	2.48	0.51	3.91	3.06
Corona Municipal Airport	4.10	140.13	1.88	0.39	2.96	2.32
Desert Air Sky Ranch	0.00	0.00	0.00	0.00	0.00	0.00
Desert Center	0.01	0.42	0.01	0.00	0.01	0.01
El Monte	7.84	261.96	3.83	0.76	5.57	4.37
Ernst Field	0.00	0.00	0.00	0.00	0.00	0.00
Flabob	0.91	31.11	0.42	0.09	0.66	0.52
French Valley	5.28	176.12	2.62	0.51	3.73	2.93
Fullerton Municipal Airport	6.29	206.62	3.27	0.62	4.39	3.45
Hemet-Ryan	6.19	211.43	2.84	0.58	4.47	3.50
Jack Northrop Field/Hawthorne Muni	8.13	224.95	5.22	0.91	5.39	4.36
Jacqueline Cochran Regional Airport	8.98	217.56	8.49	1.13	4.86	3.89
John Wayne Airport	121.66	1,158.52	349.24	42.94	11.86	10.80
Lake Riverside Estates	0.00	0.00	0.00	0.00	0.00	0.00
Long Beach Airport	169.91	1,317.21	255.38	34.14	5.57	5.57
Los Alamitos Army Air Base	33.65	96.48	68.34	6.48	4.63	4.45
Los Angeles International Airport	737.99	7,128.35	6,127.81	576.90	58.84	58.84
March Air Force Base	6.00	93.94	72.89	6.72	17.08	11.90
Ontario International Airport	130.91	534.17	864.82	72.42	12.69	12.59
Palm Springs International Airport	33.10	212.66	186.14	16.34	4.37	4.05
Perris Valley	2.39	77.39	1.31	0.24	1.65	1.29
Quail Lake Sky Park	0.00	0.00	0.00	0.00	0.00	0.00
Redlands Municipal Airport	3.61	123.31	1.65	0.34	2.60	2.04
Riverside Municipal	9.96	294.63	6.33	1.07	6.57	5.23
San Bernardino International Airport	28.63	332.72	263.28	20.64	6.51	5.62
San Clemente Island Naval Air Station	37.70	177.58	170.96	10.36	83.36	85.68
Santa Monica Municipal Airport	7.02	205.00	3.95	0.75	4.87	3.92
Skylark Field	0.00	0.00	0.00	0.00	0.00	0.00
Van Nuys	25.96	605.99	17.36	3.20	17.42	14.58
Whiteman	7.14	237.87	3.74	0.71	5.04	3.96
Zamperini Field	10.19	335.46	5.14	1.00	7.18	5.65
Total	1,533.49	17,455.14	8,981.86	850.25	320.73	293.30
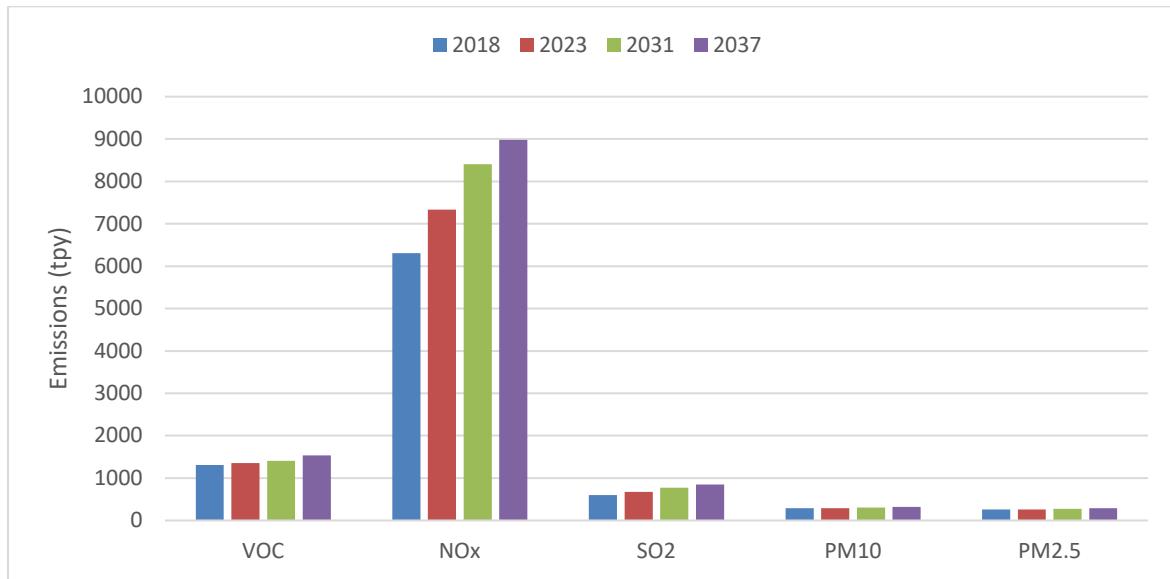
Figure 1. Total aircraft emissions for the base and future milestone years.

Appendix A
EPA's Average Aircraft Emission Factors[8]
(tons/Landing Takeoff)[9]

	Air Taxi-Jet	Air Taxi-Piston	GA-Jet	GA-Piston	Military	Commercial
VOC	5.03E-04	8.48E-05	3.45E-04	7.52E-05	5.43E-03	3.08E-03
CO	1.81E-03	1.41E-02	4.79E-03	6.01E-03	1.30E-02	1.12E-02
NOx	3.88E-04	7.90E-05	1.62E-04	3.25E-05	1.12E-02	9.29E-03
SOx	8.12E-05	7.50E-06	3.68E-05	5.00E-06	1.06E-03	8.91E-04
PM10	3.02E-04	3.02E-04	1.18E-04	1.18E-04	6.97E-04	5.39E-04
PM2.5	2.94E-04	2.02E-04	1.16E-04	8.17E-05	6.80E-04	5.26E-04

FAA's GA/Air Taxi Survey Results[10]

	% Jet	% Piston
Air Taxi	86	14
GA	33	67

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[8] 2017 National Emissions Inventory: Aviation Component, Appendix C, July 2019.
[9] One landing take-off cycle is equivalent to two operations.
[10] FAA, 2018. https://www.faa.gov/data_research/aviation_data_statistics/general_aviation/CY2018/

Appendix B

Aircraft Emissions and Operations for Commercial Airports Compared with the Previous Inventory (2016 AQMP)

Figures 1 - 4 compare SCAB commercial airport emissions with those in the 2016 AQMP inventory. Commercial airport emissions have increased, with the exception of ONT (2023-2037) and SNA (2018-2037), which decreased due to fewer projected Air Carrier operations compared to forecasts used in the previous inventory. Tables 1 - 6 provide a breakdown of the emissions and operations differences by airport and major category. Tables 7 and 8 provide a summary of the total inventory for South Coast AQMD for all pollutants compared to the previous inventory. Overall, NOx emissions are 2.5 and 2.3 tpd higher in 2023 and 2031, respectively, compared to the previous inventory, with much of the increase stemming from LAX, BUR, LGB, and SBD. For BUR and SBD, the increase was primarily due to increased commercial operations. The reason for the emission increase at LAX and LGB is unclear, as these airports provided their own emissions. Finally, Figure 5 shows a comparison of 2018 aircraft operations by major category at the San Clemente Island Naval Base (NUC). Air Carrier and GA operations are similar, while Military operations decreased significantly. NUC provided forecasted emissions, however, the corresponding operations were not provided thereby precluding future comparisons.
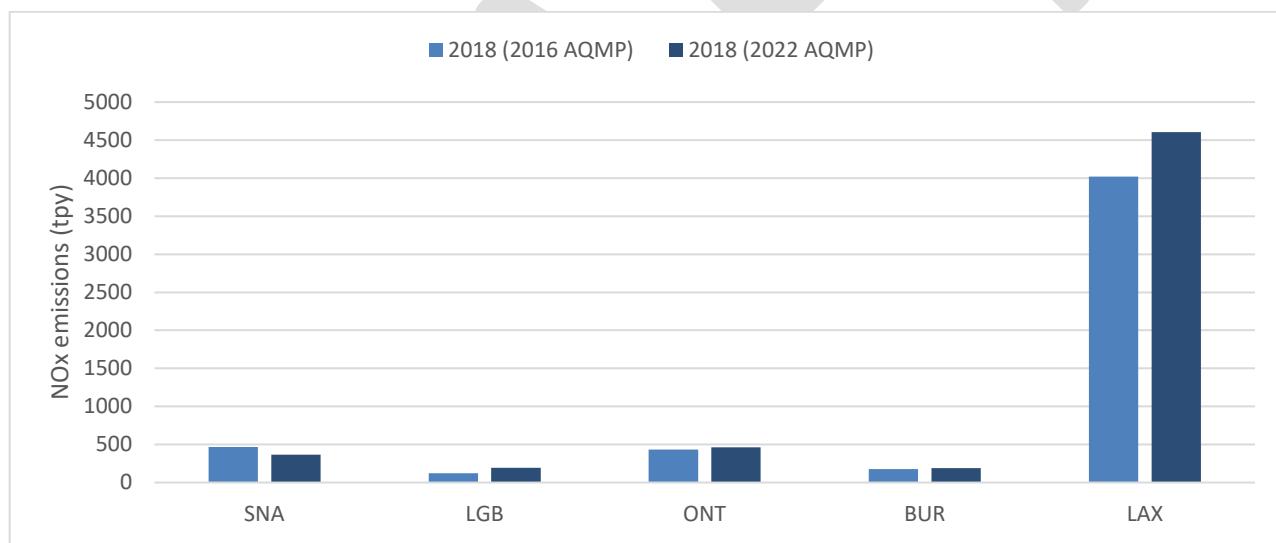

