

APRIL 2016

ECONOMIC IMPACT ANALYSIS
**LOS ANGELES
INTERNATIONAL
AIRPORT**
IN 2014

LAEDC

LOS ANGELES COUNTY
ECONOMIC DEVELOPMENT CORPORATION

LAX

LOS ANGELES INTERNATIONAL AIRPORT IN 2014

ECONOMIC IMPACT ANALYSIS

INSTITUTE FOR APPLIED ECONOMICS
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This report was commissioned by the Los Angeles World Airports.

The LAEDC Institute for Applied Economics offers objective economic and policy research for public agencies and private firms. The group focuses on economic impact studies, regional industry analyses, economic forecasts and issue studies, particularly in water, transportation, infrastructure and environmental policy.

Every reasonable effort has been made to ensure that the data contained herein reflect the most accurate and timely information possible and they are believed to be reliable.

The report is provided solely for informational purposes and is not to be construed as providing advice, recommendations, endorsements, representations or warranties of any kind whatsoever.

EXECUTIVE SUMMARY

The Los Angeles County Economic Development Corporation (LAEDC) has quantified the total economic impact in the six-county Southern California region of Los Angeles International Airport (LAX) and activities related to airport services, as well as of its capital improvement program.

Ongoing Activity in 2014

The airport is a hive of activity. In 2014, the airport carried 70.7 million passengers on over 578,000 domestic and international flights, and moved 2 million tons of mail and cargo. Together, on- and off-airport services supported 142,970 jobs in 2014. Arriving visitors spent almost \$10 billion at the region's many hotels, restaurants, theme parks and retail outlets. More than \$45.6 billion of merchandise flown to international destinations from the airport was manufactured by regional firms, whose employees and suppliers, in turn, benefited from these sales.

The total economic and fiscal impact of this activity in the six-county Southern California region, including direct, indirect and induced impacts, is shown in Exhibit E-1.

- ▶ 620,610 jobs in Southern California;
- ▶ \$37.3 billion in labor income;
- ▶ \$126.6 billion in output (business revenues); and
- ▶ \$6.2 billion in state and local taxes, and \$8.7 billion in federal tax revenues.

Exhibit E-1

Activity Related to LAX in 2014 Economic and Fiscal Impacts in Southern California

	Ongoing Activities	Visitor Spending	International Exports	Total *
Total Economic Impact:				
Output (\$ millions)	\$ 29,558	\$ 16,177	\$ 80,848	\$ 126,583
Employment (jobs)	142,970	155,640	322,000	620,610
Labor income (\$ millions)	\$ 9,058	\$ 6,304	\$ 21,848	\$ 37,271
Total Fiscal Impact (\$ millions):				
Federal taxes	\$ 2,129	\$ 1,447	\$ 5,104	\$ 8,693
State and local taxes	1,991	1,114	3,102	6,214

* May not sum due to rounding
Source: Estimates by LAEDC



Capital Improvements

The airport is in the midst of a multi-billion dollar capital improvement program, which is expected to continue through 2023. Several projects are in the planning stage, including the landside automated people mover, the consolidated rental car facility, two intermodal transportation facilities and roadway improvements. Other projects are related to airfield and terminal improvements, and those involving tenant improvements at the terminals. It is estimated that the overall capital investment will reach \$10.1 billion.

This investment's total economic and fiscal impact in the six-county Southern California region over the duration of the program, including direct, indirect and induced impacts, is shown in Exhibit E-2.

- ▶ 121,640 annual jobs in Southern California;
- ▶ \$7.6 billion in regional labor income;
- ▶ \$20.3 billion in output (business revenues); and
- ▶ \$966 million in state and local taxes, and \$1.6 billion in federal tax revenues.

Exhibit ES-2

Overall Capital Improvement Program at LAX Economic and Fiscal Impacts in Southern California

	In Planning	Projects in Develop- ment	Tenant Improve- ments	Total *
Expenditures (\$ millions)	\$ 5,500	\$ 2,970	\$ 1,649	\$ 10,119
Total Economic Impact:				
Output (\$ millions)	\$ 10,943	\$ 5,951	\$ 3,425	\$ 20,306
Employment (annual jobs)	65,160	35,970	20,510	121,640
Labor income (\$ millions)	\$ 4,117	\$ 2,239	\$ 1,224	\$ 7,580
Total Fiscal Impact (\$ millions):				
Federal taxes	\$ 875	\$ 475	\$ 292	\$ 1,643
State taxes	508	281	177	966

* May not sum due to rounding
Source: Estimates by LAEDC

TABLE OF CONTENTS

EXECUTIVE SUMMARY		i
1 INTRODUCTION		1
1.1 Los Angeles International Airport	1	
1.2 Economic Impact Analysis	1	
1.3 Approach and Methodology	2	
2 ONGOING ACTIVITIES AT LAX IN 2014		4
2.1 Airport Activity	4	
2.2 Economic Impact of Airport Activity	7	
2.3 Employment Impacts Sub-Region	8	
3 VISITORS ARRIVING THROUGH LAX		11
3.1 Visitor Spending	11	
3.2 Economic Impact of Visitor Spending	14	
4 GOODS EXPORTED THROUGH LAX		16
4.1 Exports Through LAX	16	
4.2 Economic Impact of International Exports through LAX	19	
5 CAPITAL IMPROVEMENT PROGRAM AT LAX		20
5.1 Budgeted Spending	20	
5.2 Economic Impacts	22	
5.3 Total Impacts by Project	23	
5.4 Fiscal Impacts	23	
APPENDIX		25
Description of Industry Sectors	25	
Study Authors	27	

1 INTRODUCTION

1.1 Los Angeles International Airport

The Los Angeles International Airport (LAX) is a complex and vibrant center of diverse activity, much like a small city. On any single day, more than 150,000 passengers walk through one of the terminals, often accompanied by greeting friends or relatives, stopping to purchase a snack or a souvenir on their way to the departure gate, or hailing a cab or shuttle bus to take them to their home, their business appointment, their hotel or their parked car. Thousands of employees arrive at work at the airport each day, booking passengers into departing flights, serving meals or refreshments to passengers and other employees, providing maintenance services to airlines and to the airport administration, guarding against security risks and handling cargo.

This report quantifies the regional economic effects of the airport by analyzing how regional residents and businesses benefit from the services provided at LAX by both on- and off-airport firms that cater to airport users. These firms include domestic and international airlines, cargo services, food and beverage establishments, newsstands and other retailers, ground transportation, off-airport parking, government agencies and maintenance firms. In the region surrounding the airport, additional activity that caters to airport users include hotels, restaurants, freight forwarders, warehouses, small manufacturers, gas stations, travel agencies and cargo handlers. Additional activity is generated in the region by the spending of the domestic and international passengers who arrive and stay a few nights to enjoy local amenities and cultural attractions.

This report also includes an analysis of the economic impacts of the manufacturing of goods that are exported through the airport to international destinations.

Each of these firms hire workers from around the region, paying wages and benefits which circulate throughout the local and regional economy, and purchase millions of dollars worth of goods and services, much of which is provided by other local suppliers.

The extent to which the original demand from airport users circulates through the economy into additional economic activity in the six-county Southern California region is significant. ❖



1.2 Economic Impact Analysis

Economic impact analysis is used to estimate the overall economic activity, including the spill-over and multiplier impacts, which occurs as a result of a particular business, event, or geography.

The initial economic impact of the activity occurring at the airport is the purchase of goods and services from local vendors and the wages and benefits paid to local workers. This injection of funds into the region circulates from the initial recipients to the owners and employees of establishments that help supply them with goods and services for purchase.

For example, airlines purchase large amounts of jet fuel, food and catering supplies, janitorial services and operating supplies, from paper goods to computer services. They also pay the wages and benefits of their own workers, including ticket agents and flight crews.

The suppliers of all the goods and services sold to the airlines in turn hire their own staff and purchase parts and other inputs in order to fill the orders received from the airlines.

Workers at the airlines and at the supplier companies spend a portion of their incomes on groceries, rent, vehicle expenses, healthcare, entertainment, and so on.

The recirculation of the original expenditures multiplies the initial impact through these indirect and induced effects.

The extent to which the initial expenditures multiply is estimated using economic models that depict the relationships between industries (such as construction and its suppliers) and among different economic agents (such as industries and their employees). These models are built upon actual data of expenditure patterns that are reported to the U.S. Bureau of Labor Statistics, the U.S. Census Bureau and the Bureau of Economic Analysis of the U.S. Department of Commerce. Data is regionalized so that it reflects and incorporates local conditions such as prevailing wages rates, idiosyncratic expenditure patterns, and resource availability and costs.

The magnitude of the multiplying effect differs from one region to another depending on the extent to which the local region can fill the demand for all rounds of supplying needs. For example, the automobile manufacturing industry has high multipliers in Detroit and Indiana since these regions have deep and wide supplier networks, while the same industry multiplier in Phoenix is quite small. In another example, the jobs multiplier for the construction industry is higher in, say, Arkansas, than in California because the same amount of spending will purchase fewer workers in Los Angeles than in Little Rock.

Multipliers can also differ from year to year as relative material and labor costs change and as the production “recipe” of industries change. For example, the IT revolution significantly reduced the job multiplier of many industries (such as automotive manufacturing, accounting, architecture and publishing) as computers replaced administrative and production workers. ❖

1.3 Approach and Methodology

Economic impact analysis typically begins with an increase in final demand for an industry’s output, such as a purchase of construction services, or an inflow of out-of-town visitors who spend money at local accommodations and retail outlets. In the case of an airport, this would encompass a wide variety of activity, including not only the terminal services provided by Los Angeles World Airports (LAWA) but also retail, food and beverages, automated teller machines, phone and internet service, parking, rental cars, taxi and limousine services, and government services such as security and immigration and customs agents.

The diversity of activity at the airport presents a challenge in defining the parameters of the activity to include in an economic impact analysis.

Our approach is to define the geographic area for which we are estimating the economic impact. We begin by estimating the impact of LAWA operations at the airport. LAWA pays the salaries of thousands of local workers and purchases millions of dollars worth of goods and services, most of which originates in the region, during the course of ongoing, regular airport operations.

We follow this with an analysis of all other on-airport activity, including retail, food and beverages, maintenance, airline services and ground transportation. Finally, we expand the analysis to include off-airport activity occurring in a circumscribed region adjacent to the airport.

We consulted a variety of data sources to determine the direct activity occurring in each geographic unit. Our estimates for LAWA operations at LAX are produced using data from LAWA’s Annual Financial Report for the fiscal year ending June 30, 2014. Passenger data are for the calendar year ending December 31, 2014.

