THE ECONOMIC IMPACT OF THE PORT OF OAKLAND, 2021

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TABLE OF CONTENTS

I. OVERVIEW OF THE ANALYSIS 1

1. FLOW OF IMPACTS 2
   - *1.1 Business Revenue Impact 3*
   - *1.2 Employment Impact 3*
   - *1.3 Personal Earnings Impact 4*
   - *1.4 Tax Impact 5*
2. SUMMARY OF METHODOLOGY 5
   - *2.1 Data Collection 6*
   - *2.2 Direct Jobs, Income, and Revenue Impacts 6*
   - *2.3 Induced Impacts 7*
   - *2.4 Indirect Jobs 9*
   - *2.5 Related Impacts 10*
   - *2.6 Tax Impacts 11*
3. TOTAL IMPACT OF THE PORT OF OAKLAND 11
4. RESIDENCE OF DIRECT JOB HOLDERS AND THE IMPACT OF THE PORT AS AN ECONOMIC CATALYST IN DISADVANTAGED COMMUNITIES 14

II. THE ECONOMIC IMPACTS OF THE PORT OF OAKLAND SEAPORT 17

1. SUMMARY OF THE ECONOMIC IMPACTS GERNERATED BY CARGO ACTIVITY AT THE OAKLAND SEAPORT 21
2. EMPLOYMENT IMPACTS 23
   - *2.1 Direct Employment Impacts 23*
   - *2.2 Induced Job Impact 26*
   - *2.3 Indirect Job Impact 27*
   - *2.4 Related User Jobs 27*
3. BUSINESS REVENUE IMPACT OF THE SEAPORT 28
4. PERSONAL INCOME AND LOCAL CONSUMPTION IMPACT OF THE OAKLAND SEAPORT 30
5. STATE AND LOCAL TAX IMPACT 30
6. COMPARISON OF ECONOMIC IMPACTS OF OAKLAND SEAPORT OPERATIONS 30
7. CONCLUSION 33

III. THE ECONOMIC IMPACTS OF OAKLAND INTERNATIONAL AIRPORT 36

1. SUMMARY OF THE ECONOMIC IMPACTS OF OAKLAND INTERNATIONAL AIRPORT 38
2. EMPLOYMENT IMPACTS OF AIRPORT ACTIVITY 40
   - *2.1 Total Job Impacts 41*
   - *2.2 Direct Airport Generated On-site Job Impacts 42*
   - *2.3 Induced Job Impact 47*
   - *2.4 Indirect Job Impact 48*
   - *2.5 Related User Impact 48*
3. REVENUE, INCOME AND TAX IMPACTS CREATED BY OAKLAND INTERNATIONAL AIRPORT ACTIVITY 50
   - *3.1 Direct Business Revenue 50*
4. PERSONAL INCOME IMPACTS 51
5. LOCAL PURCHASES 52
6. TAX IMPACTS 52
7. VISITOR INDUSTRY IMPACTS 53
   - *7.1 Visitor Industry Job Impact 55*
   - *7.2 Visitor Industry Business Revenue Impact 56*

7.3 Visitor Industry Personal Income and State and Local Tax Impacts *57*
8. COMPARISON OF IMPACTS GENERATED BY OAKLAND INTERNATIONAL AIRPORT 57

IV. ECONOMIC IMPACTS OF THE PORT OF OAKLAND COMMERCIAL REAL ESTATE TENANTS 65

1. TOTAL COMMERCIAL REAL ESTATE IMPACTS 67
2. ECONOMIC IMPACTS BY INDUSTRY SECTOR 69
3. COMPARISON OF ECONOMIC IMPACTS OF OAKLAND REAL ESTATE OPERATIONS 71
4. SUMMARY 72

I. OVERVIEW OF THE ANALYSIS

The Port of Oakland (Port), located in Oakland, California, operates three revenue lines of business: Maritime, Aviation and Commercial Real Estate. The Port's investment in marine terminals, airport infrastructure and commercial real estate has been a major driver of the Bay Area's economy. The Bay Area is defined as the nine counties of Alameda, San Francisco, San Mateo, Sonoma, Contra Costa, Santa Clara, Marin, Napa, and Solano.

In order to quantify these economic impacts, the Port retained the services of Martin Associates to evaluate the economic impacts generated by (a) waterborne activity at the Port of Oakland-owned marine terminals[1]; (b) airport activity at the Oakland International Airport, which includes the general aviation activity at North Field and the commercial aviation activity at South Field; and (c) the Port's non-maritime and non-aviation commercial real estate tenants of Jack London Square, Embarcadero Cove, Embarcadero Business Park, and other real estate holdings of the Commercial Real Estate Division (collectively referred to herein as "Commercial Real Estate Tenants").

A major emphasis of the study is its defensibility and realistic assessment of the impacts generated by activity at the Port of Oakland Seaport, the Oakland International Airport, and other Port properties leased to commercial real estate tenants. The study is based on interviews with 558 firms providing services to the Seaport and the Oakland International Airport, as well as interviews with the Port's Commercial Real Estate tenants and subtenants. A greater than 90 percent coverage of the firms in the Oakland seaport and airport community has been achieved, underscoring the defensibility of the study. The impacts can be traced back to the company level of detail. The data collected from the interviews were then used to develop operational models of the Oakland marine terminal operations, the Oakland International Airport and the Port's non-maritime and non-aviation real estate tenants. In addition to the data collected from the interviews, an in-terminal passenger survey of 900 passengers using the Oakland International Airport was conducted to develop the impacts of the Airport on the Bay Area visitor's industry.

The results of the analysis include a snapshot of the economic impacts of the Oakland Seaport, Oakland International Airport, and the Commercial Real Estate tenants in 2021, as well as the development of impact models for each of these business units operated by the Port of Oakland. These models provide the Port with tools to update the economic impacts on an annual basis, as well as to evaluate the sensitivity of the resulting local and regional impacts to changes in underlying factors, and to assess the economic impacts of specific Port of Oakland capital development projects.

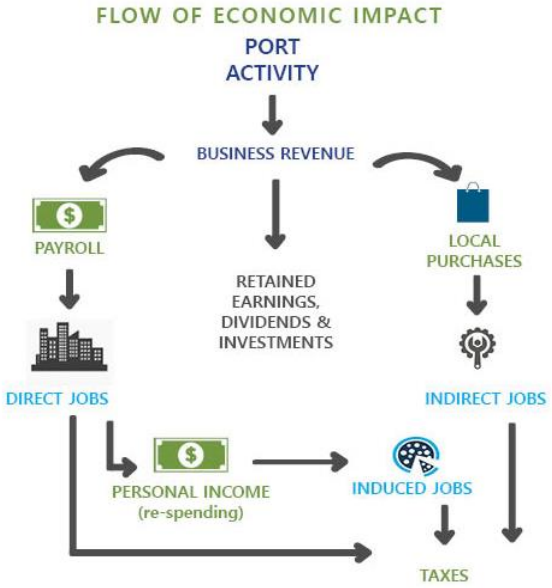
[1] This study includes a break-bulk terminal located on the Oakland Inner Harbor that leases a small portion of water right away from the Port of Oakland. Private marine terminals handling dry bulk cargo and liquid bulk (bunkers) are not included in the analysis.

For the most part, the same methodology has been used to estimate the 2021 economic impacts as was used by Martin Associates to estimate the economic impacts of the Port of Oakland Seaport in 1990, 1995, 2001, 2005, 2010 and 2017. Similarly, the same methodology was used to quantify the economic impacts of airport activity at Oakland International Airport in 1991, 1997, 2010 and 2017. Economic impacts of the Port's Commercial Real Estate tenants were quantified by Martin Associates in 1992, 2000, 2010 and 2017. This real estate activity is, for the most part, not as dependent on business level activity "created" by the Port of Oakland, but instead the overall business climate in Oakland. The remainder of this chapter presents an overview of the impact analysis and a summary of the results.

1. FLOW OF IMPACTS

Passenger and air cargo activity at Oakland International Airport, marine cargo activity at the Seaport, and Commercial Real Estate activity contribute to the local and regional economy by generating business revenue to local and national firms providing services to these sectors. These firms, in turn, provide employment and income to individuals, and pay taxes to state and local governments. Exhibit I-1, below, shows how air traffic activity at Oakland International Airport, the waterborne cargo activity at the Oakland Seaport, and real estate activity of the Port of Oakland's Commercial Real Estate tenants generate impacts throughout the local, state, and national economies. As this exhibit indicates, the impact of an airport, seaport, and real estate tenants on a local, state, or national economy cannot be reduced to a single number, but rather to several impacts. These are the revenue impact, employment impact, personal income impact, and tax impact.