*Figure 1. 2018 SCAB commercial airport emissions compared to the 2016 AQMP inventory.*
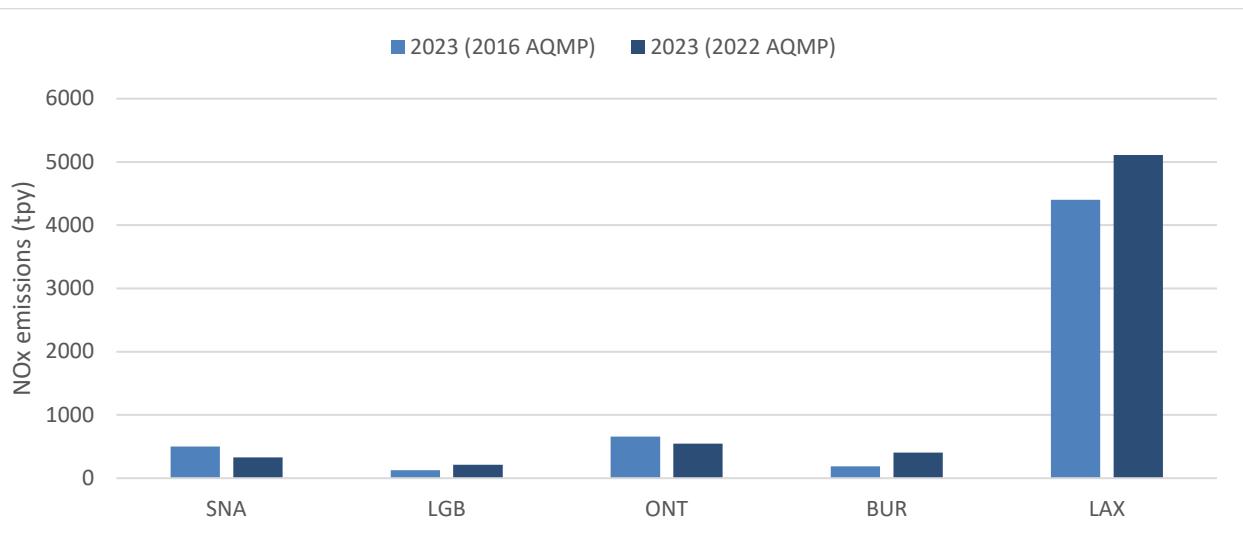
Figure 2. 2023 emissions compared to the 2016 AQMP inventory.
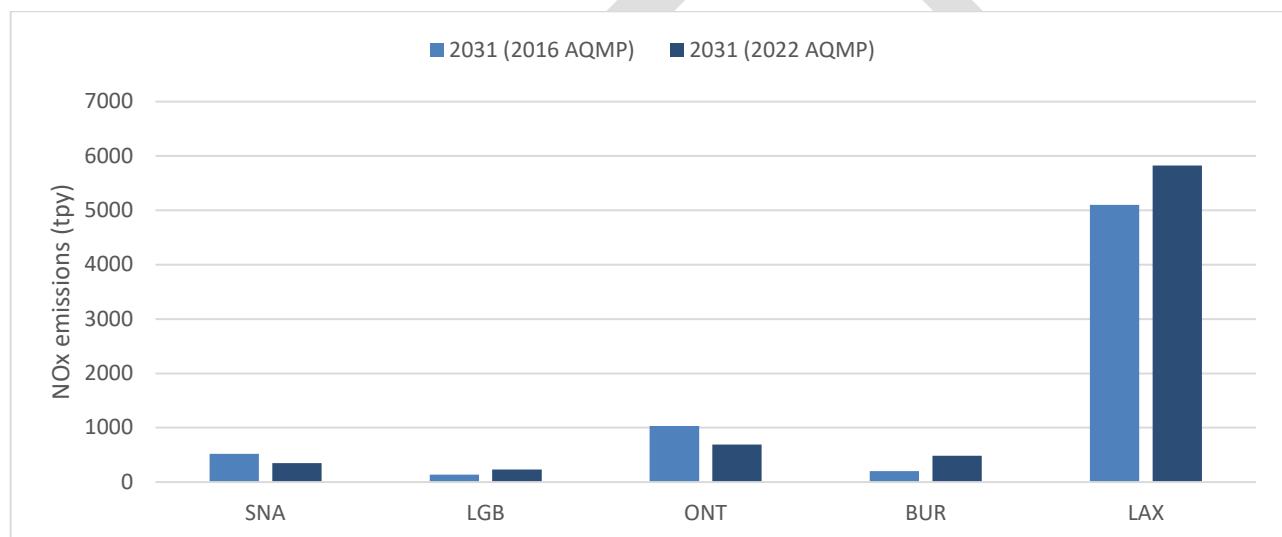
Figure 3. 2031 emissions compared to the 2016 AQMP inventory.
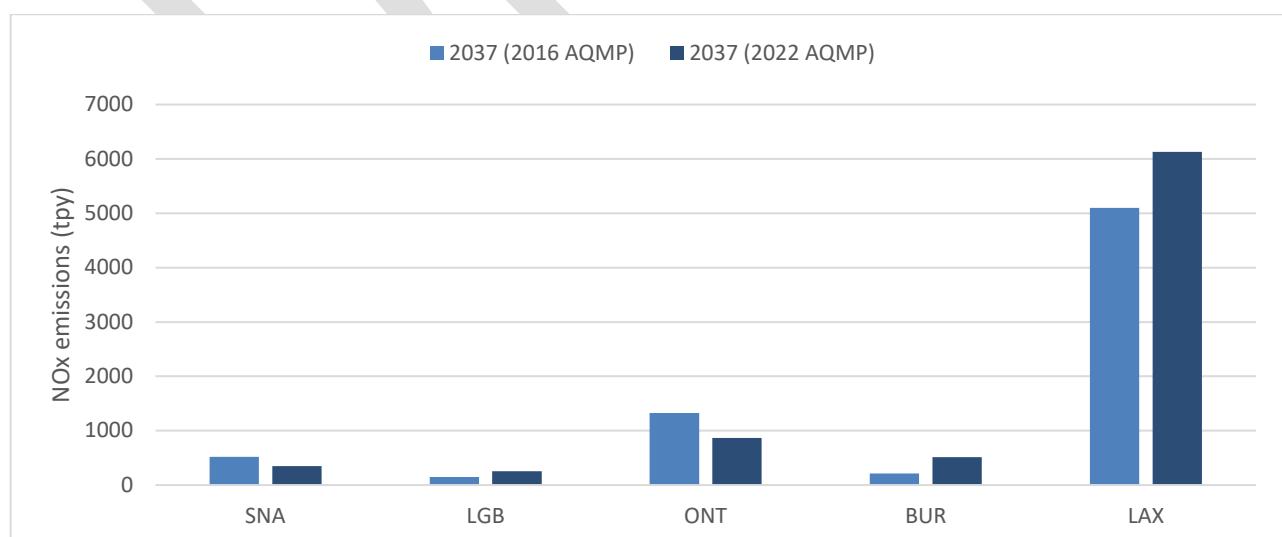
Figure 4. 2037 emissions compared to the 2016 AQMP inventory.

Table 1. Difference in NOx emissions (2022 AQMP – 2016 AQMP) by airport. Units: tpd

	SNA	LGB	ONT	BUR	LAX	Total
2018	-0.27603	0.198014	0.083321	0.029958	1.605279	1.64054
2023	-0.47287	0.231108	-0.30638	0.594645	1.950615	1.997121
2031	-0.46474	0.261937	-0.94367	0.764992	1.980323	1.598848
2037	-0.46442	0.296887	-1.26972	0.82289	2.812076	2.197708

Table 2. Difference in operations (2022 AQMP – 2016 AQMP) at BUR.

	Air Carrier	Air Taxi	GA	Military
2018	3,721	1,944	-17,230	-30
2023	22,464	2,689	-16,259	-304
2031	26,741	5,009	-16,597	-400
2037	32,042	7,010	-16,678	-472

Table 3. Difference in operations (2022 AQMP – 2016 AQMP) at SNA.

	Air Carrier	Air Taxi	GA	Military
2018	-17,169	15,420	78,650	-154
2023	-28,380	12,790	87,874	23
2031	-27,105	13,588	99,174	23
2037	-27,105	13,588	102,233	22

Table 4. Difference in operations (2022 AQMP – 2016 AQMP) at ONT.

	Air Carrier	Air Taxi	GA	Military
2018	-26,037	-56	1,003	69
2023	-34,790	-4,803	-10,015	-6
2031	-59,701	-610	-10,020	-58
2037	-69,007	3,750	-9,962	-97

Table 5. Difference in operations (2022 AQMP – 2016 AQMP) at LGB.

	Air Carrier	Air Taxi	GA	Military
2018	3,228	2,736	-21,046	-183
2023	3,804	2,653	12,426	-511
2031	6,080	2,652	637	-716
2037	8,717	2,690	-8,196	-869

Table 6. Difference in operations (2022 AQMP – 2016 AQMP) at LAX.

	Air Carrier	Air Taxi	GA	Military
2018	34,945	-24,629	-1,075	-1,800
2023	-20,859	8,276	-942	-1,744
2031	-56,807	15,442	-2,887	-1,735
2037	-34049	14464	-4121	-1781

Table 7. Emissions comparison for all airports and pollutants in 2023 (units: tpd).

	VOC	CO	NOx	SO2	PM10	PM2.5
2023 (2022 AQMP)	3.71	40.38	20.10	1.86	0.79	0.71
2023 (2016 AQMP)	4.14	42.61	17.57	2.08	0.81	0.74

Table 8. Emissions comparison for all airports and pollutants in 2031 (units: tpd).