Our estimates of direct activity for on-airport operations and off-airport operations adjacent to LAX were developed using GIS mapping of the airport property and the surrounding region. These maps were overlaid with Census Bureau data on employment by place of work for the 2013 calendar year. This employment data is taken from official unemployment insurance payroll returns filed by all covered businesses, and identifies the numbers of jobs in each industry sector within the defined geography. While accurate insofar as the data is defined, these returns will underestimate government employment which is not covered by the unemployment insurance system, and will not count employees who work at the airport but whose official business address is elsewhere.

Export data produced by the U.S. Census Bureau is used to estimate the manufacturing activity related to the goods that are exported through the airport.

To estimate the local spending of domestic and international visitors to the region, we use data published by the Los Angeles Tourism and Convention Board and the California Travel and Tourism Commission on overnight visitors and their spending patterns, as described in the narrative.

The distribution of impacts by City Council District and Supervisorial District is estimated as described in the narrative.

Spending estimates for the airport's capital improvements program were also provided by LAWA.

Once the initial direct activity was determined, indirect and induced impacts were estimated using models developed with data and software from IMPLAN Group, LLC. Our region of interest is the six-county Southern California region (consisting of the counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura).

The metrics used to determine the value of the economic impact include employment, labor income and the value of output. Employment numbers include full-time, part-time, permanent and seasonal employees, and the self-employed, and are measured on a job-count basis regardless of the number of hours worked. Labor income is a measure of all income received by both payroll employees and the self-employed, including wages and benefits such as health insurance and pension plan contributions. Output is the value of the goods and services produced. For most industries, this is simply the revenues generated through sales; for others, in particular retail industries, output is the value of the retail services supplied.

The total impacts include direct, indirect and induced effects, as the examples above illustrate. Direct employment is the personnel hired by the airport administration and by the airlines, the concessionaires and other related companies in their ongoing operations, including ticket agents, engineers, maintenance workers, administrative, management, parking attendants, and so on. Direct output is the value of the services provided by each business firm or entity. Indirect effects are those which stem from the employment and output motivated by the purchases made by each direct company. For example, indirect jobs are sustained by the suppliers of the office supplies and insurance purchased by LAWA, American Airlines, and Wolfgang Puck Express. Induced effects are those generated by the household spending of employees whose wages are sustained by both direct and indirect spending.

Our estimates for labor income and output are reported in 2015 dollars. Employment estimates are reported on an annual basis, i.e., the number of full- and part-time jobs supported in one year. ❖

2 ONGOING ACTIVITIES AT LAX IN 2014

2.1 Airport Activity

The estimation of the economic impact of ongoing operations at LAX is taken in three parts. First, the annual operations of Los Angeles World Airports (LAWA) at LAX is analyzed. Thereafter, all other on-airport activity is reviewed, followed by off-airport activity adjacent to the airport.

LAWA Operations at LAX

In 2014, the airport carried 70.7 million passengers on more than 578,000 domestic and international flights, and moved 2 million tons of mail and cargo. This activity generated operating revenue of \$961.7 million and resulted in the employment of 3,500 workers with salaries and benefits of \$356.7 million. Financial data for LAX for the fiscal year are shown in Exhibit 2-1.

Exhibit 2-1

LAWA Operations at LAX Financial Summary FY2014

Operating Revenue (\$ millions):	
Aviation revenue (landing fees, building / land rentals, etc.)	\$ 628.5
Concession revenue	331.3
Other operating revenue	1.9
Total	\$ 961.7
Operation Expenses (\$ millions):	
Salaries and benefits	\$ 356.7
Contractual services	161.8
Materials and supplies	45.7
Utilities	39.1
Other operating expenses (incl. allocated admin charges)	6.7
Total *	\$ 610.0

* Does not include depreciation and amortization
Source: LAWA Annual Financial Report FY2014

Approximately two-thirds of LAWA's operating revenue at LAX originates from landing fees, building rent and land rental. Concession revenue, including terminal retail and food concessions, non-aviation parking and commercial ground transportation revenues, generated the majority of the remaining operating revenue.

LAWA spent almost \$357 million on salaries and benefits for its employees, and an additional \$161.8 million on contracted services for parking, maintenance



and professional services. It purchased \$45.7 million in materials and supplies, and paid \$39 million in utility services, many of which are sourced from the local and regional economy.

Other On-Airport Activity at LAX

LAWA is the operator and landlord of airport property, which includes more than the terminals and runways. With thousands of employees and hundreds of thousands of passengers moving through the airport on a daily basis, a myriad of businesses delivering on-airport services have located on the premises. Examples of businesses delivering on-airport services include domestic and international airlines (carrying passengers and/or cargo), airport tenants performing services to airlines, retail establishments, food and beverage establishments, public agencies engaged in air traffic control and providing security, and emergency services.

A large number of employees who work at LAX are not directly employed by LAWA but are employed by firms contracted to operate at LAX.

Badge counts provide a picture of other employees that work at the airport: many providers of freight and passenger air transportation locate their operations at LAX—FedEx itself employs approximately 3,000 workers at LAX, and airline companies alone employ an additional 12,000 people.

City and county employees number 970. The U.S. Department of Homeland Security staffs the Transportation Security Administration (TSA), Customs and Border Protection (CBP) and Immigration and Customs Enforcement (ICE) with 4,000 employees. Other federal agencies with staff at the airport include General Services Administration, the Department of Agriculture, the Federal Bureau of Investigation, Fish and Wildlife, the State Department, the Drug Enforcement Agency, and the Food and Drug Administration.

Total employment related to on-airport businesses may not be fully represented by badge data. For example, employees who work for firms located in publicly-accessible areas of the airport do not require badges.

To obtain complete detailed employment and payroll data estimates across all industries for the on-airport services, unrelated to LAWA, we defined LAX as a custom site using GIS software. Specialized reports containing place of work data can be obtained using the defined custom geography. A map of the custom site of LAX property is shown in Exhibit 2-2.

Using the map, payroll data for employment by place of work is estimated for each business location within the defined geography. The summary of employment by industry sector within the property is shown in Exhibit 2-3.

Exhibit 2-3

Jobs in Other On-Airport Activity at LAX

	Jobs
Utilities	55
Construction	17
Manufacturing	22
Wholesale trade	792
Retail trade	456
Transportation and warehousing	20,842
Information	85
Finance and insurance	89
Real estate and rental and leasing	604
Professional, scientific, technical services	174
Management of companies	1
Administrative and waste management services	319
Educational services	62
Health care and social assistance	98
Arts, entertainment and recreation	34
Accommodation and food services	3,425
Other services	584
Government	2,508
Total *	34,940

* May not sum due to rounding

Source: U.S. Census Bureau Local Employment Dynamics 2013

Exhibit 2-2

Map of LAX Property



Sources: ESRI, LAEDC

Most employees are in the transportation sector, which includes not only airlines but also airport support services such as cabin service, and freight handling. Other measureable employment is found in the accommodation and food services and in the public sector, which would include TSA employees and US Customs and Border Protection.

This summary does not include LAWA's employment since that was estimated in the previous section. All other on-airport activities provide 34,940 jobs in addition to LAWA's employment.

LAX-Adjacent Activity

In addition to on-airport business activity, a variety of businesses operate within close proximity to the airport for the purpose of catering to airport users. Examples of such businesses include hotels, restaurant, freight forwarders, ground transportation, rental car agencies, ticket agents, truck transportation, warehouses, manufacturers and local maintenance services.

In this section, we estimate the economic impact of all businesses within a prescribed geographic region of the airport, since their livelihood is dependent on proximity. For example, hotels within the area host many conventions and business meetings for both domestic and international travelers, with attendees staying onsite. This spending is directly related to the convenience of the aviation services provided at the airport.

Similarly, convention facilities utilized near the airport are chosen specifically for their proximity and ease of access for arriving visitors. These are included in our estimates of direct activity because we believe that they would essentially vanish if the airport were not there.

The boundaries of the LAX-adjacent area are Imperial Highway to the south, Manchester Avenue to the north, Aviation Boulevard to the east, and the Pacific Ocean to the west. A careful examination of a much broader area indicates that this LAX-adjacent geography is appropriate. A map of the region is shown in Exhibit 2-6. Note the darker region in the exhibit is the LAX airport property.

Using the map, payroll data for employment by place of work is estimated for each business location within the defined geography. The summary of employment by industry sector within the property is shown in Exhibit 2-5. This summary does not include LAWA's employment or other on-airport employment shown in Exhibit 2-3.

Exhibit 2-5

Jobs in LAX-Adjacent Activity

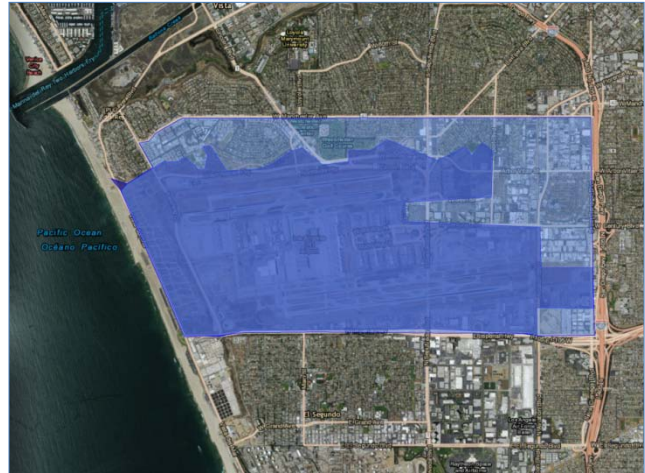
	Jobs
Agriculture	27
Mining	1
Utilities	17
Construction	275
Manufacturing	1,073
Wholesale trade	1,601
Retail trade	1,851
Transportation and warehousing	5,262
Information	360
Finance and insurance	476
Real estate and rental and leasing	2,237
Professional, scientific, technical services	1,428
Management of companies	379
Administrative and waste management services	2,405
Educational services	1,130
Health care and social assistance	1,358
Arts, entertainment and recreation	216
Accommodation and food services	6,080
Other services	1,264
Government	58
Total *	27,500

* May not sum due to rounding

Source: U.S. Census Bureau Local Employment Dynamics 2013

Exhibit 2-4

Map of LAX-Adjacent Area



Sources: ESRI, LAEDC

Most employees are in the transportation sector, which includes not only airlines but also airport support services such as cabin service, and freight handling. Other measureable employment is found in the accommodation and food services and in administrative and waste management services. ❖

2.2 Economic Impact of Airport Activity

Using the financial data for LAWA operations, and employment estimates by industry for other activities on airport property and at businesses adjacent to the airport, the economic and fiscal impact of the overall ongoing activity occurring at LAX is estimated for the Southern California region. These impacts are shown in Exhibit 2-6.