Exhibit I-1
Flow of Economic Impacts Generated by
Port of Oakland Seaport, Airport and Real Estate Activity



1.1 Business Revenue Impact

At the outset, activity at the Port of Oakland's Airport, Seaport, and the Commercial Real Estate properties generate business revenue. This business revenue impact is dispersed throughout the economy in several ways. It is used to hire people to provide the services, to purchase goods and services, and to pay for leases with the Port of Oakland. The remainder is used to pay stockholders, retire debt, make investments, or is held as retained earnings. It is to be emphasized that the only portions of the revenue impact that can definitely be identified as remaining in the state of California are those portions paid out in salaries to California employees; for local purchases by individuals and businesses directly dependent on the seaport and airport, as well as the purchases by the real estate tenants and their employees; and in contributions to state and local taxes. Landing fees and terminal rentals paid by airlines cover some of the costs of operation of the Airport and capital costs of new construction. Terminal leases paid by terminal operators and land leases paid by the Commercial Real Estate tenants to the Port generate revenue as well.

The related users output is the value of the marine cargo moving via the Oakland Seaport and the air freight loaded at Oakland International Airport. This output includes the value added at each stage of production for the exported items moving via the marine terminals, as well as the value added at each stage of use of imported products moving via the marine terminals. Similarly, the related users output of air freight includes the total value of the freight loaded at the airport, as well as the value added at each stage of producing the air freight that is enplaned at the airport. This total value of output represents the economic value of the seaport and airport to users of the Port's maritime and aviation transportation infrastructure.

1.2 Employment Impact

- The employment impact of the Airport, Seaport and Commercial Real Estate Tenants consists of five levels of job impacts. Direct employment impact - jobs directly generated by airport and Seaport activity, as well as the direct jobs with the Port's Commercial Real Estate tenants. Direct jobs generated by marine cargo include jobs with railroads and trucking companies moving cargo between inland origins and destinations, and the marine terminals, longshoremen, mechanics, steamship agents, freight forwarders, stevedores, etc. Direct jobs generated by the Airport include jobs with airlines, catering companies, retail concessions located in the terminals, etc. Direct jobs with the Commercial Real Estate tenants are the employees of these tenants.

  It is to be emphasized that these are classified as directly generated in the sense that these jobs would experience near term dislocation if the Seaport were to be closed; air operations at Oakland International Airport were discontinued; and Port of Oakland Commercial Real Estate tenants were not able to relocate to non-port property, and as a result, leave the area. These jobs are, for the most part, local jobs and the majority are held by residents of the City of Oakland and Alameda County.

- Induced employment impact - jobs created throughout the local economy because individuals directly employed due to airport, seaport and commercial real estate activity spend their wages locally on goods and services such as food, housing, and clothing. These local purchases in the Bay Area generate induced jobs that are employed to provide the goods and services purchased by those directly employed.

- Air visitor industry employment impact - are service jobs in the community (hotel, restaurant, retail employees) resulting from the purchases by 1.77 million visitors to the Bay Area arriving via Oakland International Airport in 2021. Without air service at Oakland International Airport, some of these visitors would not reach the Bay Area, while others would use other Bay Area Airports including San Francisco and San Jose. Therefore, these visitor industry jobs are related to the Airport, but not entirely dependent upon air service at Oakland International Airport.

- Indirect Jobs - are jobs created in the Bay Area due to purchases of goods and services by firms, not individuals. These jobs are estimated directly from local purchases data supplied to Martin Associates by the 558 companies interviewed as part of this study, and include jobs with local office supply firms, maintenance and repair firms, parts, and equipment suppliers, etc. Special care was taken to avoid double counting, since the current study counts certain jobs as direct, which are often classified as indirect by other approaches.

- Related user employment impact – these are jobs with firms using the Seaport and Airport to ship and receive marine cargo and air freight. These jobs are not entirely dependent upon the marine terminals and the Oakland International Airport but reflect the importance of the marine terminals and the Airport to regional firms. While the facilities and services provided at the marine terminals and airport are a crucial part of the infrastructure allowing these jobs to exist, they would not necessarily be immediately displaced if marine terminal and air cargo activity were to cease. These include shippers of agricultural products located in the San Joaquin Valley, manufacturers of high value computer parts from Silicon Valley, and manufacturers of aviation equipment moving these parts via the Oakland International Airport. Also included are the related impacts with importers of consumer goods, and local manufacturers located within the Bay Area.

1.3 Personal Earnings Impact

The personal earnings impact is the measure of employee wages and salaries (excluding benefits) received by individuals directly employed due to Airport or Seaport activity, and the employees of the Port's Commercial Real Estate tenants. Re-spending of these earnings throughout the Bay Area for purchases of goods and services is also estimated. This, in turn, generates additional jobs -- the induced employment impact. This re-spending throughout the Bay Area is estimated using a Bay Area personal earnings multiplier, which reflects the percentage of purchases by individuals that are made within a region. The income multiplier differs by line of business – maritime, airport and real estate. The

personal income impact for the related users is also estimated based on average earnings per employee in those industries using the Seaport to export and import cargo, and the Airport to load outbound air cargo.

1.4 Tax Impact

Federal, state, and local tax impacts are tax payments to the state and local governments by firms and by individuals whose jobs are directly dependent upon and supported (induced and indirect jobs) by activity at Oakland International Airport, the Oakland Seaport, and the Port's Commercial Real Estate tenants. The tax impacts include state and local taxes collected from all sources, both personal and business taxes, as well as Airport specific taxes such as the air cargo waybill tax, the international departure tax, the domestic passenger tax as well as various security tax levies imposed after September 11. State and local taxes are based on income indices developed by the Tax Foundation and these indices are applied to the direct, induced, and indirect personal income impacts.[2] Related user taxes are also estimated.

2. SUMMARY OF METHODOLOGY

The methodological approach to this study is designed to provide highly defensible and accurate results. This same methodology has been used by Martin Associates in the last 30 years to assess the economic impacts of activity at more than 500 seaports including:

Los Angeles	*Freeport, TX*	*Brunswick, GA*
Long Beach	*Portland, OR*	*Everett, WA*
Seattle	*Vancouver, WA*	*Miami*
Tacoma	*Texas City, TX*	*Richmond, VA*
Portland	*New Orleans*	*Providence, RI*
Sacramento	*Port Everglades*	*Montreal*
Tacoma	*Palm Beach*	*Quebec City*
San Francisco	*Jacksonville*	*Prince Rupert, BC*
Vancouver, BC	*Wilmington/Morehead City, NC*	*Halifax*
Houston	*Virginia Port Authority*	*Saint John, NB*
Corpus Christi	*Baltimore*	*18 U.S. Great Lakes Ports*
Oakland	*Philadelphia*	*Wilmington, DE*

Similarly, the Airport impact methodology has been used in the last 30 years by Martin Associates to estimate the economic impacts of airport activity for a majority of the major airports in North America, including:

Hartsfield Atlanta Int'l Airport *Miami Int'l Airport*

[2] The Tax Foundation publishes similar tax indices for state and local tax burdens for each state in the United States.

Stapleton Int'l and Denver Int'l Airports
San Francisco Int'l Airport
San Jose Int'l Airport
Sacramento Int'l Airport
Minneapolis/St. Paul Int'l Airport
Nashville International Airport
Fresno International Airport
Milwaukee's General Mitchell Int'l Airport
Toronto's Lester B. Pearson Int'l Airport
Reagan National and Dulles Int'l Airports
Oakland Int'l Airport
Baltimore-Washington Int'l Airport
Portland (OR) Int'l Airport
Harrisburg Int'l Airport

2.1 Data Collection

The cornerstone of the Martin Associates' approach is the collection of detailed baseline impact data from firms providing services at the Airport and marine terminals. To ensure accuracy and defensibility, the baseline impact data was collected from personal and telephone interviews with 400 firms serving the Port of Oakland Seaport, the Oakland International Airport, and the Port's Commercial Real Estate tenants. These firms represent the universe of firms providing services at the Port of Oakland Seaport, Oakland International Airport as well as the tenants of the Port's Commercial Real Estate Division.

These 558 firms represent greater than 90 percent coverage of all firms identified in the seaport, airport, and real estate community.

In addition to the interviews, an in-terminal survey of 900 passengers using Oakland International Airport was conducted to develop passenger characteristics.

2.2 Direct Jobs, Income, and Revenue Impacts

The results of these interviews were then used to develop the baseline direct job, revenue, and income impacts for the Seaport, Airport, and Commercial Real Estate activity, and for the economic sectors and job categories associated with the Airport, Seaport and Commercial Real Estate tenants.

This baseline survey data was also used to develop operational models for each of the Port's lines of business that can be used to update the impacts of the Port's Seaport, Airport and Commercial Real Estate activity.