	VOC	CO	NOx	SO2	PM10	PM2.5
2031 (2022 AQMP)	3.86	44.30	23.03	2.12	0.84	0.76
2031 (2016 AQMP)	4.67	48.19	20.77	2.53	0.90	0.82
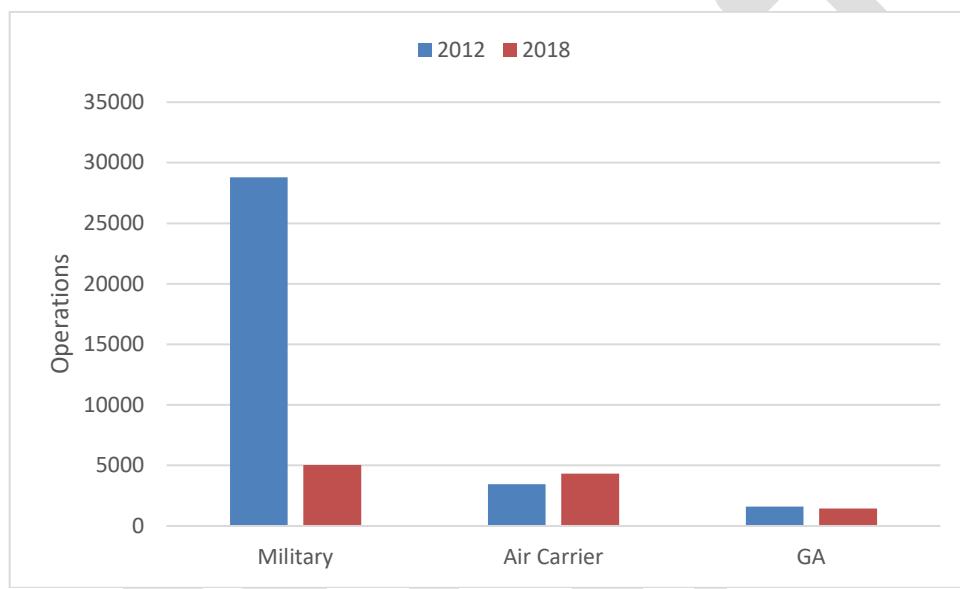
Figure 5. San Clemente Island 2018 operations by major category compared to those in 2012.

Appendix C

**Number of Aircraft Operations by Aircraft and Engine Model
for Commercial Airports**

Tables 1 - 10 provide the operations by aircraft and engine model in AEDT for commercial airports.

Table 1. Operations by aircraft and engine model at BUR.

Aircraft and Engine Model	2018	2023	2031	2037
Airbus A300F4-600 Series	**1,866**	**1,230**	**1,328**	**1,442**
CF6-80C2B8FA	0	1,230	1,328	1,442
PW4x58	1,866	0	0	0
Airbus A318-100 Series	**2,214**	**0**	**0**	**0**
PW6122A	2,214	0	0	0
Airbus A319-100 Series	**0**	**4,192**	**4,698**	**5,098**
CFM56-5B9/2P	0	4,192	4,698	5,098
Airbus A320-200 Series	**0**	**2,104**	**2,356**	**2,558**
CFM56-5B3/2P	0	2,104	2,356	2,558
Boeing 737-600 Series	**36,736**	**0**	**0**	**0**
CFM56-3C-1	36,736	0	0	0
Boeing 737-700 Series	**0**	**24,618**	**27,606**	**29,970**
CFM56-7B18	0	24,618	27,606	29,970
Boeing 737-800 Series	**3,698**	**13,976**	**15,670**	**17,010**
CFM56-7B26	0	13,976	15,670	17,010
CFM56-7B27	3,698	0	0	0
Boeing 737-900 Series	**0**	**702**	**792**	**858**
CFM56-7B27	0	702	792	858
Boeing 757-200 Series	**0**	**144**	**144**	**154**
PW2040	0	144	144	154
Boeing 767-400	**0**	**72**	**80**	**86**
CF6-80C2B8FA	0	72	80	86
Bombardier CRJ-200	**3,244**	**0**	**0**	**0**
CF34-3A1	3,244	0	0	0
Embraer ERJ135	**6,802**	**0**	**0**	**0**
AE3007A1/3	6,802	0	0	0
Embraer ERJ145	**294**	**0**	**0**	**0**
AE3007A1/1	294	0	0	0
Embraer ERJ175-LR	**5,456**	**0**	**0**	**0**
CF34-8E5	5,456	0	0	0
Grand Total	60,310	47,038	52,674	57,176

Table 2. Operations by aircraft and engine model at SNA.

Aircraft and Engine Model	2018	2023	2031/2037
Airbus A300F4-600 Series	**530**	**608**	**646**
PW4x58	530	608	646
Airbus A319-100 Series	**3,958**	**6,786**	**7,206**
CFM56-5B9/2P	3,958	6,786	7,206
Airbus A320-200 Series	**4,930**	**4,822**	**5,120**
CFM56-5B2/2P	0	1,936	2,056
CFM56-5B4/2	4,930	0	0
V2524-A5	0	2,886	3,064
Airbus A320-NEO	**600**	**0**	**0**
LEAP-1A26/26E1	600	0	0
Airbus A321-100 Series	**4**	**0**	**0**
V2530-A5	4	0	0
Airbus A321-200 Series	**0**	**632**	**670**
CFM56-5B1/P	0	632	670
Boeing 717-200 Series	**3,378**	**0**	**0**
BR700-715A1-30	3,378	0	0
Boeing 737-600 Series	**10**	**0**	**0**
CFM56-3C-1	10	0	0
Boeing 737-700 Series	**36,602**	**55,320**	**58,746**
CFM56-3C-1	36,602	0	0
CFM56-7B18	0	26,240	27,866
CFM56-7B27/3	0	29,080	30,880
Boeing 737-8	**14**	**0**	**0**
LEAP-1B27	14	0	0
Boeing 737-800 Series	**24,952**	**18,852**	**20,020**
CFM56-7B26/3	0	18,852	20,020
CFM56-7B27	24,952	**0**	**0**
Boeing 737-900 Series	**2**	**0**	**0**
CFM56-7B27	2	0	0
Boeing 757-200 Series	**2,898**	**2,792**	**2,966**
PW2040	2,898	2,792	2,966
Boeing 757-200 Series Freighter	**394**	**0**	**0**
RB211-535E4	394	0	0
Boeing DC-9-30 Series	**2**	**0**	**0**
JT8D-9 series	2	0	0
Bombardier Challenger 300	**0**	**4,248**	**4,440**
AE3007A1	0	4,248	4,440
Bombardier Challenger 600	**0**	**2,474**	**2,586**
CF34-3A	0	2,474	2,586
Bombardier Challenger 602	**0**	**2,474**	**2,586**
CF34-3B	0	2,474	2,586
Bombardier CRJ-400	**0**	**4,248**	**4,440**

Aircraft and Engine Model	2018	2023	2031/2037
CF34-3B	0	4,248	4,440
Bombardier CRJ-700	**730**	**0**	**0**
CF34-3B	730	0	0
Bombardier CRJ-900	**6**	**3,576**	**3,796**
CF34-8C5	6	3,576	3,796
Bombardier de Havilland Dash 8 Q100	**728**	**0**	**0**
PW120A	728	0	0
Bombardier Learjet 55	**0**	**3,822**	**3,996**
TFE731-3	0	3,822	3,996
Britten-Norman BN-2 Islander	**0**	**228**	**228**
250B17B	0	228	228
Cessna 140 (FAS)	**0**	**68,820**	**61,174**
O-200	0	68,820	61,174
Cessna 150 Series	**0**	**23,394**	**20,794**
O-200	0	23,394	20,794
Cessna 172 Skyhawk	**0**	**7,468**	**6,638**
IO-360-B	0	7,468	6,638
Cessna 182	**0**	**1,722**	**1,530**
IO-360-B	0	1,722	1,530
Cessna 206	**0**	**1,130**	**1,004**
TIO-540-J2B2	0	1,130	1,004
Cessna 208 Caravan	**0**	**2,990**	**2,658**
PT6A-114	0	2,990	2,658
Cessna 210 Centurion	**0**	**5,208**	**4,628**
TIO-540-J2B2	0	5,208	4,628
Cessna 441 Conquest II	**0**	**3,450**	**3,066**
TPE331-8	0	3,450	3,066
Cessna 525 CitationJet	**0**	**4,046**	**4,046**
PW4090	0	4,046	4,046
Cessna 550 Citation II	**0**	**5,538**	**5,538**
JT15D-4 series	0	5,538	5,538
Cessna 560 Citation V	**0**	**1,850**	**1,850**
JT15D-5, -5A, -5B	0	1,850	1,850
Cessna 560 Citation XLS	**0**	**2,952**	**2,952**
PW306B	0	2,952	2,952
Cessna 650 Citation III	**0**	**1,004**	**1,050**
TFE731-2-2B	0	1,004	1,050
Cessna 680 Citation Sovereign	**0**	**1,448**	**1,448**
PW306B	0	1,448	1,448
Cessna 750 Citation X	**0**	**1,936**	**2,024**
AE3007C	0	1,936	2,024
CESSNA CITATION 510	**0**	**1,068**	**1,116**

Aircraft and Engine Model	2018	2023	2031/2037
PW610F	0	1,068	1,116
DeHavilland DHC-6-300 Twin Otter	**0**	**3,452**	**3,068**
PT6A-42	0	3,452	3,068
DeHavilland DHC-8-200	**0**	**1,380**	**1,380**
PW123	0	1,380	1,380
Dornier 228-200 Series	**0**	**430**	**430**
TPE331-5A	0	430	430
Eclipse 500 / PW610F	**0**	**302**	**314**
PW610F-A	0	302	314
Embraer ERJ135	**1,056**	**0**	**0**
AE3007A1/3	1,056	0	0
Embraer ERJ170	**0**	**5,822**	**6,182**
CF34-8E2	0	5,822	6,182
Embraer ERJ175	**12,864**	**0**	**0**
CF34-8E5A1	12,864	0	0
Fokker F100	**0**	**1,220**	**1,220**
TAY Mk620-15	0	1,220	1,220
Gulfstream G100	**0**	**624**	**652**
TFE731-3	0	624	652
Gulfstream G300	**0**	**3,644**	**3,810**
TAY Mk611-8	0	3,644	3,810
Gulfstream G500	**0**	**2,386**	**2,494**
BR700-710A1-10	0	2,386	2,494
Piper PA-28 Cherokee Series	**0**	**728**	**648**
IO-320-D1AD	0	728	648
Raytheon Beech 55 Baron	**0**	**2,306**	**2,048**
TIO-540-J2B2	0	2,306	2,048
Raytheon Beechjet 400	**0**	**1,846**	**1,928**
JT15D-1 series	0	1,846	1,928
Grand Total	**93,658**	**269,046**	**263,136**

Table 3. Operations by aircraft and engine model at ONT.