To avoid double-counting of impacts, such as those which occur when airport employees purchase food and beverages from concessionaires on airport property, we have discounted the actual employment recorded in the region.

Exhibit 2-6
Ongoing Activities at LAX
Economic and Fiscal Impacts in Southern California

	LAWA Operations	Other On- Airport Activity	LAX- Adjacent Activity	Total *
Total Economic Impact:				
Output (\$ millions)	\$ 1,882	\$ 18,787	\$ 8,889	\$ 29,558
Employment (jobs)	10,100	82,900	49,980	142,970
<i>Direct</i>	<i>3,150</i>	<i>31,450</i>	<i>24,750</i>	<i>59,350</i>
<i>Indirect</i>	<i>3,730</i>	<i>26,780</i>	<i>11,680</i>	<i>42,190</i>
<i>Induced</i>	<i>3,220</i>	<i>24,670</i>	<i>13,550</i>	<i>41,440</i>
Labor income (\$ millions)	\$ 705	\$ 5,394	\$ 2,960	\$ 9,058
Total Fiscal Impact (\$ millions):				
Federal taxes	\$ 150	\$ 1,279	\$ 701	\$ 2,129
State and local taxes	79	1,274	638	1,991
Total Fiscal Impact	\$ 228	\$ 2,553	\$ 1,338	\$ 4,120

* May not sum due to rounding
Source: Estimates by LAEDC

It is estimated that ongoing activities at the airport during the year supported 142,970 jobs with total labor income of \$9.1 billion in the Southern California region. This activity generated \$29.6 billion in economic output (more generally, business revenues for regional firms), and \$4.1 billion in total tax revenues.

The economic impacts spill across industry sectors in the region through indirect and induced effects. These are shown in Exhibit 2-7.

Exhibit 2-7
Ongoing Activities at LAX
Total Economic Impacts by Industry Sector

	Jobs	Labor Income (\$ millions)	Output (\$ millions)
Agriculture, forestry and fishing	200	\$ 10	\$ 19
Mining	800	117	286
Utilities	240	42	235
Construction	2,000	144	378
Manufacturing	3,290	283	2,710
Wholesale trade	5,010	398	1,197
Retail trade	8,660	317	750
Transportation and warehousing	36,170	3,016	10,527
Information	2,400	257	1,248
Finance and insurance	8,930	630	1,660
Real estate and rental	8,090	386	2,446
Professional, scientific technical	7,920	623	1,209
Management of companies	1,380	161	327
Administrative and waste services	10,500	456	952
Educational services	2,780	136	242
Health and social services	9,470	552	989
Arts, entertainment and recreation	2,050	73	157
Accommodation and food services	17,380	531	1,272
Other services	6,960	301	518
Government	8,760	624	2,433
Total	142,970	\$ 9,058	\$ 29,558

Source: Estimates by LAEDC

While clearly many of the impacts were felt in the transportation and warehousing industry, many other industries benefited from the ongoing activities at the airport, including administrative and waste management, health and social services, retail trade, real estate and rental services, accommodation and food services and health and social services. Each of these industries will see an increase in business revenues and in the number of jobs as the effects of visitor spending ripple through the economy.

The values in this exhibit should be interpreted as illustrative of the industry effects rather than precise given data and model limitations. ❖

2.3 Sub-Regional Employment Impacts

Estimated employment impacts of ongoing operations at Los Angeles International Airport (LAX) and its adjacent area in Los Angeles County and in the six-county Southern California region were presented above. We use the Los Angeles County impacts for the distribution. These are shown in Exhibit 2-9.

Exhibit 2-9

Ongoing Activities at LAX Employment Impact in Los Angeles County by Industry Sector

	Direct Jobs	Indirect/ Induced Jobs	Total Jobs
Agriculture, forestry and fishing	20	10	30
Mining	0	530	530
Utilities	70	100	170
Construction	260	1,340	1,610
Manufacturing	990	890	1,880
Wholesale trade	2,150	1,920	4,080
Retail trade	2,080	5,400	7,480
Transportation and warehousing	26,640	7,410	34,060
Information	400	1,810	2,221
Finance and insurance	510	6,850	7,360
Real estate and rental	2,560	5,120	7,680
Professional, scientific technical	1,440	5,360	6,810
Management of companies	340	830	1,170
Administrative and waste services	2,450	6,760	9,210
Educational services	1,070	1,490	2,560
Health and social services	1,310	7,500	8,810
Arts, entertainment and recreation	220	1,520	1,750
Accommodation and food services	8,560	7,860	16,410
Other services	1,660	4,700	6,360
Government	6,610	1,360	7,960
Total	59,350	68,780	128,120

Source: Estimates by LAEDC

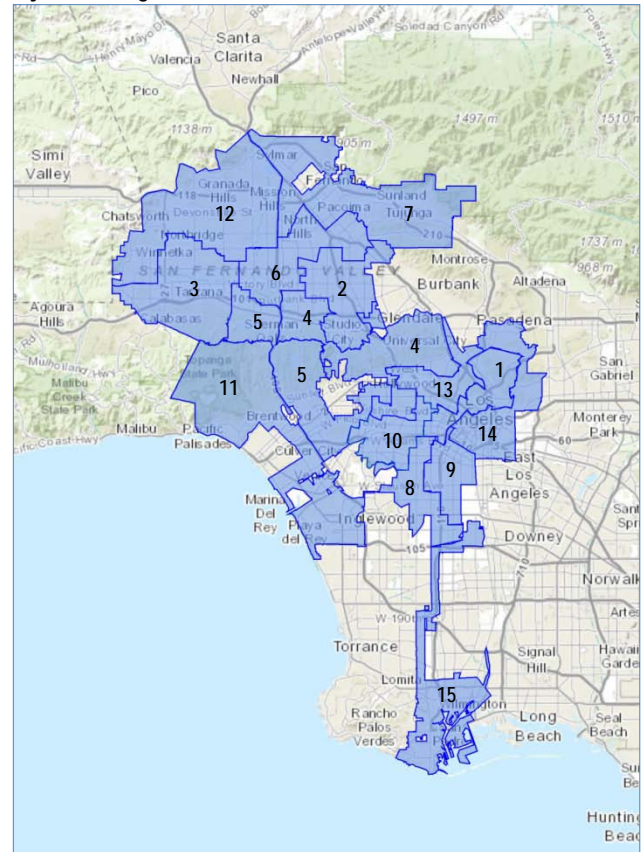
Impacts by City Council District

LAX is located in the City of Los Angeles, which overall represents approximately forty percent of the county employment. City Council Districts are outlined in Exhibit 2-10.

Employment and population is not equally distributed across districts. Exhibit 2-11 presents the overall distribution of employment in the County and in the City by Council District.

Exhibit 2-10

City of Los Angeles Council Districts



Sources: ESRI, LAEDC

Exhibit 2-11

LA City Jobs by Council District

Council District	Jobs	% of All Jobs in City	% of All Jobs in County
1	90,644	5.4	2.1
2	67,075	4.0	1.6
3	104,920	6.2	2.4
4	131,893	7.8	3.1
5	228,960	13.6	5.3
6	77,2494	4.6	1.8
7	51,161	3.0	1.2
8	232,191	1.4	0.5
9	57,047	3.4	1.3
10	67,403	4.0	1.6
11	160,481	9.5	3.7
12	107,793	6.2	2.4
13	111,141	6.6	2.6
14	351,923	20.8	8.2
15	61,252	3.6	1.4
Total*	1,692,165	100.0	39.5

* May not sum due to rounding

Source: U.S. Census Bureau Local Employment Dynamics 2013

District 14 has the most payroll jobs, followed by District 5 and District 11.

Each district has its own characteristics, with varying concentrations of residential neighborhoods and business activity. As such, employment impacts will not be received the same for all districts. As the airport is located in District 11, the direct employment will occur mostly in that district. Nevertheless, it is expected that all Council Districts will benefit to some extent from the indirect and induced effects of the activity at LAX and its adjacent area, and each district has residents who are employed at the airport or who are employed by vendors and contractors servicing the airport.

Based upon the industrial composition of employment of each district, and using the Census Bureau Local Employment Dynamics data, the total employment impacts can be distributed across the fifteen Los Angeles City Council Districts.

Total employment impacts can be estimated for the City of Los Angeles and for each of the 15 Council Districts using county-wide employment shares. These are shown in Exhibit 2-12.

Exhibit 2-12

Total Employment Impacts by City Council District

Council District	Jobs Impact	% of City Jobs Impact	% of County Jobs Impact
1	2,530	5.0	2.0
2	1,650	3.3	1.3
3	2,610	5.2	2.0
4	3,180	6.3	2.5
5	5,240	10.4	4.1
6	2,320	4.6	1.8
7	1,080	2.1	0.8
8	580	1.2	0.5
9	1,300	2.6	1.0
10	1,670	3.3	1.3
11	9,370	18.5	7.3
12	2,250	4.5	1.8
13	2,420	4.8	1.9
14	12,220	24.2	9.5
15	2,090	4.1	1.6
Total*	50,530	100.0	39.4

* May not sum due to rounding
Source: Estimates by LAEDC

With the most payroll jobs, District 14 is also the district with the largest employment impact from LAX. As noted above, this is due to the industrial composition of the employment in the districts and the industrial distribution of the overall employment impact.

Districts with high employment concentrations will have larger values, while districts that contain large residential areas may have more residents than jobs. Larger employment impacts will occur in areas where there is existing concentrations of employment due to the existing structure and infrastructure of each area.

Impacts by County Supervisorial District

Beyond the city borders, other areas of the county benefit from the direct, indirect and induced effects of activity occurring at LAX and its adjacent area. Supervisorial Districts are outlined in Exhibit 2-13.

Exhibit 2-13

Los Angeles County Supervisorial Districts



Sources: ESRI, LAEDC

Exhibit 2-14 presents the overall distribution of employment in the County by Supervisorial District. District 1 has the most payroll jobs, followed by District 3 and District 4. The airport is located in District 4, so we would expect most of the direct payroll jobs associated with the airport to be located in that District.

Exhibit 2-14**LA County Jobs by Supervisorial District**

Supervisorial District	Jobs	% of All Jobs in County
1	994,181	23.2
2	604,436	14.1
3	1,019,995	23.8
4	829,676	19.4
5	834,534	19.5
Total*	4,282,822	100.0

* May not sum due to rounding

Source: U.S. Census Bureau Local Employment Dynamics 2013

Based upon the industrial composition of employment of each district, and using the Census Bureau Local Employment Dynamics data, the total employment impacts are distributed across the five Supervisorial Districts. Exhibit 2-15 shows the total employment impacts of ongoing activities at LAX in each district.