Specifically, the Oakland Seaport economic impact model can be used to estimate the impacts due to changes in:

- Marine cargo tonnage, by commodity
- Labor productivity, and work rules
- Modal distribution of Seaport cargo (what percent of the inland transportation of a commodity is truck versus rail), as well as the geographical distribution of each commodity
- Vessel calls

- New terminal development
- New marine tenants and vessel services
- Capital expansion plans such as the development of the former Oakland Army Base for distribution center activity as well as intermodal facilities development

The Oakland International Airport impact model can be used to estimate the impacts due to changes in:

- Air passenger volume
- International versus domestic visitors
- Number of flights
- Opportunity costs of not undertaking capital projects such as runway or ramp capacity enhancements
- Mix of aircraft (wide body aircraft versus commuter aircraft)

The Commercial Real Estate model can be used to estimate the impacts of alternative uses of land parcels owned by the Port of Oakland, as well as the impacts of new tenants.

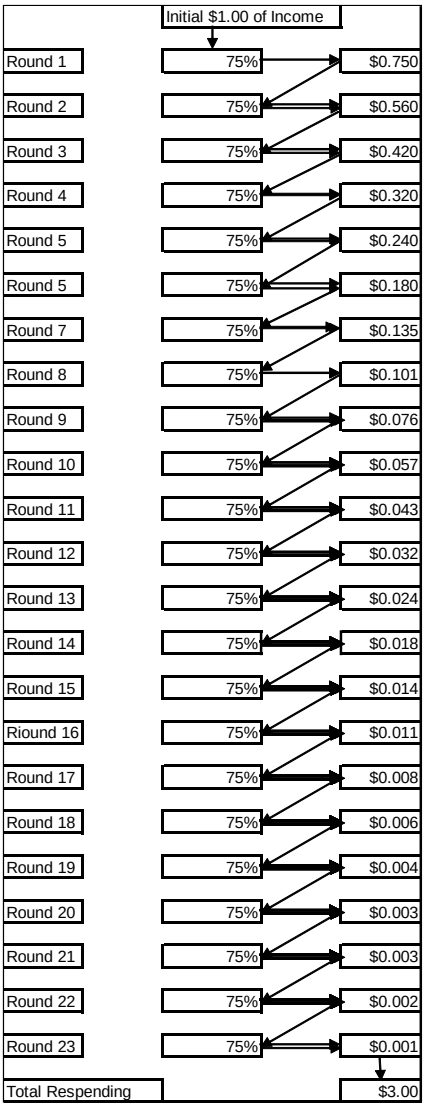
Overall, the impact models can be used to assist the Port in evaluating and ranking planning and capital development alternatives/strategies and to present strategic planning initiatives in terms of potential economic contributions to the City of Oakland and the Bay Area.

2.3 Induced Impacts

The induced impacts are based on the income multiplier for each line of business operated by the Port of Oakland. The concept of the income multiplier results from successive rounds of spending a portion of the direct wages and salaries (personal income) for goods and services. Specific to the Port of Oakland, the U.S. Bureau of Economic Analysis developed a final demand income multiplier for waterborne cargo operations, various types of real estate development, and for airport activity. The re-spending of income within a state is measured by a Bay Area income multiplier. The size of the multiplier for each line of business operated by the Port varies depending on the proportion of goods and services purchased in the Bay Area by individuals as well as by the size of the region. The higher this percentage, the lower is the income leakage out of the Bay Area and this also depends on the location of supplying firms as well as the level of direct income per employee. For example, a final demand income multiplier of 4 indicates that for every one dollar of direct income, about $0.75 is spent in the defined geographic region, while the other $0.25 is either saved or spent out of the defined geographic area. The full income multiplier effect results from successive rounds of re-spending. For example, in the initial round, one dollar is earned. Of that $1.00, $0.75 is used to purchase goods and services. Of the $0.75 received, another 75 percent, or $0.5625, will be used for the next round of purchases of goods and services. Of this $0.5625, again 75 percent, or about $0.4219, will be used for further regional purchases. These successive re-spending rounds will continue until an additional $3.00

of spending in the regional economy is generated for every dollar of direct earned income. At each stage of the re-spending, additional jobs and income are created, as are consumption expenditures. Table I-1 graphically displays the re-spending effect.

Table I-1
Re-spending Impact



The local purchases are allocated to local service/goods suppliers based on the current expenditure profile of residents in the Bay Area, as estimated by the U.S. Bureau of Labor Statistics,

"Consumer Expenditure Survey". This survey indicates the distribution of consumer expenditures over key consumption categories for Bay Area residents. The consumption categories are:

- Housing
- Food at Restaurants
- Food at Home
- Entertainment
- Health Care
- Home Furnishings
- Transportation Equipment and Services

The estimated consumption expenditure generated as a result of the re-spending impact is distributed across these consumption categories. Associated with each consumption category is the relevant retail and wholesale industry. Jobs to sales ratios in each industry are then computed for the Bay Area (Economic Census), and induced jobs are estimated for the relevant consumption categories. It is to be emphasized that induced jobs are only estimated at the retail and wholesale level, since these jobs are most likely generated in the Bay Area. Further levels of induced jobs are not estimated since it is not possible to defensibly identify geographically where the subsequent rounds of purchasing occur.

"The Consumer Expenditure Survey" does not include information to estimate the job impact with supporting business services, legal, social services, and educational services. To estimate this induced impact, a ratio of state of California employment in these key service industries to total state employment is developed. This ratio is then used with the direct and induced consumption jobs to estimate induced jobs with business/financial services, legal, educational, and other social services, not directly estimated from the consumption effect. This ratio is then used with the direct and induced jobs to estimate induced jobs with business/financial services, legal, educational, and other social services.

The re-spending impact includes not only the wage and salary income received by those employed to provide the goods and services to the direct job holders, but also the value of the purchases. Therefore, the re-spending/local consumption impact cannot be divided by the induced jobs to estimate the induced income, as this would overestimate the induced personal wage/salary impact per induced job.

2.4 Indirect Jobs

Indirect jobs are generated in the local economy as the result of purchases by firms that are directly dependent upon activity at the Port of Oakland Seaport, Oakland International Airport, as well as by the Commercial Real Estate tenants. These purchases are for goods such as office supplies and equipment, maintenance and repair services, raw materials, communications and utilities, transportation services and other professional services. To estimate the indirect economic impact, local purchases, by type of purchase, were collected from each of the 558 firms interviewed. These local purchases were then combined with employment-to-sales ratios in local supplying industries, developed from U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System for the state of California and the Bay Area. These job-to-sales ratios capture the numerous spending rounds associated with the

supply of goods and services. Special care has been exercised to avoid double counting the indirect impacts, and to specifically include only the expenditures by the directly dependent firms that are, in fact, in the Bay Area.

2.5 Related Impacts

Related impacts measure the jobs with shippers and consignees moving cargo through the Port of Oakland Seaport and via the airlines serving Oakland International Airport. These jobs are classified as related jobs since the firms using the Seaport and Airport facilities for the movement of marine and air cargo can and do use other seaports and airports. For example, firms exporting containerized cargo typically select a steamship line rather than the seaport through which the cargo will move, and the port through which the export containerized cargo moves is ultimately determined by the steamship line's port call rotation. However, with more sophisticated logistics operations and the development and reliance on distribution centers in West Coast port cities, predominantly Los Angeles and Long Beach, importers have become more involved in the port choice, and the steamship lines have responded to these demands by adjusting port rotations accordingly. Similarly, air cargo shippers often select a freight forwarder or an express air courier to arrange and handle the air cargo shipment. The air courier or forwarder ultimately determines which airport will be used, based on the selection of the air carrier. Therefore, the air cargo shippers are essentially "port blind". The estimate of the number of jobs related to cargo moving via the Seaport and Airport highlight the importance of the sea and air transportation infrastructure developed by the Port of Oakland as a catalyst to economic growth and development in the Bay Area.

Related impacts for the seaport were estimated by multiplying the value of the Bay Area cargo moving via the marine terminals with jobs to sales ratios specific to the exporters and importers.[3] Values of airfreight moving via Oakland International Airport were based on a detailed analysis of air cargo shipments via the Airport from the U.S. Bureau of Census.

The ratio of jobs to value of air cargo shipments was also developed from the U.S. Bureau of Economic Analysis. The value of enplaned air cargo multiplied by the ratios of jobs to value of air cargo resulted in an estimate of related air cargo jobs. Personal income, total economic activity and tax impacts are also estimated from the U.S. Bureau of Economic Analysis personal income multipliers and output multipliers for the relevant user industries associated with the marine cargo and enplaned airfreight.

Related impacts are not estimated for the Commercial Real Estate tenants.