Aircraft and Engine Model	2018	2023	2031	2037
Aerospatiale Caravelle 10	**488**	**592**	**684**	**758**
JT8D-7 series	488	592	684	758
Airbus A300C4-600 Series	**4,514**	**5,468**	**6,308**	**6,992**
CF6-80C2A5	4,514	5,468	6,308	6,992
Airbus A319-100 Series	**2,224**	**3,010**	**4,274**	**5,670**
CFM56-5B7/3	0	3,010	4,274	5,670
CFM56-5B9/2P	2,224	0	0	0
Airbus A320-200 Series	**3,808**	**5,152**	**7,314**	**9,704**
CFM56-5B1/2P	0	3,558	5,052	6,702
CFM56-5B4/2	2,630	0	0	0
V2527-A5 SelectOne™ Upgrade Package	0	1,594	2,262	3,002
V2527E-A5	1,178	0	0	0
Airbus A321-100 Series	**1,454**	**1,968**	**1,397**	**1,854**
CFM56-5B1	1,454	0	0	0
CFM56-5B2/P	0	1,968	1,397	1,854
Airbus A321-200 Series	**0**	**0**	**1,397**	**1,854**
CFM56-5B2/P	0	**0**	1,397	1,854
Airbus A350-1000 Series	**146**	**198**	**283**	**374**
Trent XWB-97	146	198	283	374
Boeing 717-200 Series	**172**	**232**	**330**	**436**
BR700-715A1-30	172	232	330	436
Boeing 727-200 Series	**184**	**250**	**356**	**470**
JT8D-7 series	184	250	356	470
Boeing 737-300 Series	**14**	**0**	**0**	**0**
CFM56-3C-1	14	0	0	0
Boeing 737-400 Series	**12**	**0**	**0**	**0**
CFM56-3C-1	12	0	0	0
Boeing 737-700 Series	**23,636**	**32,008**	**45,468**	**60,314**
CFM56-3C-1	23,636	0	0	0
CFM56-7B18	0	32,008	45,468	60,314
Boeing 737-8	**108**	**146**	**208**	**276**
LEAP-1B27	108	146	208	276
Boeing 737-800 Series	**7,122**	**9,636**	**13,686**	**18,154**
CFM56-7B27	7,122	0	0	0
CFM56-7B27/3	0	9,636	13,686	18,154
Boeing 737-900 Series	**590**	**798**	**1,134**	**1,504**
CFM56-7B27	590	0	0	0
CFM56-7B27/3	0	798	1,134	1,504
Boeing 737-900-ER	**2,222**	**3,006**	**4,270**	**5,664**
CFM56-7B27	2,222	0	0	0
CFM56-7B27/3	0	3,006	4,270	5,664
Boeing 747-400 Series Freighter	**884**	**1,072**	**1,236**	**1,370**

Aircraft and Engine Model	2018	2023	2031	2037
RB211-524G-T	884	1,072	1,236	1,370
Boeing 747-8	**266**	**322**	**372**	**412**
CF6-80C2B1F	266	0	0	0
GENX-2B67	0	322	372	412
Boeing 757-200 Series Freighter	**4,842**	**5,866**	**6,768**	**7,502**
RB211-535E4	4,842	5,866	6,768	7,502
Boeing 767-200 Series Freighter	**5,572**	**6,750**	**7,786**	**8,632**
CF6-80A	5,572	0	0	0
CF6-80C2B4F	0	6,750	7,786	8,632
Boeing 767-300 Freighter	**6,334**	**7,674**	**8,854**	**9,814**
CF6-80C2B7F	6,334	7,674	8,854	9,814
Boeing 777-300 Series	**446**	**604**	**856**	**1,136**
GE90-85B	446	604	856	1,136
Boeing 777-9	**12**	**14**	**16**	**18**
GE90-94B	12	14	16	18
Boeing DC-10-10 Series	**288**	**350**	**404**	**446**
CF6-50E1	288	350	404	446
Boeing DC-10-30 Series	**58**	**72**	**82**	**92**
CF6-50E2	58	72	82	92
Boeing DC-9-30 Series	**14**	**16**	**20**	**22**
JT8D-9 series	14	16	20	22
Boeing MD-11	**6,174**	**7,480**	**8,630**	**9,566**
CF6-80CB42	6,174	7,480	8,630	9,566
Bombardier CRJ-200-ER	**2,298**	**3,098**	**4,400**	**5,836**
CF34-3B	2,298	3,098	4,400	5,836
Bombardier CRJ-700	**520**	**704**	**1,000**	**1,326**
CF34-3B	520	704	1,000	1,326
Bombardier CRJ-900	**2,248**	**3,042**	**4,322**	**5,732**
CF34-8C5	2,248	3,042	4,322	5,732
Embraer ERJ175	**3,170**	**4,288**	**6,090**	**8,080**
CF34-8E5A1	3,170	4,288	6,090	8,080
Raytheon Beech 18	**556**	**752**	**1,068**	**1,418**
R-1820	556	752	1,068	1,418
Raytheon Super King Air 200	**20**	**28**	**40**	**52**
PT6A-40	20	28	40	52
Grand Total	**80,396**	**104,596**	**139,053**	**175,478**

Table 4. Operations by aircraft and engine model at SBD.

Aircraft and Engine Model	2017	2023	2024	2031	2037
Airbus A320-200 Series	**44**	**48**	**48**	**51**	**52**
CFM56-5B4/2	44	48	48	51	52
Antonov 124 Ruslan	**16**	**18**	**18**	**19**	**19**
D-36	16	18	18	19	19
BAE 146-RJ85	**82**	**86**	**86**	**92**	**92**
LF507-1F, -1H	82	86	86	92	92
Boeing 737-400 Series Freighter	**90**	**2,430**	**2,650**	**2,822**	**2,847**
CFM56-3-B1	90	2,430	2,650	2,822	2,847
Boeing 757-200 Series Freighter	**178**	**188**	**190**	**202**	**204**
RB211-535E4	178	188	190	202	204
Boeing 767-300 Freighter	**232**	**14,844**	**16,672**	**17,754**	**17,911**
CF6-80C2B7F	232	14,844	16,672	17,754	17,911
Boeing 777-200 Series	**16**	**18**	**18**	**19**	**19**
PW4056	16	18	18	19	19
Boeing DC-10-30 Series	**26**	**28**	**28**	**30**	**30**
CF6-50E2	26	28	28	30	30
Boeing MD-83	**65**	**68**	**68**	**72**	**73**
JT8D-217	65	68	68	72	73
Bombardier Challenger 600	**1,164**	**1,228**	**1,240**	**1,320**	**1,332**
CF34-3B	1,164	1,228	1,240	1,320	1,332
Bombardier CRJ-200	**18**	**18**	**18**	**19**	**19**
CF34-3A1	18	18	18	19	19
Bombardier de Havilland Dash 8 Q400	**2**	**2**	**2**	**2**	**2**
PW127C	2	2	2	2	2
Bombardier Global Express	**146**	**154**	**156**	**166**	**168**
BR700-715A1-30	146	154	156	166	168
Embraer ERJ135-LR	**12**	**12**	**12**	**13**	**13**
AE3007A1/1	12	12	12	13	13
Embraer Legacy 500 (EMB-550)	**676**	**714**	**720**	**767**	**773**
HTF7500E (AS907-3-1E-A3)	676	714	720	767	773
Fairchild SA-226-T Merlin III	**52**	**54**	**54**	**58**	**58**
TPE331-2	52	54	54	58	58
Grand Total	**2,819**	**19,910**	**21,980**	**23,406**	**23,613**

Table 5. Operations by aircraft and engine model at PSP.

Aircraft and Engine Model	2018	2023	2031	2037
Airbus A319-100 Series	**2,548**	**3,195**	**4,153**	**4,934**
CFM56-5B9/2P	2,548	3,195	4,153	4,934
Airbus A320-100 Series	**1,860**	**2,332**	**3,031**	**3,601**
CFM56-5B2/2	1,860	2,332	3,031	3,601
Airbus A320-200 Series	**46**	**58**	**75**	**89**
CFM56-5B4/2	46	58	75	89
Airbus A321-100 Series	**94**	**118**	**153**	**182**
CFM56-5B1	94	118	153	182
Airbus A321-200 Series	**66**	**83**	**108**	**128**
CFM56-5B1/P	66	83	108	128
Boeing 717-200 Series	**80**	**100**	**130**	**155**
BR700-715A1-30	80	100	130	155
Boeing 737-400 Series	**7**	**9**	**11**	**14**
CFM56-3C-1	7	9	11	14
Boeing 737-600 Series	**88**	**110**	**143**	**170**
CFM56-3C-1	88	110	143	170
Boeing 737-700 Series	**1,182**	**1,482**	**1,926**	**2,289**
CFM56-3C-1	1,182	1,482	1,926	2,289
Boeing 737-800 Series	**5,608**	**7,031**	**9,140**	**10,859**
CFM56-7B27	5,494	6,888	8,954	10,638
LEAP-1B25	114	143	186	221
Boeing 737-900 Series	**514**	**644**	**838**	**995**
CFM56-7B27	514	644	838	995
Boeing 737-900-ER	**2,030**	**2,545**	**3,308**	**3,931**
CFM56-7B27	2,030	2,545	3,308	3,931
Boeing 767-300 Series	**70**	**0**	**0**	**0**
PW4060	70	0	0	0
Bombardier (Canadair) CRJ200 ExecLiner	**3,646**	**4,001**	**4,625**	**5,146**
CF34-3A1	3,646	4,001	4,625	5,146
Bombardier Challenger 300	**2**	**2**	**3**	**3**
AE3007A1	2	2	3	3
Bombardier Challenger 350	**6**	**7**	**8**	**8**
HTF7350 (AS907-2-1A)	6	7	8	8
Bombardier Challenger 604	**238**	**261**	**302**	**336**
CF34-3B	238	261	302	336
Bombardier CRJ-700	**4,238**	**4,651**	**5,376**	**5,982**
CF34-3B	4,238	4,651	5,376	5,982

Aircraft and Engine Model	2018	2023	2031	2037
Bombardier CRJ-900	**1,346**	**1,477**	**1,708**	**1,900**
CF34-8C5	1,346	1,477	1,708	1,900
Bombardier Global 5000 Business	**16**	**18**	**20**	**23**
BR700-710A2-20	16	18	20	23
Bombardier Global 6000 Business	**4**	**4**	**5**	**6**
BR700-710A2-20	4	4	5	6
Bombardier Global Express	**2**	**2**	**3**	**3**
BR700-715A1-30	2	2	3	3
Embraer ERJ135	**2**	**2**	**3**	**3**
AE3007A1/3	2	2	3	3
Embraer ERJ175	**1,834**	**2,013**	**2,327**	**2,589**
CF34-8E5A1	1,834	2,013	2,327	2,589
Raytheon Super King Air 200	**8**	**9**	**10**	**11**
PT6A-41	8	9	10	11
Grand Total	**25,535**	**30,155**	**37,405**	**43,355**

Table 6. Operations by aircraft and engine model at LAX in 2018.