Exhibit 2-15**Total Employment Impacts by Supervisorial District**

Council District	Jobs Impact	% of County Jobs Impact
1	31,780	24.8
2	18,210	14.2
3	26,980	21.1
4	31,600	24.7
5	19,560	15.3
Total*	128,120	100.0

* May not sum due to rounding

Source: Estimates by LAEDC

Districts 1 and 4 experienced that largest employment impacts from the airport, followed closely by District 3.

Larger employment impacts will occur in areas where there is existing concentrations of employment, due to the existing structure and infrastructure of each area. ❖

3 VISITORS ARRIVING THROUGH LAX

3.1 Visitor Spending

The Los Angeles International Airport is one of the busiest airports in the world, with almost 71 million enplanements and deplanements in 2014. Many of those arriving here are transiting to other locales or are local residents returning home. However, millions more are visitors to Southern California for business or leisure purposes attracted by the entertainment, dining, shopping, sports and business opportunities available in the area.

For the past decade, LAX has been the port of entry for approximately ten percent of all non-resident overseas arrivals. In 2014, there were 132 international flights arriving daily, carrying a total of 4.5 million international visitors. According to Airports Council International, in 2014 LAX was the fifth busiest airport internationally and the second busiest in the United States.

Visitors who arrive into Southern California through LAX and stay for a length of time enjoy the local amenities and cultural attractions, stay in local hotels, visit museums and theme parks, shop at retail establishments and dine at the many famous restaurants in the region. This spending on accommodation, ground transportation, food, retail, and entertainment generates significant economic impact.

International Visitors

Passenger traffic between LAX and its top international airport partners are shown in Exhibit 3-1. Note that the number of passengers includes both arrivals from and departures to the partner airport.

The top 15 airports have changed little since 2011 and account for approximately 62 of total international passenger movement.

While this data shows passenger arrivals to LAX and departures from LAX, it does not provide information about whether arriving passengers transferred to a domestic flight on the same day, or whether passengers stayed in the Los Angeles area for any length of time. Nor does it identify local residents returning home.



Exhibit 3-1
Top International Airport Connections

Airport	Passengers in 2014	Passengers in 2011	% Change in Passengers
Heathrow (London)	1,452,031	1,447,630	0.3%
Narita (Tokyo)	1,351,629	1,114,251	21.3%
Incheon (Seoul)	1,049,924	896,055	17.2%
Sydney (Australia)	1,033,921	1,104,245	-6.4%
Taoyuan (Taipei)	905,673	894,670	1.2%
Vancouver (Canada)	897,297	805,000	11.5%
Guadalajara (Mexico)	746,017	693,928	7.5%
Benito Juarez (Mexico City)	725,575	696,657	4.2%
Toronto Pearson (Canada)	619,399	538,047	15.1%
Charles de Gaulle (Paris)	590,488	568,912	3.8%
Hong Kong (China)	582,856	497,927	17.1%
Pudong Airport (Shanghai)	482,953	379,677	27.2%
Auckland (New Zealand)	432,797	490,631	-11.8%
Los Cabos (Mexico)	389,962	359,913	8.3%
Melbourne (Australia)	385,523	320,542	20.3%
<i>All Others</i>	<i>7,459,622</i>	<i>5,923,240</i>	<i>25.9%</i>
International Passengers	19,105,667	16,731,324	14.2%

Source: U.S. Department of Transportation T-100 Segment Data; LAWA

The Los Angeles Tourism and Convention Board provides estimates for the number of overnight visitors to the Los Angeles area, by country of origin. This data is presented in Exhibit 3-2, showing the change in the number of visitors by country of origin since 2011.

Approximately 6.5 million international visitors arrived in the Los Angeles area in 2014. Not all of these visitors arrived through LAX. Some may have arrived by other modes of transportation including auto, bus, train or even through another local gateway airport such as Ontario.

Exhibit 3-2

Overnight International Visitors (All Modes)

Country of Origin	Visitors in 2014	Visitors in 2011	% Change in Visitors
Mexico	1,755,000	1,609,000	9.1%
Canada	737,000	675,000	9.2%
China	668,000	338,000	97.6%
Australia	412,000	383,000	7.6%
United Kingdom	334,000	372,000	-10.2%
Japan	297,000	289,000	2.8%
France	271,000	335,000	-19.1%
South Korea	250,000	240,000	4.2%
Germany	245,000	241,000	1.7%
Brazil	128,000	107,000	19.6%
<i>All Others</i>	<i>1,368,000</i>	<i>1,273,000</i>	<i>7.5%</i>
International Visitors	6,465,000	5,862,000	10.3%

Source: Los Angeles Tourism and Convention Board

To estimate the number of international visitors arriving through LAX alone, data collected by the Department of Homeland Security (DHS) is used. A completed Form I-94 is collected from all residents of foreign nations visiting the United States. In 2014, there were 3,589,791 non-US residents arriving through the LAX port of entry.

However, this data excludes visitors from Canada and Mexico who, together, constitute approximately 40 percent of visitors to the region. To estimate the number of visitors from Canada and Mexico, data from the 2014 *Marketing and Planning Resource Book* produced by the Los Angeles Tourism and Convention Board (LATCB) is used. For 2014, the report forecasts 1.76 million visitors from Mexico and 740,000 visitors from Canada.

While these numbers include all modes of transportation, the report estimates that approximately 18.5 percent of visitors from Mexico and 74 percent of

visitors from Canada arrived by air in 2013. Assuming these proportions did not change significantly in 2014, it is estimated that 325,210 visitors from Mexico and 547,600 visitors from Canada arrived through LAX in 2014.

Spending for overseas and Mexican visitors was obtained from the *Overseas and Mexican Visitors to California* report from the California Travel and Tourism Commission. Canadian spending was obtained from the Los Angeles Tourism and Convention Board's *Marketing and Planning Resource Book*. Using these sources, it is estimated that international visitors and Mexican visitors arriving into Southern California through LAX spend, on average, \$2,094 each during their stay while visitors from Canada spend, on average, \$630 during their stay.

The estimated number of visitors and their estimated spending is summarized in Exhibit 3-3.

Exhibit 3-3

International Visitors through LAX in 2014

	Number of Visitors	Average Local Spend per Visitor	Total Local Spending (\$ millions)
Overseas visitors	3,589,790	\$ 2,094	7,517
Visitors from Mexico	325,210	2,094	681
Visitors from Canada	547,600	630	345
International Visitors	4,462,600	\$ 1,914	\$ 8,543

Sources: California Travel and Tourism Commission; Los Angeles Tourism and Convention Board 2014 Marketing and Planning Resource; Estimates by LAEDC

In total, it is estimated that approximately 4.5 million international visitors to Southern California arrived in the region through LAX in 2014. These visitors spent an estimated \$8.5 billion on a variety of goods and services including accommodations, food and beverages, retail purchases, ground transportation, and so on. The distribution of spending by category for these groups of visitors is shown in Exhibit 3-5.

The largest expenditures in the aggregate are for accommodations, followed by purchases of gifts and souvenirs, dining and personal care services such hair care, spas and health care.

Exhibit 3-5**International Visitor Spending in 2014**

	Overseas and Mexican Visitors (\$ millions)	Visitors from Canada (\$ millions)	Total Local Spending (\$ millions)
Lodging	\$ 2,568	\$ 90	\$ 2,658
Gifts and souvenirs	1,933	86	2,019
Dining	1,571	76	1,647
Personal care	556	14	570
Amusement and theme parks	538	24	562
Ground transportation	494	31	525
Other entertainment spending	323	14	337
Sightseeing	215	10	225
Total Spending *	\$ 8,198	\$ 345	\$ 8,543

* May not sum due to rounding

Sources: U.S. Department of Commerce, ITA, National Travel and Tourism Office; California Travel and Tourism Commission; Los Angeles Tourism and Convention Board 2014 Marketing and Planning Resource; Estimates by LAEDC

Domestic Visitors

International visitors are not the only source of tourist spending in the region. Almost 26 million domestic passengers arrived in the Southern California region through LAX. Many of these certainly spent time in Los Angeles, either for business or leisure purposes.

The Los Angeles Tourism and Convention Board estimates that there were approximately 22 million overnight domestic visitors to the Los Angeles area in 2014, arriving through all modes of entry including ground transportation. The city of origin of domestic visitors is shown in Exhibit 3-6.

Data provided by the Los Angeles Tourism and Convention Board includes total non-resident domestic arrivals to the region through three local airports, including LAX, Burbank Bob Hope and the Long Beach Airport. The distribution of domestic and non-domestic arrivals is assumed to be consistent for the three airports. Hence, based on the total domestic arrivals at LAX, it is estimated that 8.7 million domestic visitors arrived through LAX in 2014. Of these, 5.4 million were overnight visitors who spent on average \$160 per visit, and 3.3 million were daytrippers who spent on average \$64 per visit. In total, domestic visitors therefore spent \$1.1 billion in the regional economy.

Exhibit 3-6**Overnight Domestic Visitors**

Domestic Origin	Visitors in 2014	Visitors in 2011	% Change in Passengers
San Francisco	2,636,120	3,024,000	-12.8%
San Diego	1,787,200	2,016,000	-11.3%
Sacramento	871,260	1,113,000	-21.7%
Fresno	759,560	588,000	29.2%
All Other California	5,249,900	4,998,000	5.0%
New York	1,653,160	1,428,000	15.8%
Phoenix	1,049,980	987,000	6.4%
Chicago	781,900	756,000	3.4%
Seattle	737,220	693,000	6.4%
La Vegas	625,520	777,000	-19.5%
Portland	424,460	335,000	26.7%
<i>All Others</i>	<i>5,763,720</i>	<i>4,285,000</i>	<i>34.5%</i>
Domestic Overnight Visitors	22,340,000	21,000,000	6.4%

Source: Los Angeles Tourism and Convention Board

The distribution of this spending by category was also obtained from the Los Angeles Tourism and Convention Board, and is presented in Exhibit 3-7.