[3] The value of cargo moving via the seaport was determined from U.S. Census of Foreign Trade Statistics, while the ratios of jobs to sales data for related Bay Area and California State exporters and importers were developed from data supplied to Martin Associates by the Bureau of Economic Analysis, Regional Input-Output Modeling System. The terminal operators at the Port of Oakland supplied the analysis regarding the share of marine cargo exports and imports from and to the state of California.

2.6 Tax Impacts

The tax impacts include state and local taxes collected from all sources, both personal and business taxes, as well as airport specific taxes. The state and local per capita income tax burdens (developed by the Tax Foundation for the state of California) are applied to the total direct, induced, and indirect income impacts to estimate total state and local taxes created by Seaport and Airport activity at the Port of Oakland. The aviation specific taxes, such as the air cargo waybill tax, the international departure tax, the domestic passenger tax, as well as various security tax levies imposed after the September 11, 2001, terrorist attacks are estimated based on the specific tax formulas and the relevant passenger or air cargo activity at the Airport.

3. TOTAL IMPACT OF THE PORT OF OAKLAND

As Table I-2 indicates, the Seaport and Oakland International Airport, as well as the Commercial Real Estate activities, generate the following economic impacts for the Bay Area economy:

Table I-2
Summary of the Economic Impacts Generated by the Port of Oakland Seaport, Airport and Commercial Real Estate Activity, 2021

IMPACTS	SEAPORT	ON-SITE AIRPORT	VISITOR INDUSTRY	CRE	TOTAL
JOBS					
DIRECT	12,223	8,269	25,397	3,870	49,759
INDUCED	12,051	5,654	10,187	1,989	29,881
INDIRECT	5,942	1,896	9,623	1,246	18,706
TOTAL	30,215	15,818	45,207	7,104	98,345
PERSONAL INCOME/LOCAL CONSUMPTION ($millions)					
DIRECT	$795	$575	$965	$241	$2,576
RE-SPENDING/LOCAL CONSUMPTION	$2,027	$945	$1,007	$239	$4,220
INDIRECT	$367	$96	$280	$53	$795
TOTAL	$3,189	$1,616	$2,252	$533	$7,591
BUSINESS REVENUE ($millions)	$2,530	$3,894	$4,571	$698	$11,694
STATE AND LOCAL TAXES ($millions)	$400	$212	$285	$73	$970
LOCAL PURCHASES ($millions)	$586	$218	$651	$82	$1,538
RELATED USER IMPACTS					
USER JOBS	538,628	582,671			1,121,299
TOTAL VALUE OF OUTPUT ($millions)	$85,769	$72,571			$158,341
USER INCOME ($millions)	$24,238	$40,624			$64,862
USER STATE/LOCAL TAXES ($millions)	$3,921	$5,484			$9,405

Totals may not add due to rounding.

- 49,759 direct jobs are generated by Port of Oakland. As the result of local and regional purchases by those 49,759 individuals holding the direct jobs, an additional 29,881 induced jobs are supported in the region.

- 18,706 indirect jobs were supported by $1.5 billion of local purchases by businesses supplying services at the Seaport, Airport and by the Commercial Real Estate tenants.

- $2.6 billion of direct wages and salaries were received by those 49,759 directly employed by Seaport activity, Airport activity and the Commercial Real Estate tenants of the Port of Oakland. As the result of re-spending this income, an additional $4.2 billion of income and local consumption expenditures are created in the Bay Area. The 18,706 indirect job holders earned an additional $795 million of personal income.

- Businesses providing services at the Seaport, Oakland International Airport, as well as Commercial Real Estate tenants, received $11.7 billion of revenue, excluding the value of cargo shipped through the Airport and Seaport.

- $970 million of state and local taxes were generated by activity at the Port of Oakland marine terminals, real estate tenants, and Oakland International Airport. Of the $970 million of state and local taxes, the state of California received about $603 million, and the balance, $367 million, was received by local and county governments within the state. In addition, $233 million of federal aviation-specific taxes were generated by activity at Oakland International Airport.

- The user impacts of the Port of Oakland Seaport and Oakland International Airport supported a significant number of jobs, income, and tax revenue in the State. User impacts are not estimated for the Commercial Real Estate Tenants or the Visitor Industry.

    - 1,121,299 jobs with importers and exporters using the Port of Oakland Seaport to ship and receive cargo, and the Oakland International Airport to ship air freight, were in some way related to the cargo moving via the marine terminals and airport. It is to be emphasized that these jobs would not likely disappear if the marine terminals and the Airport were not available for their use. Instead, these importers and exporters and air freight shippers would (and actually do) use other seaports and airports. The level of employment with the users is driven by the demand for the import and export cargo and air freight, and not the use of the Oakland Seaport and Airport. The 1,121,299 jobs include jobs with firms supporting the production of the exports and the use of the imports as an intermediate input, and also include the retail and wholesale impacts associated with imports.

    - The 1,121,299 job holders received $64.9 billion of personal income, including the direct, induced, and indirect impacts.

- The value associated with the marine cargo moving via the Oakland Seaport, and air freight enplaned at Oakland International Airport includes the value of the import and export as well as enplaned air freight, as well as the value added at each stage of production of an export cargo and at each stage of the imported cargo use until final consumption. In 2021, $222.7 billion of economic activity in the state of California was associated with the imports and exports moving via the Oakland Seaport, as well as the air freight loaded at Oakland International Airport.

- The economic activity created in the State by the use and production of the import and export cargo though the Oakland Seaport and the shipment of freight through Oakland International Airport supported $9.4 billion of state and local tax impacts in 2021.

It is important to understand that many of the dollar value impact measures described in Table I-1 are not additive, as the metrics are parts of other impact measures. For example, the only independent impact measures that can be added from a dollar value perspective are the direct revenue component and the induced/local consumption expenditures. For example, the direct revenue measure includes the direct income, local purchases (of which indirect wages are a part), and the direct and indirect tax payments. The induced/local consumption component includes the induced/local consumption expenditures, from which are paid the induced/local consumption taxes. Therefore, a total annual economic impact of the Port of Oakland activities is represented by adding the $11.7 billion direct business revenue impact with the $4.2 billion induced/local consumption expenditures, for a total impact of $15.9 billion annually.

If the Port activity were to cease, this economic value would no longer be created in the Bay Area. In addition to the $15.9 billion of annual economic impact of the Port of Oakland, $222.7 billion of economic value was created by the marine cargo and the air freight handled at the Oakland Seaport and Oakland International Airport, for a combined economic value of $238.6 billion. It is to be emphasized that if the Port were not available for the movement of marine cargo and air freight, the $15.9 billion of economic activity would be lost from the Bay Area. The balance, the $222.7 billion of economic value, would not be lost from the national or regional economy, as it is the demand for the marine cargo and air freight that results in the $222.7 billion of economic value, not the use of the Port of Oakland Seaport and Oakland International Airport. This value would still be created regardless of the seaport or airport used.

In summary, of the $174.3 billion of total economic activity associated with the Port of Oakland in 2021:

- Businesses received $11.7 billion in direct business revenue from the provision of services in support of the Seaport and Airport activity, and from the Commercial Real Estate Tenants, of which:

- $2.6 billion of direct wages and salaries (excluding benefits) were paid to the 49,759 direct job holders.
- $1.5 billion of local purchases were made, supporting the 18,706 indirect job holders, with an annual personal income of $795 million
- $970 million were paid in state and local taxes

➢ $4.2 billion of re-spending and local consumption expenditures were made, supporting the 29,881 induced jobs

➢ $158.3 billion was the economic value created by the air freight enplaned at the Airport and the marine cargo moved via the Seaport, of which:

- $64.9 billion were paid in personal earnings to the 1,121,299 jobs supporting the marine cargo imported and exported via the Oakland Seaport and the air freight shipped via the Oakland International Airport
- $9.4 billion were paid in state and local taxes

In addition to the economic impacts to the Bay Area and the state of California, $232.7 million of Federal Aviation Taxes were paid as the result of passenger and air cargo activity at Oakland International Airport in 2021.

In summing the impacts, the user impacts can be added to the direct, induced, and indirect impacts of the appropriate categories to describe the point in time impacts of the Port, or in other words the "sphere of influence of the Port at a given point in time". However, the related user impacts should not be added to the direct, induced, and indirect impacts when describing the impacts "created" by the Port of Oakland on an annual basis.

4. RESIDENCE OF DIRECT JOB HOLDERS AND THE IMPACT OF THE PORT AS AN ECONOMIC CATALYST IN DISADVANTAGED COMMUNITIES

The importance of the Port of Oakland to the Bay Area economy, and also to the cities of Oakland and Alameda is underscored by Table I-3, which shows the residency of the direct job holders by City and County within the Bay Area. The direct jobs created in the visitor industry are not included since those direct jobs were estimated from visitor industry model that converts expenditures by air passenger visitors using Oakland International Airport into jobs, income, revenue, and tax impacts. The direct job impacts and the residency of those job holders for the marine cargo terminals, the Oakland International Airport, and Commercial Real Estate tenants are based on the surveys and interviews with the 558 firms as to the residency of their direct employees.