Airframe Make and Model	Engine Model	Ops
Airbus A300B4-600 Series	CF6-80C2A3	754
Airbus A300B4-600 Series	PW4158	466
Airbus A300B4-600 Series	CF6-80C2A5	92
Airbus A300F4-600 Series	CF6-80C2A8	1,148
Airbus A300F4-600 Series	CF6-80C2A5F	156
Airbus A300F4-600 Series	PW4158	28
Airbus A318-100 Series	CFM56-5B8/P	2
Airbus A319-100 Series	CFM56-5B5/P	15,876
Airbus A319-100 Series	V2524-A5	14,221
Airbus A319-100 Series	V2527-A5	313
Airbus A319-100 Series	CFM56-5B6/P	6,313
Airbus A319-100 Series	CFM56-5B4/2P	977
Airbus A319-100 Series	CFM56-5B6/3	878
Airbus A319-100 Series	CFM56-5B7/3	672
Airbus A319-100 Series	V2527M-A5	37
Airbus A320-200 Series	CFM56-5B4/P	26,575
Airbus A320-200 Series	CFM56-5B4	17,625
Airbus A320-200 Series	CFM56-5B4/3	8,998
Airbus A320-200 Series	V2527-A5	9,115
Airbus A320-200 Series	V2500-A1	8,023
Airbus A320-200 Series	V2527E-A5	2,354
Airbus A320-200 Series	V2522-D5	149
Airbus A320-NEO	LEAP-1A26/26E1	772
Airbus A320-NEO	PW1127G-JM	601
Airbus A321-200 Series	CFM56-5B3/P	6,934
Airbus A321-200 Series	V2533-A5	71,304
Airbus A321-200 Series	CFM56-5B3/3	671
Airbus A321-NEO	PW1133G-JM	5
Airbus A330-200 Series	PW4168A	3,897
Airbus A330-200 Series	Trent 772	3,824
Airbus A330-300 Series	Trent 772	1,282
Airbus A330-300 Series	CF6-80E1A4	590
Airbus A330-300 Series	PW4168A	361
Airbus A340-300 Series	CFM56-5C4	2,392
Airbus A340-600 Series	Trent 556-61	973
Airbus A350-900 series	Trent 772	20
Airbus A380-800 Series	Trent 970-84	10,401
Raytheon Beech 1900-C	PT6A-65B	5
Raytheon Beech 1900-D	PT6A-67D	1,243
Raytheon Super King Air 300	PT6A-60A	3,997
Raytheon Super King Air 300	PT6A-60	3
Boeing 717-200 Series	BR700-715A1-30	5,507
Boeing 717-200 Series	BR700-715A1-30	502
Boeing 717-200 Series	BR700-715B1-30	149

Airframe Make and Model	Engine Model	Ops
Boeing 717-200 Series	BR700-715C1-30	58
Boeing 737-400 Series	CFM56-3C-1	565
Boeing 737-600 Series	CFM56-7B20	261
Boeing 737-700 Series	CFM56-7B20	54,367
Boeing 737-700 Series	CFM56-7B24	29,538
Boeing 737-700 Series	CFM56-7B24/3	6,275
Boeing 737-700 Series	CFM56-7B24E	1,069
Boeing 737-700 Series	CFM56-3C-1	179
Boeing 737-700 Series	CFM56-7B22	6,723
Boeing 737-700 Series	CFM56-7B22/2	169
Boeing 737-700 Series	CFM56-7B26E/B2	1
Boeing 737-700 Series	CFM56-7B27/3	6
Boeing 737-800 Series	CFM56-7B27	55,303
Boeing 737-800 Series	CFM56-7B24E	18,444
Boeing 737-800 Series	CFM56-7B24/3	5,318
Boeing 737-800 Series	CFM56-7B24	602
Boeing 737-800 Series	CFM56-7B26/3	4,918
Boeing 737-800 Series	CFM56-7B26	2,836
Boeing 737-800 Series	CFM56-7B27E	12,710
Boeing 737-800 Series	CFM56-7B26E	914
Boeing 737-800 Series	CFM56-7B27/3	427
Boeing 737-10	LEAP-1A35A/33/33B2/32/30	298
Boeing 737-900 Series	CFM56-7B26	3,394
Boeing 737-900 Series	CFM56-7B27	437
Boeing 737-900-ER	CFM56-7B27E	40,715
Boeing 737-900-ER	CFM56-7B26E	3,221
Boeing 737-900-ER	CFM56-7B26/3	3,104
Boeing 737-900-ER	CFM56-7B26	1,470
Boeing 737-900-ER	CFM56-7B27E/B3	527
Boeing 737-900-ER	CFM56-7B26/2	350
Boeing 737-900-ER	CFM56-7B26	672
Boeing 747-400 Series	CF6-80C2B1F	6,662
Boeing 747-400 Series	PW4056	469
Boeing 747-400 Series	CF6-80C2B1F	212
Boeing 747-400 Series Freighter	CF6-80C2B1F	1,342
Boeing 747-400 Series Freighter	PW4062	72
Boeing 747-400 Series Freighter	CF6-80C2B5F	33
Boeing 747-8F	GEnx-2B67B	567
Boeing 747-8F	GENX-2B67	54
Boeing 757-200 Series	RB211-535E4	8,535
Boeing 757-200 Series	PW2037	21,904

Airframe Make and Model	Engine Model	Ops
Boeing 757-200 Series	PW2040	2,688
Boeing 757-300 Series	PW2040	5,074
Boeing 757-300 Series	RB211-535E4	6,374
Boeing 757-300 Series	RB211-535E4B	289
Boeing 767-200 Series	CF6-80A2	504
Boeing 767-200 Series	JT9D-7R4D, -7R4D1	448
Boeing 767-200 Series	CF6-80A	299
Boeing 767-200 Series	CF6-80C2B7F	5
Boeing 767-200 ER	CF6-80C2B8F	38
Boeing 767-300 Series	PW4060	5,252
Boeing 767-300 Series	CF6-80C2B6	1,487
Boeing 767-300 ER	CF6-80C2B6F	5,224
Boeing 767-300 ER	PW4060	588
Boeing 767-300 ER	CF6-80C2B7F	2
Boeing 767-400 ER	CF6-80C2B8FA	1,297
Boeing 777-200 Series	GE90-90B	2,466
Boeing 777-200 Series	Trent 892	4,550
Boeing 777-200 Series	PW4090	3,245
Boeing 777-200 Series	GE90-94B	7
Boeing 777-200 Series	GE90-90B	2
Boeing 777-200-LR	GE90-110B1	8,975
Boeing 777-300 Series	GE90-115B	795
Boeing 777-300 ER	GE90-115B	27,446
Boeing 787-8 Dreamliner	Trent 1000-J2	4,307
Boeing 787-8 Dreamliner	GEnx-1B70/P2	2,019
Boeing 787-8 Dreamliner	Trent 1000-C2	602
Boeing 787-8 Dreamliner	GEnx-1B70/75/P1	158
Boeing 787-8 Dreamliner	GENX-1B70	71
Boeing 787-9 Dreamliner	Trent 1000-J2	5,259
Boeing 787-9 Dreamliner	GEnx-1B74/75/P1	5,751
Boeing 787-9 Dreamliner	GEnx-1B74/75/P2	236
Raytheon Beechjet 400	JT15D-5, -5A, -5B	596
Cessna 525B CitationJet	BIZLIGHTJET_F	881
Cessna 525C CitationJet	BIZLIGHTJET_F	169
Cessna 560 Citation V	JT15D-5, -5A, -5B	349
Cessna 560 Citation V	PW530	273
Cessna 560 Citation V	JT15D-5C	27
Cessna 560 Citation Excel	JT15D-5, -5A, -5B	80
Cessna 560 Citation XLS	BIZMEDIUMJET_F	3,518
Cessna 750 Citation X	AE3007C	64
Cessna 750 Citation X	AE3007C	80
Cessna 750 Citation X	AE3007C1	50
Cessna 750 Citation X	AE3007C2	30
Bombardier CRJ-200	CF34-3B	22,739
Bombardier CRJ-200	CF34-3A1	35