Exhibit 3-7**Domestic Visitor Spending in 2014**

	Total Local Spending (\$ millions)	% of Total
Lodging	\$ 217	20.1
Ground transportation	196	18.2
Dining	287	26.6
Sightseeing	25	2.4
Amusement and theme parks	64	5.9
Other entertainment spending	38	3.5
Gifts and souvenirs	173	16.0
Personal care	80	7.4
Total Spending *	\$ 1,080	100.0

* May not sum due to rounding

Sources: Los Angeles Tourism and Convention Bureau; Estimates by LAEDC

International Flight Crew

In addition to international and domestic visitors to the region, the flight operations of international airlines necessitates many flight crew to spend the night in Los Angeles before departing on another flight on the following day. Many international carriers require overnight stays for their flight crew given the geographic distance that they travel.

The number of nights spent in the Southern California region by international flight crews was estimated using data collected by LAWA from international carriers. Assuming that the length of overnight stays was exactly one night, it is estimated that there were 571,190 overnight stays in the Southern California region by international flight crew including pilots and flight attendants.

The spending patterns of flight crew members are not comparable to those of international visitors. For example, they are unlikely to engage in spending on theme parks or major retail excursions, and will spend less on food and beverages and on hotel stays than international leisure and business passengers. To estimate the total local spending of overnight international flight crew, *per diem* rates established by the U.S. General Services Administration (GSA) for airline crew members in the Los Angeles area are used as a reasonable proxy for all flight crew. In 2014, the GSA established \$133 as the maximum lodging rate per night, \$66 as the maximum reimbursement for food and an additional \$5 per night for incidental expenses.

Over 571,190 overnight stays, it is estimated that international flight crew spent approximately \$117 million in 2014.

This estimate does not include domestic flight crew or cargo flight crew that may be required to overnight in the region (which may be a significant number) and hence underestimates the local spending of flight crew.



3.2 Economic Impact of Visitor Spending

Exhibit 3-8 presents the economic impact of visitor spending facilitated by the airport, including the impact of international and domestic visitor spending and the overnight spending of international flight crew.

Exhibit 3-8
Visitor Spending
Economic and Fiscal Impacts in Southern California

	Int'l Visitors	Domestic Visitors	Int'l Flight Crew	Total *
Total Spending (\$ millions)	\$ 8,543	\$ 1,080	\$ 117	\$ 9,740
Total Economic Impact:				
Output (\$ millions)	\$ 14,090	\$ 1,869	\$ 219	\$ 16,177
Employment (jobs)	135,630	17,970	2,040	155,640
<i>Direct</i>	92,200	12,240	1,390	105,840
<i>Indirect</i>	18,270	2,390	270	20,830
<i>Induced</i>	25,160	3,340	380	28,870
Labor income (\$ millions)	\$ 5,493	\$ 728	\$ 83	\$ 6,304
Total Fiscal Impact (\$ millions):				
Federal taxes	\$ 1,262	\$ 165	\$ 20	\$ 1,447
State taxes	974	125	15	1,114
Total Fiscal Impact	\$ 2,236	\$ 290	\$ 34	\$ 2,560

* May not sum due to rounding
Source: Estimates by LAEDC

It is estimated that the 13.8 million visitors and flight crew visiting the Southern California region in 2014 spent \$9.7 billion during their stay. Visitor spending contributed \$16.2 billion to the regional economy and supported 155,640 jobs with a total labor income of \$6.3 billion.

This activity is estimated to have generated \$1.1 billion in state and local tax revenues, and \$1.4 billion in federal tax revenues.

Industry Breakdown

The total economic impact spills across industries through indirect and induced effects. These are shown in Exhibit 3-9.

Exhibit 3-9

Visitor Spending

Total Economic Impacts by Industry Sector

	Jobs	Labor Income (\$ millions)	Output (\$ millions)
Agriculture, forestry and fishing	170	\$ 8	\$ 16
Mining	100	14	35
Utilities	90	16	82
Construction	770	55	146
Manufacturing	1,460	101	753
Wholesale trade	1,550	123	371
Retail trade	21,380	650	1,463
Transportation and warehousing	8,960	424	943
Information	1,140	148	623
Finance and insurance	3,890	274	732
Real estate and rental	5,660	210	1,647
Professional, scientific technical	3,720	276	584
Management of companies	990	115	233
Administrative and waste services	5,220	198	370
Educational services	1,240	55	92
Health and social services	6,450	394	639
Arts, entertainment and recreation	14,710	542	1,157
Accommodation and food services	65,310	2,225	5,413
Other services	11,750	368	631
Government	1,070	105	244
Total	155,640	\$ 6,304	\$ 16,177

Source: Estimates by LAEDC

Of the 155,640 jobs generated, over one-third were in accommodations and food services along with one-third of the total output generated. However, other industry sectors are also significantly impacted including: retail trade, real estate and rental services, health and social services and administrative and waste services. Each of these industries will see an increase in business revenues and in the number of jobs as the effects of visitor spending ripple through the economy.

The values in this exhibit should be interpreted as illustrative of the industry effects rather than precise given data and model limitations. ❖

4 GOODS EXPORTED THROUGH LAX

4.1 Exports Through LAX

Los Angeles International Airport is one of the nation's main trade hubs, for both domestic and international trade. Each year, billions of dollars worth of goods and merchandise are transported to destinations around the nation and the globe. As the main cargo airport for Southern California, approximately 1,000 flights carrying cargo exclusively or in the cargo hold of passenger planes come in to and leave LAX each day.

Along with cargo shipments, LAX also processed almost 80,000 tons of mail of which 44 percent were arrivals into the airport. Generally, the term *cargo* refers to any goods, materials or merchandise that is carried onboard a ship, aircraft, train or truck. The term *freight* is often used interchangeably with *cargo* but is also used to refer to the value of the goods being transported.

LAX ranked 15th internationally in total freight traffic and 5th in the United States (according to Airports Council International) with more than \$96.3 billion worth of goods moved in 2014. Since 2004, LAX has averaged about 1.9 million total metric tons of air cargo in both domestic and international departures and arrivals. In terms of exports alone, in 2014 LAX handled more than 500,000 tons of freight that were exported internationally as well as over 400,000 tons of domestic freight.

International Exports

In 2014, LAX exported almost \$46 billion worth of goods and merchandise to destinations around the world. LAX alone accounted for almost 3 percent of the \$1.64 trillion worth of goods that was exported in 2014, signifying its importance as an international hub and gateway to the Pacific Rim.

The top five export partners for LAX are China, Japan, Hong Kong, India and South Korea. Together, these nations received 43 percent of exports through LAX in 2014.

Total export data was taken from the U.S. Census Bureau *USA Trade Online* which provides detailed trade data for about 400 ports around the world, including LAX as well



as for the United States as a whole. Port data includes the value and shipping weight including the method of transportation (air, vessel and containerized vessel).

LAX export data was presented for all commodities at the two-, four- and six- digit Harmonized System (HS) level. The Harmonized Commodity Description and Coding System is comprised of 5,000 commodity groups identified by a six-digit code and provides the basis for export classification in the United States as well as in over 200 countries to organize tariffs and to compile trade statistics.

LAX exports were then converted to NAICS codes using the Exports Concordance provided by the U.S. Census. NAICS is the North American Industry Classification System which uses a 6-digit hierarchical coding system. Using industry codes rather than the export data HC commodity codes allows for consistent modeling of the economic impact of these goods.

The total exports are presented in Exhibit 4-1, sorted by total air export value in 2014, and compared to exports of the same goods in 2004.

The total value of exports grew by 34.5 percent from \$33.9 billion in 2004 to \$46.6 billion in 2014. Several

commodities saw significant export growth during the period, including primary metals, miscellaneous manufactured products, arts, media and sports goods, and fabricated metals.

Exhibit 4-1
International Exports through LAX

	Total Value in 2014 (\$ millions)	Total Value in 2004 (\$ millions)	% Change
Computer and electronic products	\$ 14,187	\$ 17,134	-17.2
Miscellaneous products	8,910	2,039	337.0
Transportation equipment	7,024	5,242	34.0
Machinery	4,044	3,592	12.6
Chemical products	3,085	2,119	45.6
Primary metals	2,390	226	959.5
Electrical eqmt. and components	1,571	1,172	34.0
Fabricated metal products	1,372	512	167.7
Arts, media, sports products	572	194	195.0
Apparel products	529	342	54.7
Agricultural crop products	418	183	128.6
Plastics and rubber products	352	215	63.7
Beverage and tobacco products	205	238	-14.0
Leather and allied products	196	103	90.6
Manufactured food products	127	82	54.2
Nonmetallic mineral products	117	99	18.8
Printing and related activities	117	144	-18.9
<i>All Others</i>	414	285	45.3
Total *	45,628	33,920	34.5

* May not sum due to rounding
Source: USA Trade Online; Estimates by LAEDC

Computer and electronic products accounted for more than 31 percent of the total value of exported goods. Miscellaneous manufactured goods accounted for another 20 percent and transportation equipment another 15 percent. Together, these three commodity groups made up two-thirds of the value of all international exports out of LAX to international destinations.

The three commodity groups are quite broad. A more detailed picture of the top ten exported commodities is presented in Exhibit 4-2.

Exhibit 4-2
Top Detailed International Exports through LAX

	Total Value in 2014 (\$ millions)	Total Value in 2004 (\$ millions)	% Change
Semiconductors and other electronic components	\$ 6,802	\$ 9,135	-25.5
Other miscellaneous products	6,387	793	705.4
Aerospace products and parts	6,081	4,784	27.1
Navigational, measuring, electromedical and control instruments	2,986	2,001	49.2
Computer and peripheral equipment	2,527	3,345	-24.5
Medical equipment and supplies	2,526	1,247	102.6
Nonferrous metals (except aluminum)	2,097	-	n/a
Processing commercial and service industry machinery	1,236	838	47.5
Communications equipment	1,192	1,426	-16.4
Pharmaceutical and medicines	2,175	1,605	35.5
Other general purpose machinery	-	905	-100.0
<i>All Others</i>	11,618	7,840	48.2
Total *	45,628	\$ 33,920	134.5

* May not sum due to rounding
Source: USA Trade Online; Estimates by LAEDC

Semiconductors and electronic components such as printed circuit boards and electronic connectors, are the number one export commodity through LAX by value. This is followed by other miscellaneous products, which includes a variety of products such as jewelry, sporting goods, toys, coin-operated amusement machines and musical instruments.

The total economic impact spills across industries through indirect and induced effects. These are shown in Exhibit 4-3.

Many industries are impacted by the goods exported through LAX, particularly manufacturing industries in the region.