As Table I-3 demonstrates, the Port of Oakland generates the greatest number of direct jobs with residents of Oakland, accounting for 23.7% of the total direct jobs' impacts created by the Seaport, Airport and Commercial Real Estate lines of business.

Table I-3
Residency of Direct Job Holders Created by the Port of Oakland, 2021

OAKLAND AREA JURISDICTIONS	DIRECT JOBS	PERCENT
Oakland	5,780	23.7%
Alameda	1,520	6.2%
San Leandro	1,435	5.9%
Hayward	1,270	5.2%
Fremont	249	1.0%
Other Alameda County	3,583	14.7%
Total Alameda County	**13,837**	**56.8%**
Richmond	648	2.7%
Other Contra Costa	3,603	14.8%
Total Contra Costa County	**4,251**	**17.5%**
San Jose	124	0.5%
Other Santa Clara County	154	0.6%
Total Santa Clara County	**278**	**1.1%**
San Francisco	1,579	6.5%
Solano County	1,168	4.8%
Sacramento County	239	1.0%
Sonoma County	225	0.9%
San Mateo County	614	2.5%
Marin County	253	1.0%
Napa County	101	0.4%
Other CA	1,217	5.0%
Other US	599	2.5%
TOTAL	**24,361**	**100%**

Excludes Direct Jobs with the Visitor Industry; Totals may not add due to rounding
Source: U.S. Bureau of the Census, American Fact Finder, 2020 DEC Redistricting Data, Hispanic or Latino or Not Hispanic or Latino, by Race

It is important to emphasize that the key occupations/industry sectors generated by each of the lines of business are those that employ a relatively large share of minority workers nationwide, as measured by the U.S. Bureau of Labor Statistics, Current Population Survey, 2022, Tables 11 and 18.

The key occupations generated by the Seaport line of business are with trucking,

warehousing/distribution, freight forwarders/maritime services, and the International Longshore and Warehouse Union (ILWU). With respect to trucking, 46.5 percent of the trucking jobs in the U.S., are held by minorities consisting of 23.6 percent Hispanic or Latino, 18.7 percent African American and 4.2 percent Asian; and 12.6 precent females. Nationally 63.9 percent of jobs with warehouses and distribution centers are held by minority workers consisting of 36.0 percent Hispanic or Latino, 22.4 precent African American and 5.5 percent Asian; and 35.2 percent are female. At the national level, 50.1 percent of shipping and receiving clerks, used as a proxy for freight forwarders and marine service providers, are held by minorities, consisting of 29.1 percent Hispanic or Latino, 16.2 percent African American and 4.8 percent Asians; and 36.9 percent are females. Furthermore, about 65% of the ILWU membership serving the Seaport consists of minority workers, and no further breakdown by race or ethnicity is available.

The key occupations generated by the Airport are with passenger airlines including based flight crew, and with the accommodation and food services occupations (the key occupations generated by the visitors arriving via the Airport. With respect to flight crew, 35 percent of those employed in this occupation nationwide are minorities consisting of 18.4 percent African American, 7.1 percent Asian and 9.5 percent Hispanic or Latino; 64.6 percent are female. With respect to the visitors industry, 47.2 precent of jobs in the accommodations and food services are held by minorities nationwide, consisting of 27.3 percent Hispanic or Latino, 12.6 percent African American and 7.3 percent Asian; 52.5 percent are female.

The key occupations generated by the Commercial Real Estate line of business are with office/professionals, warehouse and distribution and restaurants. At the national level, 63.9 percent of jobs with warehouses and distribution centers are held by minorities, consisting of 36.0 percent Hispanic or Latino, 22.4 percent African American and 5.5 percent Asian; and 35.2 percent are female. At the national level 47.6 percent of restaurant jobs are held by minorities, consisting of 27.8 percent Hispanic or Latino, 12.7 percent African American and 7.1 percent Asian; and 51.8 percent are female. At the national level 36.2 percent of office/professional services jobs are held by minorities, consisting of 16.6 percent Hispanic or Latino, 9.8 percent African American and 9.8 percent Asian; and 42.6 percent are female.

II. THE ECONOMIC IMPACTS OF THE PORT OF OAKLAND SEAPORT

In 2021, a total of 1.4 million containers moved through marine facilities owned by the Port of Oakland, while 822,000 tons of steel moved via a private terminal that is located within the Seaport District and lease the area of water at their docks from the Seaport. The Seaport retains the water access rights within the channel. Autos and light trucks were also handled at marine facilities in 2021. The movement of containerized cargo, autos and light trucks and steel products through the Port of Oakland's marine cargo terminals generates economic activity in various business sectors of the state and local economy. Specifically, the following economic sectors are involved in providing services to move the cargo through the marine terminals:

- Surface Transportation Sector
- Maritime Service Sector
- Port of Oakland Maritime Division
- Shippers/Consignees using the Seaport

Jobs, income, revenue, and tax impacts are estimated for each sector, as well as for specific job categories within each sector.

Within each sector, various participants are involved. Separate impacts are estimated for each of the participants. A discussion of each of the four economic impact sectors is provided below, including a description of the major participants in each sector.

The Surface Transportation Sector

The surface transportation sector consists of both the railroad and trucking industries. These sectors are responsible for moving the various cargoes between the marine terminals and their inland origins and destinations. Two mainline railroads serve the Oakland marine terminals, the Burlington Northern and the Union Pacific railroads.

Many local and national trucking firms serve the marine terminals, as do numerous individual owners/operators. Trucking firms are involved in distributing local containerized cargo (both full container loads, as well as less-than-container load (LCL) cargo). Typically, trucks distribute the imported containers moving locally, as well as throughout California, and move export containers originating in the Bay Area, as well as from the San Joaquin Valley to the marine terminals for export. Finally, trucks play a major role in the drayage of containers between rail yards and the marine terminals.

The Maritime Service Sector

This sector consists of numerous firms and participants performing functions related to the following maritime services:

- Cargo Marine Transportation
- Vessel Operations
- Cargo Handling
- Federal, State, and Local Government Agencies

A brief description of the major participants in each of these categories is provided below:

- Cargo Marine Transportation - Participants in this category are involved in arranging for overland and water transportation for export or import freight through the Seaport. The freight forwarder/customhouse broker is the major participant in this category. The freight forwarder/customhouse broker arranges for the freight to be delivered between the Oakland marine terminals and inland destinations, as well as the ocean transportation. This function performed by freight forwarders is most prevalent for general cargo commodities. For bulk cargo, arrangements are often made by the shipper/receiver, and the cargo passes over privately owned docks.
- Vessel Operations - This category consists of several participants. The steamship agents provide a number of services for the vessel as soon as it enters Oakland Harbor; the agents arrange for pilot services and towing, for medical and dental care of the crew, and for ship supplies. The agents are also responsible for vessel documentation. In addition to the steamship agents arranging for vessel services, those providing the services include:
  - Pilots - assist vessels navigating the San Francisco Bay
  - Chandlers - supply the vessels with ship supplies (food, clothing, nautical equipment, etc.)
  - Towing firms - provide tug assist service to vessels docking and undocking at a terminal
  - Bunkering firms - provide fuel to the vessels
  - Marine surveyors - inspect the vessels and the cargo
  - Shipyards/marine construction firms - provide repairs, either emergency or scheduled, as well as marine pier construction and dredging
- Cargo Handling - This category involves the physical handling of the cargo at the marine terminals between the land and the vessel. Included in this category are the following participants:
  - Longshoremen/dockworkers – This category includes members of the International Longshore and Warehouse Union (ILWU), who are involved in the loading and unloading of cargo from the vessels, as well as handling the cargo prior to loading and after unloading, including stuffing and stripping containers
  - Stevedoring firms - manage the longshoremen and cargo-handling activities

- Terminal operators - are often stevedoring firms who operate the maritime terminals where cargo is loaded and off-loaded. In addition to the members of the ILWU, other labor, such as machinists (IAM) and electricians (IBEW) are employed by terminal operators
- Warehouse operators - store cargo after discharge or prior to loading, and consolidate cargo units into shipment lots
- Container leasing and repair firms - provide containers to steamship lines and shippers/consignees and repair damaged containers

➢ Government Agencies - This maritime service sector category involves federal, state and local government agencies that perform services related to cargo handling and vessel operations at the Oakland marine terminals. U.S. Customs, Bureau of Immigration, U.S. Department of Labor, U.S. Department of Agriculture, and U.S. Department of Commerce employees are involved. In addition, both civilian and military personnel with the U.S. Coast Guard, U.S. Navy and the U.S. Army Corps of Engineers dedicated to the security and movement of marine cargo moved via Oakland marine terminals are included, as are members of the Military Sealift Command. The City of Oakland police and fire departments are also included.