Airframe Make and Model	Engine Model	Ops
Bombardier CRJ-700-ER	CF34-8C1	15,731
Bombardier CRJ-700-ER	CF34-8C5B1	9,022
Bombardier CRJ-900	CF34-8C5	1,102
Bombardier CRJ-900	CF34-8C5A1	42
Boeing MD-10-30	CF6-50C2	393
Boeing MD-10-1 Freighter	CF6-6D	937
Bombardier de Havilland Dash 8 Q400	PW150A	6,057
Embraer EMB120 Brasilia	PW118	569
Embraer ERJ135	AE3007A1E	5
Embraer ERJ135 Legacy Business	AE3007A1E	194
Embraer ERJ135 Legacy Business	AE3007A2	19
Embraer ERJ170	CF34-8E5	12
Embraer ERJ190	CF34-10E	542
Embraer ERJ190	CF34-10E7-B	318
Embraer 500	BIZLIGHTJET_F	16
Embraer Legacy 450 (EMB-545)	HTF7500E (AS907-3-1E-A2)	336
Dassault Falcon 2000	PW308C Build Spec 1289	89
Dassault Falcon 2000	CF700-2D	868
Dassault Falcon 2000-EX	PW308C Build Spec 1289	1,310
Falcon 7X	PW307A	562
Israel IAI-1126 Galaxy	PW306A	166
Bombardier Global Express	BR700-710A2-20	1,339
Bombardier Global 5000 Business	BR700-710A2-20	587
Gulfstream G300	SPEY Mk511	70
Gulfstream G300	TAY Mk611-8	9
Gulfstream G400	TAY Mk611-8	636
Gulfstream G400	TAY 611-8C	1,225
Gulfstream G500	BR700-710A1-10	557
Gulfstream G650ER	BR700-725A1-12	1,007
Raytheon Hawker 4000 Horizon	PW308A	180
Bombardier Learjet 45	TFE731-2-2B	276
Bombardier Learjet 45	BIZMEDIUMJET_F	551
Bombardier Learjet 60	TFE731-2/2A	40
Bombardier Learjet 60	BIZMEDIUMJET_F	851
Boeing MD-11	CF6-80C2D1F	177
Boeing MD-11	CF6-80C2D1F	2
Boeing MD-11 Freighter	CF6-80C2D1F	4,370
Boeing MD-11 Freighter	PW4062	1,105
Boeing MD-11 Freighter	CF6-6D1A	124
Boeing MD-11 Freighter	PW4460	77
Pilatus PC-12	PT6A-67B	6,572

Airframe Make and Model	Engine Model	Ops
Pilatus PC-12	PT6A-67	24
Total Operations		707,342

Table 7. Operations by aircraft and engine model at LAX in 2023.

Airframe Make and Model	Engine Model	Ops
Airbus A220-100	PW1524G	2,485
Airbus A300B4-600 Series	CF6-80C2A3	377
Airbus A300B4-600 Series	PW4158	245
Airbus A300F4-600 Series	CF6-80C2A8	1,460
Airbus A318-100 Series	CFM56-5B8/3	4,260
Airbus A319-100 Series	CFM56-5B5/3	10,472
Airbus A319-100 Series	CFM56-5B5/P	7,938
Airbus A319-100 Series	V2524-A5	7,110
Airbus A319-100 Series	V2527-A5	156
Airbus A319-100 Series	CFM56-5B6/P	3,156
Airbus A319-100 Series	CFM56-5B4/2P	488
Airbus A319-100 Series	CFM56-5B6/3	438
Airbus A319-100 Series	CFM56-5B7/3	336
Airbus A319-100 Series	V2527M-A5	18
Airbus A320-200 Series	CFM56-5B4/3	33,431
Airbus A320-200 Series	CFM56-5B4/P	13,287
Airbus A320-200 Series	CFM56-5B4	8,812
Airbus A320-200 Series	V2527-A5	4,557
Airbus A320-200 Series	V2500-A1	4,011
Airbus A320-200 Series	V2527E-A5	1,177
Airbus A320-200 Series	V2522-D5	74
Airbus A320-NEO	LEAP-1A26/26E1	386
Airbus A320-NEO	PW1127G-JM	300
Airbus A321-200 Series	V2533-A5 SelectOne™ Upgrade Package	63,547
Airbus A321-200 Series	CFM56-5B3/P	3,466
Airbus A321-200 Series	V2533-A5	35,652
Airbus A321-200 Series	CFM56-5B3/3	335
Airbus A330-200 Series	PW4168A	2,658
Airbus A330-200 Series	Trent 772	1,911
Airbus A330-300 Series	Trent 772	1,883
Airbus A330-300 Series	CF6-80E1A4	295
Airbus A330-300 Series	PW4168A	180
Airbus A330-800-NEO	Trent7000-72	2,485
Airbus A330-900N Series (Neo)	Trent7000-72	7,100
Airbus A340-300 Series	CFM56-5C4	1,551
Airbus A340-600 Series	Trent 556-61	486
Airbus A350-900 series	Trent XWB-84	13,490
Airbus A350-900 series	Trent 772	10
Airbus A350-1000 Series	Trent XWB-97	710
Airbus A380-800 Series	Trent 970-84	12,655
Raytheon Super King Air 300	PT6A-60A	4,305
Boeing 717-200 Series	BR700-715A1-30	3,359
Boeing 717-200 Series	BR700-715B1-30	74
Boeing 717-200 Series	BR700-715C1-30	29
Boeing 737-700 Series	CFM56-7B26	19,170
Boeing 737-700 Series	CFM56-7B20	27,183
Boeing 737-700 Series	CFM56-7B24	14,768
Boeing 737-700 Series	CFM56-7B24/3	3,137
Boeing 737-700 Series	CFM56-7B24E	534
Boeing 737-700 Series	CFM56-7B22	3,361
Boeing 737-700 Series	CFM56-7B22/2	84
Boeing 737-800 Series	CFM56-7B27/3	67,310
Boeing 737-800 Series	CFM56-7B27	27,651
Boeing 737-800 Series	CFM56-7B24E	9,221
Boeing 737-800 Series	CFM56-7B24/3	2,659
Boeing 737-800 Series	CFM56-7B24	300
Boeing 737-800 Series	CFM56-7B26/3	2,459
Boeing 737-800 Series	CFM56-7B26	1,418
Boeing 737-800 Series	CFM56-7B27E	6,354
Boeing 737-800 Series	CFM56-7B26E	456
Boeing 737-10	LEAP-1A35A/33/33B2/32/30	148
Boeing 737-900 Series	CFM56-7B26	2,767
Boeing 737-900 Series	CFM56-7B27	218
Boeing 737-900-ER	CFM56-7B27E/B1	32,306
Boeing 737-900-ER	CFM56-7B27E	20,357
Boeing 737-900-ER	CFM56-7B26E	1,610
Boeing 737-900-ER	CFM56-7B26/3	1,552
Boeing 737-900-ER	CFM56-7B27E/B3	263
Boeing 737-900-ER	CFM56-7B26/2	174
Boeing 747-400 Series	CF6-80C2B1F	7,656
Boeing 747-400 Series	PW4056	234
Boeing 747-400 Series Freighter	PW4062	35
Boeing 747-400 Series Freighter	CF6-80C2B5F	16
Boeing 747-8F	GEnx-2B67	1,979
Boeing 747-8F	GEnx-2B67B	283
Boeing 757-200 Series	PW2037	11,306
Boeing 757-200 Series	RB211-535E4	4,267
Boeing 757-300 Series	RB211-535E4	9,222
Boeing 757-300 Series	PW2040	2,536
Boeing 757-300 Series	RB211-535E4B	144
Boeing 767-200 Series	CF6-80C2B7F	1,067
Boeing 767-300 Series	PW4060	7,889
Boeing 767-300 Series	CF6-80C2B6	743
Boeing 767-300 ER	CF6-80C2B6F	2,612
Boeing 767-400 ER	CF6-80C2B8FA	648
Boeing 777-200 Series	GE90-90B	1,233

Airframe Make and Model	Engine Model	Ops
Boeing 777-200 Series	Trent 892	2,275
Boeing 777-200 Series	PW4090	1,622
Boeing 777-200-LR	GE90-110B1	9,102
Boeing 777-300 ER	GE90-115B	14,120
Boeing 777-9X	GE90-115B	2,485
Boeing 787-8 Dreamliner	GEnx-1B70/75/P2	1,775
Boeing 787-8 Dreamliner	Trent 1000-J2	2,153
Boeing 787-8 Dreamliner	GEnx-1B70/P2	1,009
Boeing 787-8 Dreamliner	Trent 1000-C2	300
Boeing 787-8 Dreamliner	GEnx-1B70/75/P1	78
Boeing 787-8 Dreamliner	GENX-1B70	35
Boeing 787-9 Dreamliner	Trent 1000-K2	11,005
Boeing 787-9 Dreamliner	GEnx-1B76A/P2	9,585
Boeing 787-9 Dreamliner	Trent 1000-J2	2,629
Boeing 787-9 Dreamliner	GEnx-1B74/75/P1	2,875
Boeing 787-9 Dreamliner	GEnx-1B74/75/P2	118
Boeing 787-10 Dreamliner	GEnx-1B76A/P2	1,065
Raytheon Beechjet 400	JT15D-5, -5A, -5B	652
Cessna 525B CitationJet	PW610F	710
Cessna 525B CitationJet	BIZLIGHTJET_F	440
Cessna 525C CitationJet	PW610F	1,065
Cessna 525C CitationJet	BIZLIGHTJET_F	84
Cessna 402	TIO-540-J2B2	1,775
Cessna 560 Citation V	JT15D-5, -5A, -5B	174
Cessna 560 Citation V	PW530	136
Cessna 560 Citation V	JT15D-5C	13
Cessna 560 Citation Excel	JT15D-5, -5A, -5B	39
Cessna 560 Citation XLS	BIZMEDIUMJET_F	1,758
Cessna 750 Citation X	AE3007C	602
Cessna 750 Citation X	AE3007C1	24
Cessna 750 Citation X	AE3007C2	15
Bombardier CRJ-200	CF34-3B	15,349
Bombardier CRJ-700-ER	CF34-8C1	14,965
Bombardier CRJ-700-ER	CF34-8C5B1	4,511
Bombardier CRJ-900	CF34-8C5	3,745
Boeing MD-10-1 Freighter	CF6-6D	1,355
Bombardier de Havilland Dash 8 Q400	PW150A	5,158