The values in this exhibit should be interpreted as illustrative of the industry effects rather than precise given data and model limitations. ❖

Exhibit 4-3**International Exports through LAX in 2014
Total Economic Impacts by Industry Sector**

	Jobs	Labor Income (\$ millions)	Output (\$ millions)
Agriculture, forestry and fishing	6,020	\$ 269	\$ 457
Mining	430	57	175
Utilities	380	65	315
Construction	2,440	175	463
Manufacturing	130,660	10,755	51,662
Wholesale trade	17,750	1,409	4,241
Retail trade	16,430	634	1,473
Transportation and warehousing	11,020	661	1,643
Information	4,180	505	2,188
Finance and insurance	14,120	965	2,517
Real estate and rental	8,420	236	3,668
Professional, scientific technical	16,820	1,281	2,641
Management of companies	8,380	980	1,983
Administrative and waste services	21,800	826	1,480
Educational services	4,010	181	301
Health and social services	19,620	1,105	1,871
Arts, entertainment and recreation	7,910	439	1,004
Accommodation and food services	16,630	479	1,119
Other services	12,290	559	963
Government	2,690	267	684
Total	322,000	\$ 21,848	\$ 80,848

Source: Estimates by LAEDC

Domestic Exports

Not only is LAX a major hub for international exports but its location on the West Coast also makes it a significant source for domestic trade.

Domestic trade data is obtained from results of the Economic Census, which is conducted once every five years. The latest year for which complete domestic trade information is available is 2007.

To measure trade flows, the Freight Analysis Framework (FAF) was developed by the Federal Highway Administration (FHWA) and the Bureau of Transportation Statistics (BTS). The FAF builds upon the Commodity Flow Survey to estimate freight flows to, from and within the United States. Air shipments include those that are moved by just air or by air and truck as the trucks are needed to transport goods to and from the airport.

The value of goods exported through LAX to domestic destinations is presented in Exhibit 4-4.

Exhibit 4-4**Domestic Trade from Los Angeles CSA (2007)**

Commodity Description	Total Value in 2007 (\$ millions)	% of Domestic Trade
Electronics	\$ 4,027	31.5%
Transport equipment	2,660	20.8%
Precision instruments	1,318	10.3%
Miscellaneous manufacturing products	1,303	10.2%
Motorized vehicles	573	4.5%
Machinery	538	4.2%
Nonmetal mineral products	522	4.1%
Articles-base metal	343	2.7%
Textiles/leather	282	2.2%
Other agricultural products	183	1.4%
Mixed freight	164	1.3%
Pharmaceuticals	162	1.3%
Live animals/fish	162	1.3%
Plastics/rubber	126	1.0%
Base metals	117	0.9%
Chemical prods.	96	0.8%
Meat/seafood	64	0.5%
Basic chemicals	44	0.3%
Furniture	33	0.3%
Printed products	30	0.2%
Newsprint/paper	7	0.1%
Other foodstuffs	4	0.0%
Wood products	3	0.0%
Paper articles	1	0.0%
Total *	\$ 12,765	100.0

* May not sum due to rounding

Source: U.S. Department of Transportation, Bureau of Transportation Statistics, Freight Analysis Framework

As with international exports, electronics constitute almost a third of domestic goods transported out of the region to other parts of the country.

The data provided by the Freight Analysis Framework encompasses the Los Angeles Combined Statistical Area, which includes several other local airports. The share for LAX of total domestic goods traded was estimated to be approximately 56 percent. Therefore, LAX domestic trade exported to other regions can be estimated to have been \$7.2 billion in 2007.

Domestic data is not included in the analysis below given the vintage of the data. Nevertheless, it provides a picture of the importance of domestic trade in the economic activity occurring in the region. The economic impact of this trade is likely to be significant. ❖

4.2 Economic Impact of International Exports through LAX

The manufacturing and distribution activity associated with the goods that were exported internationally through LAX supported hundreds of thousands of jobs with billions of wages at regional companies. The total economic impact of these exports are presented in Exhibit 4-5.

Exhibit 4-5
International Exports through LAX in 2014
Economic and Fiscal Impact in Southern California

Total International Exports (\$ millions)	\$ 45,628
Total Economic Impact:	
Output (\$ millions)	\$ 80,848
Employment	322,000
<i>Direct</i>	119,690
<i>Indirect</i>	102,260
<i>Induced</i>	100,050
Labor income (\$ millions)	\$ 21,848
Total Fiscal Impact:	
State / local taxes (\$ millions)	\$ 3,102
Federal taxes (\$ millions)	5,104

Source: Estimates by LAEDC

Almost \$46 billion worth of exports were delivered from LAX to international destinations in 2014. These exports supported 322,000 jobs with a total labor income of \$22 billion and generated \$80.8 billion in economic output in the Southern California region consisting of the counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura.

Total tax revenues collected exceeded \$8 billion related to this activity occurring in Southern California, including \$5 billion in federal taxes and \$3 billion in state and local taxes.

Industry Breakdown

Total output, employment and compensation impacts are disaggregated by industry sector in the exhibit below. This allows an estimation and industry identification of “follow-on” jobs and business revenues.

Exhibit 4-6
International Exports through LAX in 2014
Total Economic Impacts by Industry Sector

	Jobs	Labor Income (\$ millions)	Output (\$ millions)
Agriculture, forestry and fishing	6,020	\$ 269	\$ 457
Mining	430	57	175
Utilities	380	65	315
Construction	2,440	175	463
Manufacturing	130,660	10,755	51,662
Wholesale trade	17,750	1,409	4,241
Retail trade	16,430	634	1,473
Transportation and warehousing	11,020	661	1,643
Information	4,180	505	2,188
Finance and insurance	14,120	965	2,517
Real estate and rental	8,420	236	3,668
Professional, scientific technical	16,820	1,281	2,641
Management of companies	8,380	980	1,983
Administrative and waste services	21,800	826	1,480
Educational services	4,010	181	301
Health and social services	19,620	1,105	1,871
Arts, entertainment and recreation	7,910	439	1,004
Accommodation and food services	16,630	479	1,119
Other services	12,290	559	963
Government	2,690	267	684
Total	322,000	\$ 21,848	\$ 80,848

Source: Estimates by LAEDC

Most of the impact will occur in the manufacturing industry with over 40 percent of the jobs generated and over 60 percent of the total output generated accruing to firms in the industry. However, other industry sectors are also significantly impacted including: administrative and waste services, wholesale trade, retail trade, health and social services and professional and scientific and technical services.

The values in this exhibit should be interpreted as illustrative of the industry effects rather than precise given data and model limitations. ❖

5 CAPITAL IMPROVEMENT PROGRAM AT LAX

The airport is in the midst of a multi-billion dollar capital improvements program which is expected to continue through 2023. Among the projects underway are terminal improvements and upgrades, roadway improvements, runway and taxiway rehabilitation and improvement and utilities and infrastructure components. Several projects are in the planning stage, including the landside automated people mover, the consolidated rental car facility and the intermodal transportation facility.

In this section, the budgeted expenditures and the estimated economic impacts of the overall capital improvement program is presented.

5.1 Budgeted Spending

The projects in the capital improvement program are broadly categorized into three groups: those in the planning stage, those involving tenant improvements at the terminals and those in development.

Projects in Planning

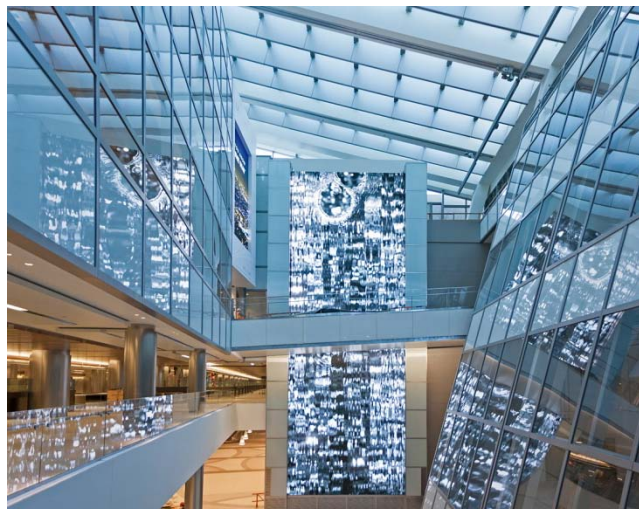
Projects in planning are among the largest in terms of capital expenditures, and are also those with the longest horizon. Together they account for \$5.5 billion (or 54 percent) of the overall \$10.1 billion capital improvements budget. The overall rough cost and expected timelines for projects in planning are shown in Exhibit 5-1.

Exhibit 5-1

Capital Improvement Program Projects in Planning Rough Order Cost and Duration

	Estimated Cost (\$ millions)	Rough Order Timeline
Landside Automated People Mover	\$ 2,700	CY2015-23
Consolidated Rental Car Facility (CONRAC)	1,000	CY2015-23
Intermodal Transportation Facilities	600	CY2017-23
Roadway Access Improvements for LAX	800	CY2017-23
Terminal Modifications	400	CY2017-23
All Projects in Planning	\$ 5,500	

Source: LAWA



Tenant Improvements

Tenant improvements to terminals will occur as part of the overall capital improvement plan. These are expected to account for \$1.65 billion (or 16 percent) of the capital improvement budget. The rough cost of each project and their expected timelines are shown in Exhibit 5-2.