Port of Oakland Maritime Division

This sector includes those individuals employed by the Port of Oakland whose purpose is to oversee maritime activity on Port-owned Seaport properties. The Port leases property and equipment such as cranes to marine terminal operators, and also leases property to maritime-related businesses such as transloading companies.

Related Users of the Oakland Marine Cargo Facilities

Related users included in this category are the importers and exporters located throughout the Bay Area and state of California, whose businesses use the marine cargo terminals for the export and import of cargo. Internationally located importers and exporters are not included, as the focus of this study is on impacts of the Seaport activity in the United States and in particular, the Bay Area. These users also ship and/or receive materials via other ports such as Los Angeles/Long Beach, and The Northwest Seaport Alliance. It is to be emphasized that these importers/exporters are not dependent exclusively upon the use of the Oakland Seaport, since they are users of other ports as well. Since these users are not exclusively dependent upon the use of the marine terminals in the Oakland Seaport, employment with these importers/exporters is considered Seaport-related and not Seaport-generated.

A major use of economic impact analysis is to provide a tool for port development planning. As a port grows, available land and other resources for port facilities become scarce, and decisions must be made as to how to develop the land and utilize the resources in the most efficient manner. Various types of facility configurations are associated with different commodities. For example, break bulk

cargo requires covered warehouse space, while containerized cargo requires significant investments in cranes and intermodal facilities, as well as open container yards.

An understanding of the commodity's relative economic value in terms of employment and earnings to the local community, the utilization and cost of providing the facilities, and the relative demand for the different commodities is essential in making future port development decisions. Because of this need for understanding relative commodity impacts and the impacts associated with marine terminal investments, economic impacts are estimated for the following commodities/commodity types handled via the Seaport:

- Containerized Cargo
- Break Bulk Steel/Steel Scrap
- Autos/Light Trucks

The impacts generated by the marine cargo terminals are estimated:

- By sector of the local and regional economy, i.e., maritime service sector, surface transportation sector, etc.
- By commodity group, i.e., containerized cargo, steel, and autos/light trucks
- By the residency of individuals directly employed by the activity at the marine terminals within the Oakland Harbor

The 2021 impact estimates for the Seaport are based on the results of personal and telephone interviews with 358 businesses in the Bay Area maritime industry. The interviews were used to identify employment, salaries, business revenue, residency of employees, cargo handling productivity and dependency of the business activity on cargo shipments and receipts transported through the Seaport facilities. In addition, an induced multiplier has been developed by the U.S. Bureau of Economic Analysis to measure the impacts of purchases by those directly employed through marine activity in the Seaport. Similarly, an indirect impact model has been developed to estimate the impacts of local purchases by firms dependent upon Seaport activity.

1. SUMMARY OF THE ECONOMIC IMPACTS GERNERATED BY CARGO ACTIVITY AT THE OAKLAND SEAPORT

The economic impacts generated by marine cargo handled at Port of Oakland Seaport are summarized in Table II-1.

Table II-1
Economic Impacts of Oakland Seaport

	ECONOMIC IMPACTS
JOBS	
DIRECT	12,223
INDUCED	12,051
INDIRECT	5,942
TOTAL	30,215
PERSONAL INCOME/LOCAL CONSUMPTION ($millions)	
DIRECT	$795
RE-SPENDING/LOCAL CONSUMPTION	$2,027
INDIRECT	$367
TOTAL	$3,189
BUSINESS REVENUE ($millions)	$2,530
STATE AND LOCAL TAXES ($millions)	$400
FEDERAL TAXES	$317
LOCAL PURCHASES ($millions)	$586
RELATED USER IMPACTS	
USER JOBS	538,628
TOTAL VALUE OF OUTPUT ($millions)	$85,769
USER INCOME ($millions)	$24,238
USER STATE/LOCAL TAXES ($millions)	$3,921
FEDERAL USER TAXES	$5,264
TOTAL ECONOMIC OUTPUT ($millions)	$90,327

Totals may not add due to rounding

As this table indicates, maritime activity (cargo and vessel activity) at the marine cargo terminals in the Oakland Harbor supported the following economic impacts:

In total, 568,843 jobs were in some way related to the cargo moving via the Seaport.

- 12,223 direct jobs were generated by the cargo handled at the marine terminals. These direct jobs include jobs with the ILWU, truckers serving the marine terminals, rail crew and yardmen and dispatchers moving the containers by rail to and from the marine terminals, terminal operators, steamship agents, freight forwarders, chandlers, warehouse operators, container repair and leasing companies, pilots, tug operators, etc. These jobs would suffer near term dislocation should marine cargo cease moving via the marine terminals within Oakland Harbor.

- 12,051 induced jobs were supported by the purchases of the 12,223 directly employed individuals. These induced jobs are with suppliers of food and groceries, housing, clothing and accessories, health care services, home furnishings, transportation services, education, finance, and real estate services, as well as with jobs held by state and local government agencies.

- 5,942 indirect jobs holders were generated as the result of $586 million of local purchases by the firms providing the direct cargo and vessel services at the marine terminals. These jobs are held by suppliers of office supplies, business services, fuel, utilities, maintenance and repair services, insurance and financing, and equipment parts and services, etc.

- The balance of jobs, 538,628, are classified as related user jobs associated with the cargo moving via the Port of Oakland's container terminals. These include jobs generated at all phases of the supply chain (excluding the direct, induced, and indirect jobs created by the marine terminal activity), including the producing firms and farms, the firms supporting the manufacturing process of the export producers and the import consumers, and the distribution center activity located off-marine terminal. These jobs would not be as directly impacted should the marine terminals at the Oakland Harbor not be available for cargo activity. These related users would and currently use other ports for export and import activity.

The total economic value of the marine cargo and vessel activity at the Seaport including the revenue and value added at each stage of moving an export to the Port or import from the marine terminals is estimated at $90.3 billion. Of the $90.3 billion-dollar economic value, businesses providing direct services to the marine terminals received $2.5 billion of direct business revenue, $2.0 billion of local re-spending and consumption expenditures were generated, and the balance, $85.8 billion, is the total economic value (less the direct business revenue) of moving the export cargo from production stage to export. This includes the revenue and value added at each stage of production, including support firms providing goods and services during the production of the export. The total economic value of users of import cargo includes the economic value of the imported cargo moving through the seaport to final consumption either by individuals or industry. This includes only the retail and wholesale margins of the cargo itself, and the value of the services added at each stage of use of an imported intermediate product or a final consumer commodity. It is to be emphasized that the $85.8 billion of economic value would not disappear from the U.S. economy should the cargo move through another port, as it is the demand for the export and import cargo that drives the value of the cargo and generates the user economic value. If the cargo were to move to another port, the logistics

cost of moving the imports and exports would increase, but the value would still be generated in other regions and/or other States due to the demand for the export and import products; however, the $2.5 billion of direct business revenue and the $2.0 billion of re-spending of personal income and the local consumption impact would be lost from the local Bay Area economy. The related economic value demonstrates at a given point of time the magnitude of the influence of the seaport.

In summary, of the $90.3 billion of economic value associated with the Oakland Seaport in 2021:

- Businesses received $2.5 billion in direct business revenue, of which:
  - $795 million of direct wages and salaries (excluding benefits) were paid to the direct job holders, for an average salary of $65,030
  - $586 million of local purchases were made, supporting the 5,942 indirect job holders, with an annual personal income of $367 million
  - $400 million were paid in state and local taxes

- $2.0 billion of re-spending and local consumption expenditures were made, supporting the 12,051 induced jobs.

- $85.8 billion was the economic value supported by the cargo moving via the Seaport, of which:
  - $24.2 billion was paid in personal earnings to the 538,628 jobs supporting the marine cargo exported and imported via the Oakland Seaport
  - $3.9 billion was paid in state and local taxes.

2. EMPLOYMENT IMPACTS

This section details the direct, induced, indirect and related job impacts generated by marine cargo and vessel activity. The direct employment impacts are first described.

2.1 Direct Employment Impacts

The distribution of the 12,223 direct job impacts by economic sector and job category is presented in Table II-2.