Airframe Make and Model	Engine Model	Ops
Embraer EMB120 Brasilia	PW118	994
Embraer ERJ135 Legacy Business	AE3007A1E	454
Embraer ERJ135 Legacy Business	AE3007A2	9
Embraer ERJ170	CF34-8E5	50,417
Embraer ERJ190	CF34-10E	1,336
Embraer ERJ190	CF34-10E7-B	159
Embraer 500	HTF7500E (AS907-3-1E-A3)	355
Embraer 500	BIZLIGHTJET_F	7
Embraer Legacy 450 (EMB-545)	HTF7500E (AS907-3-1E-A2)	345
Dassault Falcon 2000	CF700-2D	434
Dassault Falcon 2000-EX	PW308C Build Spec 1289	1,053
Falcon 7X	PW307A	458
Israel IAI-1126 Galaxy	PW306A	792
Bombardier Global Express	BR700-710A2-20	1,849
Gulfstream G400	TAY 611-8C	2,032
Gulfstream G500	BR700-710A1-10	1,698
Gulfstream G650	BR700-725A1-12	680
Raytheon Hawker 4000 Horizon	PW308A	266
Bombardier Learjet 45	TFE731-2/2A	177
Bombardier Learjet 45	TFE731-2-2B	137
Bombardier Learjet 45	BIZMEDIUMJET_F	275
Bombardier Learjet 60	AE3007C	355
Bombardier Learjet 60	TFE731-2/2A	19
Bombardier Learjet 60	BIZMEDIUMJET_F	425
Boeing MD-11 Freighter	CF6-80C2D1F	4,935
Boeing MD-11 Freighter	PW4062	552
Boeing MD-11 Freighter	CF6-6D1A	61
Boeing MD-11 Freighter	PW4460	38
Pilatus PC-12	PT6A-67B	4,351
Pilatus PC-12	PT6A-67	11
Total Operations		747,960

Table 8. Operations by aircraft and engine model at LAX in 2031.

Airframe Make and Model	Engine Model	Ops
Airbus A220-100	PW1524G	5,064
Airbus A300F4-600 Series	CF6-80C2A8	1,809
Airbus A318-100 Series	CFM56-5B8/3	8,682
Airbus A319-100 Series	CFM56-5B5/3	21,343
Airbus A320-200 Series	CFM56-5B4/3	58,965
Airbus A321-200 Series	V2533-A5 SelectOne™ Upgrade Package	129,506
Airbus A330-200 Series	PW4168A	1,447
Airbus A330-300 Series	Trent 772	2,532
Airbus A330-800-NEO	Trent7000-72	5,064
Airbus A330-900N Series (Neo)	Trent7000-72	14,470
Airbus A340-300 Series	CFM56-5C4	723
Airbus A350-900 series	Trent XWB-84	27,493
Airbus A350-1000 Series	Trent XWB-97	1,447
Airbus A380-800 Series	Trent 970-84	15,193
Raytheon Super King Air 300	PT6A-60A	4,259
Boeing 717-200 Series	BR700-715A1-30	723
Boeing 737-700 Series	CFM56-7B26	39,069
Boeing 737-800 Series	CFM56-7B27/3	136,741
Boeing 737-900-ER	CFM56-7B27E/B1	65,838
Boeing 747-400 Series	CF6-80C2B1F	7,235
Boeing 747-8F	GEnx-2B67	3,979
Boeing 757-200 Series	PW2037	723
Boeing 757-300 Series	RB211-535E4	12,299
Boeing 767-200 Series	CF6-80C2B7F	2,170
Boeing 767-300 Series	PW4060	10,129
Boeing 777-200-LR	GE90-110B1	9,405
Boeing 777-9X	GE90-115B	5,064
Boeing 787-8 Dreamliner	GEnx-1B70/75/P2	3,617
Boeing 787-9 Dreamliner	Trent 1000-K2	22,428
Boeing 787-9 Dreamliner	GEnx-1B76A/P2	19,534
Boeing 787-10 Dreamliner	GEnx-1B76A/P2	2,170
Raytheon Beechjet 400	JT15D-5, -5A, -5B	858

Airframe Make and Model	Engine Model	Ops
Cessna 525B CitationJet	PW610F	1,715
Cessna 525C CitationJet	PW610F	2,573
Cessna 402	TIO-540-J2B2	4,288
Cessna 750 Citation X	AE3007C	1,286
Bombardier CRJ-200	CF34-3B	10,485
Bombardier CRJ-700-ER	CF34-8C1	14,470
Bombardier CRJ-900	CF34-8C5	6,511
Boeing MD-10-1 Freighter	CF6-6D	1,809
Bombardier de Havilland Dash 8 Q400	PW150A	3,932
Embraer EMB120 Brasilia	PW118	1,311
Embraer ERJ135 Legacy Business	AE3007A1E	655
Embraer ERJ170	CF34-8E5	102,736
Embraer ERJ190	CF34-10E	2,170
Embraer 500	HTF7500E (AS907-3-1E-A3)	723
Embraer Legacy 450 (EMB-545)	HTF7500E (AS907-3-1E-A2)	429
Dassault Falcon 2000-EX	PW308C Build Spec 1289	858
Falcon 7X	PW307A	429
Israel IAI-1126 Galaxy	PW306A	1,715
Bombardier Global Express	BR700-710A2-20	1,638
Gulfstream G400	TAY 611-8C	2,621
Gulfstream G500	BR700-710A1-10	2,621
Gulfstream G650	BR700-725A1-12	328
Raytheon Hawker 4000 Horizon	PW308A	429
Bombardier Learjet 45	TFE731-2/2A	429
Bombardier Learjet 60	AE3007C	858
Boeing MD-11 Freighter	CF6-80C2D1F	5,426
Pilatus PC-12	PT6A-67B	2,573
Total Operations		815,000

Table 9. Operations by aircraft and engine model at LAX in 2037.

Airframe Make and Model	Engine Model	Ops
Airbus A220-100	PW1524G	5,214
Airbus A300F4-600 Series	CF6-80C2A8	1,862
Airbus A318-100 Series	CFM56-5B8/3	8,939
Airbus A319-100 Series	CFM56-5B5/3	21,975
Airbus A320-200 Series	CFM56-5B4/3	60,711
Airbus A321-200 Series	V2533-A5 SelectOne™ Upgrade Package	133,340
Airbus A330-200 Series	PW4168A	1,490
Airbus A330-300 Series	Trent 772	2,607
Airbus A330-800-NEO	Trent7000-72	5,214
Airbus A330-900N Series (Neo)	Trent7000-72	14,898
Airbus A340-300 Series	CFM56-5C4	745
Airbus A350-900 series	Trent XWB-84	28,307
Airbus A350-1000 Series	Trent XWB-97	1,490
Airbus A380-800 Series	Trent 970-84	15,643
Raytheon Super King Air 300	PT6A-60A	4,110
Boeing 717-200 Series	BR700-715A1-30	745
Boeing 737-700 Series	CFM56-7B26	40,225
Boeing 737-800 Series	CFM56-7B27/3	140,789
Boeing 737-900-ER	CFM56-7B27E/B1	67,787
Boeing 747-400 Series	CF6-80C2B1F	7,449
Boeing 747-8F	GEnx-2B67	4,097
Boeing 757-200 Series	PW2037	745
Boeing 757-300 Series	RB211-535E4	12,664
Boeing 767-200 Series	CF6-80C2B7F	2,235
Boeing 767-300 Series	PW4060	10,429
Boeing 777-200-LR	GE90-110B1	9,684
Boeing 777-9X	GE90-115B	5,214
Boeing 787-8 Dreamliner	GEnx-1B70/75/P2	3,725
Boeing 787-9 Dreamliner	Trent 1000-K2	23,092
Boeing 787-9 Dreamliner	GEnx-1B76A/P2	20,113
Boeing 787-10 Dreamliner	GEnx-1B76A/P2	2,235
Raytheon Beechjet 400	JT15D-5, -5A, -5B	798
Cessna 525B CitationJet	PW610F	1,596
Cessna 525C CitationJet	PW610F	2,394
Cessna 402	TIO-540-J2B2	3,990
Cessna 750 Citation X	AE3007C	1,197
Bombardier CRJ-200	CF34-3B	10,117
Bombardier CRJ-700-ER	CF34-8C1	14,898
Bombardier CRJ-900	CF34-8C5	6,704
Boeing MD-10-1 Freighter	CF6-6D	1,862
Bombardier de Havilland Dash 8 Q400	PW150A	3,794
Embraer EMB120 Brasilia	PW118	1,265

Airframe Make and Model	Engine Model	Ops
Embraer ERJ135 Legacy Business	AE3007A1E	632
Embraer ERJ170	CF34-8E5	105,778
Embraer ERJ190	CF34-10E	2,235
Embraer 500	HTF7500E (AS907-3-1E-A3)	745
Embraer Legacy 450 (EMB-545)	HTF7500E (AS907-3-1E-A2)	399
Dassault Falcon 2000-EX	PW308C Build Spec 1289	798
Falcon 7X	PW307A	399
Israel IAI-1126 Galaxy	PW306A	1,596
Bombardier Global Express	BR700-710A2-20	1,581
Gulfstream G400	TAY 611-8C	2,529
Gulfstream G500	BR700-710A1-10	2,529
Gulfstream G650	BR700-725A1-12	316
Raytheon Hawker 4000 Horizon	PW308A	399
Bombardier Learjet 45	TFE731-2/2A	399
Bombardier Learjet 60	AE3007C	798
Boeing MD-11 Freighter	CF6-80C2D1F	5,587
Pilatus PC-12	PT6A-67B	2,394
Total Operations		835,500

Table 10. Operations by aircraft and engine model at LGB.