Exhibit 5-2

Tenant Improvements Rough Order Cost and Duration

	Estimated Cost (\$ millions)	Rough Order Timeline
Terminal 1 Tenant Improvements	\$ 526	5/2014-2/2018
Terminal 2 Tenant Improvements	80	4/2014-7/2015
Terminal 3 Tenant Improvements	18	4/2015-3/2016
Terminal 4 Tenant Improvements	33	4/2015-3/2016
TBIT / Terminal 2 Tenant Improvements	78	10/2014-3/2016
Terminal 5 Tenant Improvements	247	1/2013-3/2016
Terminal 6 Tenant Improvements	41	10/2014-5/2016
Terminal 7 Tenant Improvements	573	3/2014-12/2017
Atlantic Aviation (New Hangar)	8	4/2015-3/2016
Airfield Tenant Improvements (Qantas)	46	4/2015-3/2016
All Tenant Improvements	\$ 1,649	

Source: LAWA

Airports Development Group (ADG) Projects in Development

ADG projects in development—many of which are well underway—include terminal improvements and upgrades, roadway improvements, runway and taxiway rehabilitation and improvement and utilities and infrastructure components. Together they account for \$2.97 billion (or 30 percent) of the overall capital improvement budget. The overall rough cost of each project and their expected timelines are shown in Exhibit 5-3. ❖

Exhibit 5-3

Capital Improvement Program ADG Projects in Development Rough Order Cost and Duration

	Estimated Cost (\$ millions)	Rough Order Timeline
West Aircraft Maintenance Area	\$ 101	8/2014-4/2016
Runway 25L Safety Area Improvements / Temporary Repairs	24	11/2014-11/2015
LAX Runway 6L-24R RSA Improvements / Rehabilitation	40	7/2015-11/2015
Runway 6R-24L Safety Area Improvement	72	10/2015-11/2016
Runway 7L-25R RSA / Twy B Rehabilitation	164	2/2016-10/2017
Second Level Roadway Expansion Joint and Deck Repairs	35	2/2014-1/2016
New Face of the CTA Phase II Electrical, Communications, Water Utility Ext.: 5 th Feeder Project	79	2/2014-1/2016
Orange Line Busway	27	10/2014-2/2016
Manchester Square/Belford Demolition Phase II	1	7/2015-11/2015
CTA Departure Level Security Bollards	2	11/2014-5/2015
Imperial Cargo Complex Water Main Replacement	5	2/2016-10/2016
ADA Accessibility Improvements – Phase 2	8	2/2016-10/2016
Construction Access Gates 21, 23 and 236	7	10/2014-10/2016
West RON Electrification Project	7	9/2015-5/2016
Taxi Holding Lot Relocation	5	9/2016-4/2017
Drainage / Expansion Joint Seal Improvements for Parking 1, 3, 4, 6	8	6/2015-11/2015
Storm Water Connection to North Central Outfall Sewer (NCOS)	6	11/2015-5/2016
Elevators & Escalators	3	6/2016-5/2017
Concessions Enabling	243	10/2014-11/2016
Passenger Boarding Bridge Relocations	3	1/2012-7/2015
Terminal 2 Improvement Program	27	9/2013-11/2015
Terminal 4 Connector	205	2/2014-1/2018
Terminal 3 Improvements	114	6/2013-4/2016
Terminal 6 Electrical Upgrades	6	9/2015-8/2016
Bradley West Core Renovation/East Ramp/Concourse Demo Project	33	12/2014-12/2016
Terminal MPOE/IT Rooms	358	11/2013-10/2015
Terminal Fire/Life Safety Improvements Project	29	5/2015-4/2017
Midfield Satellite Concourse Enabling	29	6/2016-5/2018
Midfield Satellite Concourse (North Gates)	76	9/2014-8/2017
Building Roof Replacement	1,248	4/2015-3/2020
Terminal Wide Improvements	3	10/2015-4/2016
	2	8/2015-4/2016
All Projects in Development	\$ 2,970	

Source: LAWA

5.2 Economic Impacts

The exhibit below summarizes the economic impact in the six-county Southern California region generated by all projects during the entire period of the capital improvement program at LAX.

Exhibit 5-4

Overall Capital Improvement Program at LAX Economic and Fiscal Impacts in Southern California

	In Planning	Projects in Development	Tenant Improvements	Total *
Expenditures (\$ millions)	\$ 5,500	\$ 2,970	\$ 1,649	\$ 10,119
Total Economic Impact:				
Output (\$ millions)	\$ 10,943	\$ 5,951	\$ 3,425	\$ 20,306
Employment (annual jobs)	65,160	35,970	20,510	121,640
<i>Direct</i>	32,320	17,630	8,910	58,860
<i>Indirect</i>	14,010	8,100	5,990	28,100
<i>Induced</i>	18,830	10,240	5,610	34,680
Labor income (\$ millions)	\$ 4,117	\$ 2,239	\$ 1,224	\$ 7,580
Total Fiscal Impact (\$ millions):				
Federal taxes	\$ 875	\$ 475	\$ 292	\$ 1,643
State taxes	508	281	177	966
Total Fiscal Impact	\$ 1,383	\$ 757	\$ 469	\$ 2,609

* May not sum due to rounding
Source: Estimates by LAEDC

Total spending, expected to be over \$10.1 billion, will generate almost \$20.3 billion in economic output in the six-county Southern California region, adding 121,640 annual jobs with labor income of \$7.6 billion.

Total tax revenues collected will reach \$2.6 billion on activity occurring in Southern California, including \$1.6 billion in federal taxes and \$966 million in state and local taxes.

LAWA expects to spend \$5.5 billion on projects currently in planning. Together, these projects will generate economic impact of \$10.9 billion in the six-county region of Southern California and generate 65,160 annual jobs with labor income of \$4.1 billion. This activity will contribute \$508 million in state and local taxes.

An additional \$2.97 billion is projected to be spent on ADG projects related to airfield and terminal improvements. It is estimated that these projects will generate almost \$5.95 billion in economic output and create 35,970 annual jobs with labor income of \$2.2

billion. This activity is expected to generate \$281 million in state and local taxes.

Tenant improvements are expected to cost \$1.65 billion, which will generate \$3.4 billion in economic output and create 20,510 annual jobs with labor income of \$1.2 billion and \$177 million in state and local taxes.

Industry Breakdown

Total output, employment and compensation impacts are disaggregated by industry sector in the exhibit below. This allows an estimation and industry identification of “follow-on” jobs and business revenues.

Exhibit 5-5

Capital Improvement Program at LAX Total Economic Impacts in Southern California by Industry Sector

	Annual Jobs	Labor Income (\$ millions)	Output (\$ millions)
Agriculture	130	\$ 7.4	\$ 14.3
Mining	290	35.3	97.8
Utilities	100	13.6	66.3
Construction	59,370	4,240.8	10,217.1
Manufacturing	4,610	310.8	1,295.9
Wholesale trade	3,940	311.9	938.6
Retail trade	12,210	427.6	1,101.3
Transportation and warehousing	3,190	199.1	491.7
Information	930	112.9	520.4
Finance and insurance	3,870	266.1	712.6
Real estate and rental and leasing	3,520	123.4	1,314.5
Professional, scientific, technical	4,770	386.8	724.8
Management of companies	650	78.1	158.0
Administrative and waste services	4,280	161.6	296.5
Educational services	1,410	63.4	105.8
Health and social services	6,770	382.2	647.2
Arts, entertainment and recreation	1,340	48.3	104.8
Accommodation and food services	5,400	155.9	364.4
Other services	4,060	183.8	318.3
Government	730	71.3	186.3
Total *	121,640	\$ 7,580	\$ 20,306

* May not sum due to rounding
Source: Estimates by LAEDC

Much of the impact will occur in the construction industry, with approximately half of the total jobs and output generated accruing to firms in the industry. However, other industries are also significantly impacted, including: retail trade, health care and social assistance, professional and scientific services and accommodations and food services. Each of these

industries will see an increase in business revenues and in the number of jobs as the effects of the increase in construction activity due to the LAX projects ripple through the regional economy. The values in the exhibit should be interpreted as illustrative of the industry effects rather than precise given model and data limitations.

Annual Employment Impacts

Annual employment impacts are a combination of direct, indirect and induced jobs. The decomposition of employment impacts by type by fiscal year is detailed in the following exhibit. Note that only one project began in 2012 and as such the job impacts were quite small during that year. ❖

Exhibit 5-6
Overall Capital Improvement Program at LAX
Annual Employment Impact of All Projects

Fiscal Year	Direct	Indirect	Induced	Total *
2012	5	2	3	10
2013	723	472	454	1,650
2014	4,150	2,614	2,583	9,350
2015	10,291	5,506	6,187	21,980
2016	8,322	4,258	4,958	17,540
2017	8,013	3,285	4,710	16,550
2018	5,710	2,332	3,269	11,310
2019	5,531	2,212	3,157	10,900
2020	4,331	1,819	2,503	8,650
2021	3,931	1,688	2,285	7,900
2022	3,931	1,688	2,285	7,900
2023	3,931	1,688	2,285	7,900
Total *	58,860	28,100	34,680	121,640

* May not sum due to rounding
Source: Estimates by LAEDC

5.3 Total Impacts by Project

The total economic and fiscal impacts for each project are detailed in Exhibit 5-8 on the following page. ❖

5.4 Fiscal Impacts

The economic activity in Southern California due to the capital improvements program at LAX will generate significant state, local and federal tax revenues. Income taxes will be collected on the earnings of workers, both direct and indirect, as are unemployment insurance and disability insurance taxes. Sales taxes will be generated on the purchases of materials by the construction contractors and of goods and services by all the workers whose earnings are sustained by the transportation projects.

The estimated tax revenues by level of government are detailed in Exhibit 5-7.

Exhibit 5-7
Overall Capital Improvement Program at LAX
Detailed Fiscal Impacts in Southern California

	In Planning	Projects in Develop- ment	Tenant Improve- ments	Total *
State and Local Taxes (\$ millions):				
Income taxes	\$ 139	\$ 76	\$ 54	\$ 269
Sales taxes	160	90	53	303
Property tax	137	77	46	259
Social insurance	13	7	4	23
Fees and fines	32	18	12	62
Other taxes	26	14	9	49
Total state / local taxes	\$ 508	\$ 281	\$ 177	\$ 966
Federal Taxes (\$ millions):				
Personal income taxes	\$ 328	\$ 179	\$ 126	\$ 633
Social insurance	439	237	124	800
Corporate income taxes	64	35	27	127
Fees and other payments	15	8	5	28
Other taxes	29	16	10	54
Total federal taxes	\$ 875	\$ 475	\$ 292	\$ 1,643
Total Fiscal Impact	\$ 1,383	\$ 757	\$ 469	\$ 2,609

* May not sum due to rounding
Source: Estimates by LAEDC

It is estimated that direct, indirect and induced workers will pay \$633 million in federal income taxes, \$269 million in state income taxes and \$303 million in sales taxes in California.