Table II-2
Direct Jobs by Detailed Category

IMPACT CATEGORY	DIRECT JOBS
SURFACE TRANSPORTATION	
RAIL	212
TRUCK	4,114
SUBTOTAL	**4,326**
MARITIME SERVICES	
TERMINAL	231
ILWU	2,002
TUG ASSISTS	112
PILOTS	45
STEAMSHIP LINES/AGENTS	95
MARITIME SERVICES/SURVEYORS	567
FREIGHT FORWARDERS	1,701
WAREHOUSE/DISTRIBUTION CENTERS	2,327
GOVERNMENT	446
MARINE CONSTRUCTION/SHIP REPAIR	220
SUBTOTAL	**7,744**
DEPENDENT SHIPPERS/CONSIGNEES	**88**
PORT AUTHORITY	**65**
TOTAL	**12,223**

*IAM and IBEW included in Terminal Jobs

As this table indicates, the largest direct job impact occurs with truckers serving the Port's marine terminals, followed by jobs with warehousing and distribution center/cross dock operations, members of the ILWU, and freight forwarders. The high concentration of the Oakland job impacts in the trucking industry reflects the high percentage of containerized cargo moving to and from the marine terminals by truck. In contrast the employment with the railroads is relatively small due to the small share of intermodal cargo currently moving via the Seaport. The employment impact with the ILWU reflects full-time equivalent workers with the ILWU based on hours paid to handle the cargo moving via the Port-owned container terminals. Terminal operators hire steady IBEW and IAM employees on the terminals, these jobs are included in the terminal employment.

Employment Impacts by Commodity

Table II-3 presents the distribution of the direct job impacts by commodity/handling type. A total of 12,223 direct jobs are allocated to commodities moving over the marine terminals in the Oakland Harbor[4]. The importance of containerized cargo is underscored by the fact that 11,410 direct jobs are supported by containerized cargo moving via the Port of Oakland owned marine terminals.

Table II-3
Direct Jobs by Commodity Group

COMMODITY	JOBS
CONTAINERS	11,410
AUTOMOBILES	12
SCRAP (SCHNITZER)	237
NON-ALLOCATED	565
TOTAL	**12,223**

Employment Impact by Place of Residency

The importance of the marine cargo operations at the Oakland Seaport is underscored by the residency of those holding the 12,223 direct jobs. As Table II-4 indicates, about 25 percent of the 12,223 direct jobs generated by marine cargo activity are held by residents of Oakland, while almost 55 percent of the direct jobs are held by residents of Alameda County.

[4] 565 jobs generated by cargo and vessel activity at the Oakland Seaport are not allocated to specific commodities/handling type. These direct jobs are with government agencies, shipyards and marine construction firms, and the Port of Oakland staff assigned to marine cargo activities.

Table II-4
Distribution of Direct Seaport Jobs by Place of Residence

MUNICIPALITIES	PERCENT	DIRECT JOBS
CITIES:		
ALAMEDA	4.60%	562
FREMONT	0.81%	99
HAYWARD	4.34%	531
OAKLAND	24.77%	3,028
RICHMOND	2.65%	323
SAN FRANCISCO	6.77%	827
SAN JOSE	0.14%	17
SAN LEANDRO	4.41%	539
COUNTIES:		
ALAMEDA	15.83%	1,934
CONTRA COSTA	16.18%	1,977
MARIN	1.70%	207
NAPA	0.57%	69
SACRAMENTO	0.92%	112
SAN MATEO	3.82%	467
SANTA CLARA	0.52%	64
SOLANO	6.32%	772
SONOMA	0.94%	115
OTHER CA	3.04%	371
OTHER US	1.70%	207
TOTAL	**100%**	**12,223**

2.2 Induced Job Impact

The induced jobs are generated as the result of purchases of goods and services by those 12,223 directly employed as a result of marine cargo and vessel activity at the Seaport. As the result of the local and regional purchases by these directly employed individuals, 12,051 induced jobs were supported in the Bay Area. The greatest number of induced jobs are supported in non-consumption driven sectors of the economy such as business services, state and local government agencies, social services, and education services, followed by impacts with restaurants and grocery stores.

2.3 Indirect Job Impact

Indirect jobs are jobs generated by local purchases of goods and services by the firms directly dependent upon marine cargo activity at the Seaport. Local purchases for goods (office supplies, equipment, parts, tires, fuel, etc.) and for services (maintenance and repair, consulting, utilities, etc.) were developed for each business category based on the surveys with the maritime community. The local supplying industries were then identified using Standard Industrial Classification numbers derived from the U.S. Bureau of Census data. The U.S. Bureau of Economic Analysis developed a Bay Area Input-Output Model for this study, which was used to convert the local purchases by type of purchase into indirect jobs and personal wages impacts.[5] The local purchases, by type of purchase, were then combined with jobs-to-sales coefficients in the supplying industries to estimate the number of jobs in the local economy that were indirectly supported by the marine cargo and vessel activity at the Oakland Seaport.

In 2021, it is estimated that firms directly dependent upon the Port of Oakland Seaport made $586 million of local purchases. These $586 million of local purchases supported 5,942 indirect jobs in the local economy.

2.4 Related User Jobs

To estimate jobs with importers/exporters and those industries supporting the production of the container exports and the consumers of the containerized imports moving via Port of Oakland Seaport container terminals, the following methodology was used. First, the key cargoes within the containers moving via the Port of Oakland's container terminals were identified from U.S. Census, International Waterborne Trade Data. The majority of imported containerized cargo consists of consumer retail products such as beverages, furniture, glassware, and sound and television equipment. For export containers, key commodities include beverages and wine, cereal, and food products such as frozen beef, fresh vegetables, and nuts. The average value per ton of each commodity was also developed from U.S. Census International Waterborne Trade Data. The average value per ton of containerized cargo handled at the Port was then estimated.

Export producing industries were similarly identified for the key commodities moving in the export containers via the Port's container terminals. Similarly, the cargo moving in the imported containers was associated with the retail sector. Using the Bureau of Economic Analysis, RIMS II model for the Bay Area, jobs to value of output ratios were developed for the relevant export producing and import consuming sectors. For imported goods associated with retail operations, the average retail margins were applied to the value of the imported containerized cargo.

[5] The Bay Area Input-Output Model was developed for Martin Associates by the Bureau of Economic Analysis, Regional Input-Output Modeling System RIMS II. The model is designed to control for leakages of purchases from the Bay Area at the multiple rounds of purchases after the direct local purchase.

The values of import and export containers moving via the Port of Oakland container terminals were next estimated by multiplying the value per container by the number of full containers moved via the container terminals. The total values of each type of container moved via the Port of Oakland container terminals were then adjusted to reflect the percentage of containers originating or destined for California users, as determined from the terminal operators and steamship lines.

About 80 percent of the containerized cargo exported via the Seaport is estimated to originate in the Bay Area and Northern California, while 85 percent of the containerized imports are consumed in the region. Combining this share with the value of export and import containers, and the relevant jobs to value of shipment ratios, it is estimated that about 538,628 jobs are with regional users of the Port of Oakland for the shipment and receipt of containerized cargo. Included in this related job estimate are not only the jobs with the importers and exporters and the induced and indirect jobs created by these jobs, but the jobs required to support the production of the exports as well as the distribution and use of the imports are also included in the related user job impacts.

The total value of the economic impact created by the cargo moving via the Port's container terminals is estimated at $85.8 billion, and includes the value generated at each stage of the production of the export commodities moving via the Port's container terminals, as well as the value created at each stage of the retail and distribution stages of the imported cargo. The income associated with the 538,628 related users in the state is estimated at $24.2 billion, and the state and local taxes associated with the related jobs and income total $3.9 billion.

Adjustments were made so as to not double count the direct, induced, and indirect job, income, business revenue and state and local tax impacts created by the movement of the cargo via the container terminals.

3. BUSINESS REVENUE IMPACT OF THE SEAPORT

The revenue impact is a measure of the ***total economic activity*** in the state that is generated by the cargo moving via the Oakland Seaport. In 2021, marine cargo activity generated a total of $90.3 billion of total economic activity in the Bay Area and the state of California. Of the $90.3 billion, $2.5 billion is the direct business revenue received by the firms directly dependent upon the cargo moving via the marine terminals. These firms provide maritime services and inland transportation services to the cargo handled at the marine terminals and the vessels calling the terminals. As the result of the re-spending of the personal income and the local consumption expenditures, and other $2.0 billion of income and local consumption expenditures are generated. The remaining $85.8 billion represents the value of the output to the state of California that is created due to the cargo moving via the Seaport terminals. This includes the value added at each stage of producing an export cargo, as well as the value added at each stage of production for the firms using imported raw materials and intermediate products that flow via the Port of Oakland container terminals and are consumed by industries within the state.

The balance of the revenue discussion focuses on the $2.5 billion of direct business revenue generated from providing services to the cargo and vessels calling at the Oakland Seaport.