Airframe Model	Engine Model	2018	2023	2031	2037
Aerospatiale SA-350D Astar (AS-350)	TPE331-3	308	369	372	373
Airbus A300B4-600 Series	CF6-80C2B5F	117	124	141	156
Airbus A300B4-600 Series	CF6-80C2A5	23	24	27	30
Airbus A300F4-600 Series	CF6-80E1A4	306	325	368	409
Airbus A300F4-600 Series	CF6-80C2A1	54	57	65	72
Airbus A320-200 Series	V2527-A5 SelectOne? Upgrade Package	16,838	17,910	20,280	22,507
Airbus A320-200 Series	V2527E-A5	868	923	1,046	1,160
Airbus A320-200 Series	CFM56-5B6/3	9,808	10,433	11,814	13,111
Aviat Husky A1B	IO-360-B	136	163	164	165
BEECH MENTOR (BE45) PT6A-25 NM	PT6A-34	1,192	1,427	1,436	1,443
Bell 206 JetRanger	250B17B	273	327	329	330
Bell 407 / Rolls-Royce 250-C47B	250B17B	231	277	279	280
Boeing 737-300 Series	CFM56-3B-2	106	113	128	142
Boeing 737-700 Freighter	CFM56-7B24E	3,116	3,314	3,753	4,165
Boeing 737-700 Series	CFM56-7B27	528	561	635	705
Boeing 737-700 Series	CFM56-7B22/2	272	290	328	364
Boeing 737-700 Series	CFM56-7B20	238	253	286	318
Boeing 737-700 Series	CFM56-3C-1	204	217	246	273
Boeing 737-700 Series	CFM56-7B26/2	35	37	42	46
Boeing 767-300 ER	PW4060	188	200	227	251
Boeing 767-300 ER	CF6-80C2B6F	356	378	428	475
Bombardier Challenger 300	AE3007A1	1,542	1,846	1,858	1,867
Bombardier Challenger 600	ALF 502L-2	24,439	29,258	29,449	29,594
Bombardier Challenger 600	CF34-3B	397	476	479	481
Bombardier CRJ-100	CF34-3A1	1,029	1,074	1,163	1,235
Bombardier CRJ-700	CF34-8C1	74	78	89	98
Bombardier CRJ-900	CF34-8C5	1,134	1,206	1,366	1,516
Bombardier Global Express	BR700-710A1-10	217	227	246	261
Bombardier Learjet 35A/36A (C-21A)	TFE731-2/2A	116	89	89	89
Bombardier Learjet 45	BIZMEDIUMJET_F	759	909	915	919
Bombardier Learjet 60	AE3007C	1,192	1,427	1,436	1,443
Canada Air CL-215	PW123	559	584	632	671
Cessna 150 Series	O-200	14,458	17,309	17,422	17,508
Cessna 172 Skyhawk	TSIO-360C	51,475	61,626	62,028	62,332
Cessna 182	IO-360-B	4,068	4,870	4,902	4,926
Cessna 206	IO-360-B	1,560	1,867	1,879	1,889
Cessna 208 Caravan	TPE331-12	9,061	10,848	10,919	10,973
Cessna 208 Caravan	PT6A-114	237	284	286	287
Cessna 210 Centurion	TIO-540-J2B2	1,127	1,349	1,358	1,364
Cessna 310	TIO-540-J2B2	439	525	529	531
Cessna 337 Skymaster	TSIO-360C	107	128	129	129
Cessna 340	TIO-540-J2B2	1,394	1,668	1,679	1,688
Cessna 402	TIO-540-J2B2	380	454	457	460
Cessna 414	TIO-540-J2B2	338	405	407	409
Cessna 421 Golden Eagle	TIO-540-J2B2	830	994	1,000	1,005
Cessna 425 Conquest I	PT6A-135A	196	234	236	237
Cessna 441 Conquest II	TPE331-10GT	202	241	243	244
Cessna 500 Citation I	PW530	3,173	3,798	3,823	3,842
Cessna 525 CitationJet	PW4090	2,912	3,486	3,509	3,526
Cessna 525A CitationJet	BIZLIGHTJET_F	148	177	179	180
Cessna 525B CitationJet	BIZLIGHTJET_F	2,277	2,726	2,744	2,758
Cessna 525C CitationJet	BIZLIGHTJET	729	873	879	883
Cessna 550 Citation II	BIZLIGHTJET_F	1,856	2,222	2,237	2,248
Cessna 560 Citation Excel	JT15D-5, -5A, -5B	931	1,115	1,122	1,127

Airframe Model	Engine Model	2018	2023	2031	2037
Cessna 560 Citation XLS	PW307B	2,811	3,365	3,387	3,404
Cessna 650 Citation III	TFE731-3	629	753	757	761
Cessna 680 Citation Sovereign	PW308C	1,228	1,470	1,479	1,487
Cessna 680-A Citation Latitude	BIZMEDIUMJET_F	125	149	150	151
Cessna 750 Citation X	AE3007A	824	987	993	998
Cessna T-37 Tweet	J69-25A	353	271	271	271
Cirrus SR20	IO-360-B	688	824	829	833
Cirrus SR22	TIO-540-J2B2	3,718	4,452	4,481	4,503
Dassault Falcon 2000	PW308C Build Spec 1289	95	114	114	115
Dassault Falcon 2000-EX	PW308C Build Spec 1289	492	589	593	596
Dassault Falcon 50	TFE731-3	160	192	193	194
Dassault Falcon 900	TFE731-3	735	880	886	890
Douglas A-3 Skywarrior	J57-P-10	117	90	90	90
EADS Socata TB-20 Trinidad	TIO-540-J2B2	107	128	129	129
EADS Socata TBM-700	PT6A-60	1,524	1,825	1,837	1,846
EADS Socata TBM-700	PT6A-64	107	128	129	129
Eclipse 500 / PW610F	PW610F-A	587	613	664	704
Embraer 500	HTF7500E (AS907-3-1E-A2)	96	102	116	129
Embraer 505	BIZLIGHTJET_F	394	419	474	526
Embraer Legacy 650	AE3007A2	172	206	207	208
EPIC LT/Dynasty	PT6A-67A	213	256	257	259
Eurocopter AS 355NP	250B17B	4,821	5,772	5,810	5,838
Evektor EV-55	PT6A-21	83	99	100	101
Extra EA-500	250B17B	125	149	150	151
Fairchild SA-227-AC Metro III	PW127-A	1,326	1,384	1,499	1,591
Grumman G-21G Goose	TPE331-2UA	117	123	133	141
GULFSTREAM AEROSPACE Gulfstream G650	BR-700-725A1-12	1,595	1,665	1,803	1,915
Gulfstream G150	TFE731-3	575	689	693	697
Gulfstream G200	PW306A	397	476	479	481
Gulfstream G280	HTF7250G (AS907-2-1G)	67	71	81	90
Gulfstream G400	TAY611-8C	1,081	1,128	1,222	1,297
Gulfstream G450	TAY611-8C	1,714	2,052	2,065	2,075
Gulfstream G550	BR700-710C4-11	2,544	3,046	3,066	3,081
Gulfstream II	SPEY Mk511	55	58	62	66
Gulfstream IV-SP	TAY Mk611-8	48	50	55	58
Gulfstream V-SP	TAY Mk611-8	706	845	850	855
Hawker 900XP	BIZMEDIUMJET_F	373	389	422	448
Hawker HS-125 Series 700	TFE731-3	119	142	143	144
Lancair 360	IO-360-B	190	227	229	230
Lockheed F-117 Nighthawk	F404-GE-F1D2	27	20	20	20
Lockheed Martin F-16 Fighting Falcon	F110-GE-129	150	115	115	115
McDonnell Douglas F-4 Phantom II	J79-GE-10B	46	35	35	35
Mitsubishi MU-300 Diamond	JT15D-5, -5A, -5B	9,050	10,834	10,905	10,958
Mooney M20-K	TSIO-360C	2,390	2,861	2,880	2,894
Northrop F-5E/F Tiger II	J85-GE-5H	56	43	43	43
Partenavia P.68 Victor	IO-360-B	249	298	300	302
Pilatus PC-12	PT6A-67	2,651	3,174	3,194	3,210
Piper PA-23 Apache/Aztec	TIO-540-J2B2	640	767	772	776
Piper PA-24 Comanche	TIO-540-J2B2	593	710	715	718
Piper PA-28 Cherokee Series	IO-360-B	10,176	12,183	12,263	12,323
Piper PA-30 Twin Comanche	IO-320-D1AD	208	248	250	251
Piper PA-31 Navajo	TIO-540-J2B2	314	376	379	381
Piper PA-31T Cheyenne	PT6A-135A	83	99	100	101
Piper PA-32 Cherokee Six	TIO-540-J2B2	1,453	1,739	1,751	1,759
Piper PA-34 Seneca	TSIO-360C	433	518	522	524
Piper PA-42 Cheyenne Series	TPE331-10GT	9,210	11,026	11,098	11,152

Airframe Model	Engine Model	2018	2023	2031	2037
Piper PA46-TP Meridian	PT6A-42	706	845	850	855
Rans S7S	O-200	777	930	936	941
Raytheon Beech 55 Baron	TIO-540-J2B2	1,109	1,328	1,336	1,343
Raytheon Beech 60 Duke	TIO-540-J2B2	557	667	672	675
Raytheon Beech Baron 58	TIO-540-J2B2	836	1,001	1,008	1,013
Raytheon Beech Bonanza 36	TIO-540-J2B2	4,649	5,566	5,603	5,630
Raytheon Beechjet 400	JT15D-5, -5A, -5B	1,085	1,299	1,308	1,314
Raytheon King Air 90	PT6A-21	1,376	1,647	1,658	1,666
Raytheon King Air 90	PT6A-135A	101	121	121	122
Raytheon Premier I	BIZLIGHTJET_F	113	135	136	136
Raytheon Super King Air 200	PT6A-42	397	415	449	477
Raytheon Super King Air 300	PT6A-42	835	872	945	1,003
Robin R 2160 Alpha Sport	O-320	89	106	107	108
Robinson R22	O-320	409	490	493	496
Robinson R22B	IO-320-D1AD	2,977	3,564	3,587	3,605
Robinson R44 Raven / Lycoming O-540-F1B5	TIO-540-J2B2	3,386	4,054	4,080	4,100
Schweizer S269D/330	T63-A-5A	3,001	3,592	3,616	3,634
Sikorsky S-76 Spirit	T700-GE-700	463	554	557	560
Total Operations		256,259	300,505	307,785	314,217