All together, over \$2.6 billion in tax revenues will be collected in relation to the capital improvements program. Approximately 63 percent of this will be earned at the federal level and 37 percent at the state and local level. ❖

Exhibit 5-8**Overall Capital Improvement Program at LAX
Economic Impact in Southern California by Project**

	Output (\$ millions)	Employment (Annual jobs)	Labor Income (\$ millions)	Tax Revenues (\$ millions)
Projects in Planning				
Landside Automated People Mover	\$ 5,446.6	32,265	\$ 2,018.0	\$ 679.0
Consolidated Rental Car Facility (CONRAC)	1,941.8	12,000	764	255.3
Intermodal Transportation Facilities	1,165.1	7,200	458.4	153.2
Roadway Access Improvements for LAX	1,553.4	9,600	611.2	204.3
Terminal Modifications	836.5	4,120	265.6	91.1
Total Projects in Planning *	\$ 10,943	65,160	\$ 4,117	\$ 1,383
ADG Projects in Development				
West Aircraft Maintenance Area	\$ 210.4	1,259	\$ 74.9	\$ 26.0
Runway 25L Safety Area Improvements and Temporary Repairs	50.0	299	17.8	6.2
LAX Runway 6L-24R RSA Improvements and Rehabilitation	83.3	499	29.7	10.3
Runway 6R-24L Safety Area Improvement	150.0	898	53.4	18.5
Runway 7L-25R RSA/Twy B Rehabilitation	341.7	2,045	121.6	42.2
Second Level Roadway Expansion Joint and Deck Repairs	73.1	415	26.2	8.5
New Face of the CTA Phase II	153.4	948	60.4	20.2
Electrical, Communications and Water Utility Ext--5th Feeder Project	52.4	324	20.6	6.9
Orange Line Busway	2.0	12	0.7	0.3
Manchester Square/Belford Demolition Phase II	3.9	24	1.5	0.5
CTA Departure Level Security Bollards	9.7	60	3.8	1.3
Imperial Cargo Complex Water Main Replacement	16.7	100	5.9	2.1
ADA Accessibility Improvements-Phase 2	14.6	87	5.2	1.8
Construction Access Gates 21, 23 and 236	14.6	87	5.2	1.8
West RON Electrification Project	9.7	60	3.8	1.3
Taxi Holding Lot Relocation	15.5	96	6.1	2.0
Drainage & Expansion Joint Seal Improvements for Parking Structures 1, 3, 4 &	12.5	75	4.4	1.5
Storm Water Connection to North Central Outfall Sewer (NCOS)	5.8	36	2.3	0.8
Elevators and Escalators	490.2	2,904	181.6	61.1
Concessions Enabling	6.1	36	2.2	0.8
Passenger Boarding Bridge Relocations	54.5	323	20.2	6.8
Terminal 2 Improvement Program	413.5	2,450	153.2	51.6
Terminal 4 Connector	230.0	1,362	85.2	28.7
Terminal 3 Improvements	12.1	72	4.5	1.5
Terminal 6 Electrical Upgrades	66.6	394	24.7	8.3
Bradley West Core Renovation/East Ramp and Concourse Demo Project	745.9	4,464	265.4	92.0
Terminal MPOE/IT Rooms	58.5	347	21.7	7.3
Terminal Fire/Life Safety Systems Improvements Project	60.4	362	21.5	7.5
Midfield Satellite Concourse Enabling	147.6	912	58.1	19.4
Midfield Satellite Concourse (North Gates)	2,423.4	14,976	953.5	318.6
Building Roof Replacement	5.8	36	2.3	0.8
Terminal Wide Improvements	4.0	24	1.5	0.5
Total ADG Projects in Development*	\$ 5,951	35,970	\$ 2,239	\$ 757
Tenant Improvements				
Terminal 1 Tenant Improvements	\$ 1,095.9	6,559	\$ 389.9	\$ 135.2
Terminal 2 Tenant Improvements	165.6	991	58.9	66.2
Terminal 3 Tenant Improvements	35.7	220	14.0	4.7
Terminal 4 Tenant Improvements	64.1	396	25.2	8.4
TBIT, Terminal 2 Tenant Improvements	513.8	3,075	57.6	19.9
Terminal 6 Tenant Improvements	85.8	514	30.5	10.6
Terminal 7 Tenant Improvements	1,194.5	7,149	425.0	147.0
Atlantic Aviation, New Hangar	15.3	91	5.7	1.9
Airfield Tenant Improvements (Quantas)	92.4	548	34.2	11.5
Total Tenant Improvements*	\$ 3,425	20,510	\$ 1,224	\$ 469
Total *	\$ 20,306	121,640	\$ 7,580	\$ 2,609

* May not sum due to rounding
Source: Estimates by LAEDC

APPENDIX

Description of Industry Sectors

The industry sectors used in this report are established by the North American Industry Classification System (NAICS). NAICS divides the economy into twenty sectors, and groups industries within these sectors according to production criteria. Listed below is a short description of each sector as taken from the sourcebook, *North American Industry Classification System*, published by the U.S. Office of Management and Budget (2012).

Agriculture, Forestry, Fishing and Hunting: Activities of this sector are growing crops, raising animals, harvesting timber, and harvesting fish and other animals from farms, ranches, or the animals' natural habitats.

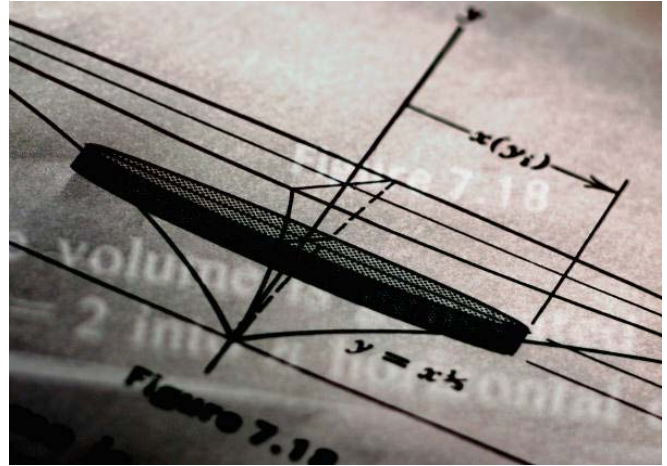
Mining: Activities of this sector are extracting naturally-occurring mineral solids, such as coal and ore; liquid minerals, such as crude petroleum; and gases, such as natural gas; and beneficiating (e.g., crushing, screening, washing and flotation) and other preparation at the mine site, or as part of mining activity.

Utilities: Activities of this sector are generating, transmitting, and/or distributing electricity, gas, steam, and water and removing sewage through a permanent infrastructure of lines, mains, and pipes.

Construction: Activities of this sector are erecting buildings and other structures (including additions); heavy construction other than buildings; and alterations, reconstruction, installation, and maintenance and repairs.

Manufacturing: Activities of this sector are the mechanical, physical, or chemical transformation of material, substances, or components into new products.

Wholesale Trade: Activities of this sector are selling or arranging for the purchase or sale of goods for resale; capital or durable non-consumer goods; and raw and intermediate materials and supplies used in production, and providing services incidental to the sale of the merchandise.



Retail Trade: Activities of this sector are retailing merchandise generally in small quantities to the general public and providing services incidental to the sale of the merchandise.

Transportation and Warehousing: Activities of this sector are providing transportation of passengers and cargo, warehousing and storing goods, scenic and sightseeing transportation, and supporting these activities.

Information: Activities of this sector are distributing information and cultural products, providing the means to transmit or distribute these products as data or communications, and processing data.

Finance and Insurance: Activities of this sector involve the creation, liquidation, or change of ownership of financial assets (financial transactions) and/or facilitating financial transactions.

Real Estate and Rental and Leasing: Activities of this sector are renting, leasing, or otherwise allowing the use of tangible or intangible assets (except copyrighted works), and providing related services.

Professional, Scientific, and Technical Services: Activities of this sector are performing professional, scientific, and technical services for the operations of other organizations.

Management of Companies and Enterprises: Activities of this sector are the holding of securities of companies and enterprises, for the purpose of owning controlling interest or influencing their management decision, or administering, overseeing, and managing

other establishments of the same company or enterprise and normally undertaking the strategic or organizational planning and decision-making of the company or enterprise.

Administrative and Support and Waste Management and Remediation Services: Activities of this sector are performing routine support activities for the day-to-day operations of other organizations, such as: office administration, hiring and placing of personnel, document preparation and similar clerical services, solicitation, collection, security and surveillance services, cleaning, and waste disposal services.

Educational Services: Activities of this sector are providing instruction and training in a wide variety of subjects. Educational services are usually delivered by teachers or instructors that explain, tell, demonstrate, supervise, and direct learning. Instruction is imparted in diverse settings, such as educational institutions, the workplace, or the home through correspondence, television, or other means.

Health Care and Social Assistance: Activities of this sector are operating or providing health care and social assistance for individuals.

Arts, Entertainment and Recreation: Activities of this sector are operating facilities or providing services to meet varied cultural, entertainment, and recreational interests of their patrons, such as: (1) producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) preserving and exhibiting objects and sites of historical, cultural, or educational interest; and (3) operating facilities or providing services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure-time interests.

Accommodation and Food Services: Activities of this sector are providing customers with lodging and/or preparing meals, snacks, and beverages for immediate consumption.

Other Services (except Public Administration): Activities of this sector are providing services not specifically provided for elsewhere in the classification system. Establishments in this sector are primarily engaged in activities, such as equipment and machinery repairing, promoting or administering religious activities, grant-making, advocacy, and providing dry-cleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services. ❖

Study Authors

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Senior Vice President

Dr. Cooper leads the LAEDC Institute for Applied Economics whose work involves research in regional issues such as economic impact studies, regional industry analysis and forecasts, workforce development analysis and policy studies. Her fields of expertise include development economics, environmental economics, regional analysis and urban sustainability.

Prior to joining the LAEDC, Dr. Cooper was co-founder of a start-up company in Hong Kong concentrating on equity transactions software and computer accessories manufacturing, which expanded production into the special economic zone of Shenzhen, China and distributed products throughout the United States and Asia. With her business partner, she also established the first authorized Apple Computer retailer in China. She has been a lecturer at California State University, Long Beach and at the Pepperdine Graziadio School of Business and Management.

Dr. Cooper is a citizen of the United States and Canada. She earned a Bachelor of Arts in Economics from Carleton University in Ottawa, Canada, and a Ph.D. in Economics from the University of Southern California. With funding from the National Science Foundation, she earned a Graduate Certificate in Environmental Sciences, Policy and Engineering. Her current research includes industry cluster performance in the regional economy, commuting and job allocation patterns and workforce development issues.

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Somjita Mitra joined the LAEDC Institute for Applied Economics as an Economist in June 2013. She is involved in planning, designing and conducting research and analysis for consulting clients and local businesses and governments, as well as for LAEDC's internal departments. Her focus is in regional analysis, economic impact studies and the industrial and occupational structure of local economies.

Before joining the LAEDC, Dr. Mitra was an Economist for a local economic research and litigation consulting company evaluating economic damages, estimating lost profits, identifying key economic issues and developing necessary analytical and empirical frameworks. Prior to this, Dr. Mitra was Project Director for a consumer research firm in Los Angeles where she managed projects that identified and analyzed key market issues for local firms as well as multinational corporations.

Dr. Mitra received her Bachelor of Arts in Economics and Political Science from the University of California, Los Angeles and her Master of Arts in Politics, Economics and Business as well as her Ph.D. in Economics from Claremont Graduate University. Dr. Mitra enjoys volunteering in the local community and is actively involved in both women's welfare and animal rescue organizations. ❖



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