Table II-5 shows the distribution of this direct revenue impact by category and economic sector. Terminal operators receive the greatest revenue impact. For the most part these are lease holders with the Port of Oakland who operate the Port's container terminals. A portion of this revenue is paid to the Port in terms of lease payments and wharfage and dockage and equipment rentals. Trucking received the next largest revenue impact due to the amount of trucking involved in moving containers to and from the marine terminals. It is to be emphasized that this revenue impact should not be viewed totally as a local or state impact, but instead as a national impact. For example, the revenue received by firms providing services is used to hire labor, to pay state, local and federal taxes, to pay stockholder dividends, invest, retire debt, and to purchase goods and services. These uses of revenue suggest that only the payment of wages and salaries to employees residing in the state, and in particular the Bay Area, the purchase of local goods and services, and the payment of state and local taxes can be identified as remaining in the State and in the Bay Area.[6]

Table II-5
Revenue Impact by Category and Economic Sector, Port of Oakland Seaport

IMPACT CATEGORY	REVENUE ($millions)
SURFACE TRANSPORTATION	
RAIL	$210
TRUCK	$427
SUBTOTAL	$637
MARITIME SERVICES	
TERMINAL	$495
TUG ASSISTS	$18
PILOTS	$16
STEAMSHIP LINES/AGENTS	$245
MARITIME SERVICES/SURVEYORS	$304
FREIGHT FORWARDERS	$164
WAREHOUSE/DISTRIBUTION CENTERS	$375
MARINE CONSTRUCTION/SHIP REPAIR	$98
SUBTOTAL	$1,716
PORT AUTHORITY	$177
TOTAL	**$2,530**

[6] The revenue reported for the Port of Oakland is net of lease revenue paid to the Port by the terminal operators. These payments to the Port are included in the gross revenue estimated for terminal operators. To allocate gross revenue of the Port of Oakland would double count the share of the terminal operators' revenue paid to the Port as lease payments.

4. PERSONAL INCOME AND LOCAL CONSUMPTION IMPACT OF THE OAKLAND SEAPORT

The 12,223 individuals directly employed as a result of activity at the Oakland Seaport received $795 million in wages and salaries, for an average annual salary of $65,030. These individuals, in turn, use the earnings to purchase goods and services (both from the Bay Area as well as out of area sources), to pay taxes, and for savings. The purchase of goods and services from local (Bay Area) sources creates a re-spending effect known as the personal earnings multiplier effect. This re-spending, or multiplier effect, was estimated using a personal earnings multiplier of 3.5506, which indicates that for every $1 earned in the Bay Area, an additional $2.55 is created due to re-spending of the initial $1 throughout the Bay Area. Using the local personal earnings multiplier, an additional $2.0 billion of re-spending and local consumption is created in the Bay Area economy. In addition, the 5,942 indirectly employed workers receive indirect wages and salaries totaling $367 million. Combining the direct, induced, and indirect income impacts, the maritime cargo activity at the Oakland Seaport created $3.2 billion of wages and salaries and local consumption expenditures.

In addition to the direct, induced, and indirect income and local consumption expenditures, the personal income impact estimated for the 538,628 related job holders is $24.2 billion.

5. STATE AND LOCAL TAX IMPACT

Total state and local tax impacts generated by activity at the Oakland Seaport are estimated at $400 million. Based on data provided by the U.S. Census, State and Local Government Financial Reports, the state of California received about 62 percent of the tax revenues, while local/county governments received about 38 percent of the tax revenues. The county tax impacts are not specific to a county but reflect the share of total state and local receipts that are received at the local and county level. In addition, $3.9 billion of state and local taxes were supported in the related user's sector.

6. COMPARISON OF ECONOMIC IMPACTS OF OAKLAND SEAPORT OPERATIONS

Martin Associates has measured the economic impacts generated by activity at the Port of Oakland Seaport for the years 1990, 1995, 2001, 2005, 2010, 2017 and 2021. Throughout these studies, Martin Associates has used a consistent methodology, with slight modifications occurring over time. For example, the methodology to measure the direct impacts has remained the same for the nearly 30-year period, in that the direct impacts are based on actual data gathered through interviews with the firm's providing cargo and vessel handling services at the marine cargo terminals. The induced methodology has also remained the same, but the personal income multiplier used to derive the Bay Area local consumption and re-spending impact has changed. Prior to 2005, the U.S. Bureau of Economic Analysis only estimated personal income multipliers for the entire transportation sector of the Bay Area. However, beginning in 2005, it was recognized that waterborne transportation generated

relatively higher paying jobs than those in trucking, rail, aviation, and pipeline transportation sectors, and as a result, separate personal income multipliers were estimated specifically for the individual modes of transportation. The waterborne transportation personal income multiplier is significantly larger than the multipliers for the other modal sectors within the transportation sector. As a result, it is difficult to compare induced impacts and local consumption expenditures for studies prior to 2005. This change in the measurement of local consumption impacts and the re-spending impact also results in a much larger state and local tax impact, and therefore state and local taxes should not be compared prior to 2005. Finally, the measurement of related port user jobs was developed throughout the period and refined during that time period. However, no measurements of related income, revenue or taxes were developed prior to 2005. Therefore, it is recommended that comparisons over the nearly 30-year period focus on the direct job impacts and the relation of these impacts to container throughput.[7]

Table II-6 presents a summary of the economic impacts generated by cargo moving via the Oakland Seaport. Between 1990 and 2021, several major changes occurred in the industry as well as the national economy. Direct jobs generated by the marine cargo activity fluctuated over this time period, growing from about 6,700 jobs in 1990 to 8,827 jobs in 1995, as TEU throughput grew by nearly 400,000 TEUs. However, despite the growth in TEUs at the marine terminals between 1995 and 2001, jobs actually declined, reflecting improved productivity and efficiencies in handling containerized cargo at the Port, as well as a consolidation of steamship lines. Also, during that time, computerization of billing and freight forwarding activities increased, reducing employment in that sector as well. The United States economy experienced the Great Recession of 2008 due to the subprime mortgage crisis. It took several years for the economy to recover from pre-crisis employment and output. Although container throughput fell through 2010 driven by the economic recession, job reductions did not occur at the same rate, reflecting fixed jobs such as administrative jobs with the various types of firms providing services to the marine terminals. It is possible that these jobs were preserved in anticipation of market turnaround, which in fact did occur in 2010. Although the number of terminals at the Seaport decreased from eight terminals in 2010 to four terminals in 2017, TEUs grew from 2.0 million in 2010 to 2.4 million in 2017. TEUs handled at the Port of Oakland continued to grow from 2.4 million TEUs in 2017 to nearly 2.6 million TEUs in 2021.

[7] Comparison with container throughput is recommended even though it is recognized that a small volume of general cargo primarily steel has been handled at the privately owned terminals in Oakland Harbor.

Table II-6
Comparison of Economic Impacts Generated by Seaport Activity

	1990	1995	2001	2005	2010	2017	2021
JOBS							
DIRECT	6,692	8,827	7,924	9,880	9,800	11,393	12,223
INDUCED	2,859	5,300	3,837	14,821	10,473	10,507	12,051
INDIRECT	NA	2,020	2,087	3,821	5,606	5,831	5,942
TOTAL	**9,551**	**16,147**	**13,848**	**28,522**	**25,879**	**27,732**	**30,215**
PERSONAL INCOME/LOCAL CONSUMPTION ($millions)							
DIRECT	$221	$344	$342	$503	$487	$641	$795
RE-SPENDING/LOCAL CONSUMPTION	$210	$359	$342	$1,358	$1,228	$1,503	$2,027
INDIRECT	NA	NA	$69	$158	$291	$333	$367
TOTAL	**$431**	**$703**	**$753**	**$2,019**	**$2,005**	**$2,478**	**$3,189**
BUSINESS REVENUE ($millions)	**$729**	**$1,269**	**$1,566**	**$1,759**	**$1,874**	**$2,243**	**$2,530**
STATE AND LOCAL TAXES ($millions)	**$38**	**$89**	**$74**	**$208**	**$211**	**$281**	**$400**
LOCAL PURCHASES ($millions)	**NA**	**$147**	**$126**	**$418**	**$464**	**$546**	**$586**

Since the direct job impacts drive the personal income and induced impacts, the remainder of this analysis focuses on the changes in direct jobs, by job category and by commodity/commodity group.

Table II-7 compares the direct jobs generated in 2017 and 2021 by job category at the Seaport. Between 2017 and 2021 direct jobs increased by 830 jobs. The largest gain was with jobs associated with warehouses and distribution centers, followed by the trucking industry and International Longshore and Warehouse Union (ILWU). Notably, Dreisbach partnered with Lineage Logistics in the development of a state-of-the art intermodal transload and consolidation facility for perishable commodities at the Port of Oakland known as Cool Port Oakland, which opened in fall of 2018. In addition to Cool Port Oakland, the number of warehousing, container freight stations, and distribution facilities jobs increased reflecting the growth in containers between 2017 and 2021. The growth in trucking and ILWU jobs reflects the growth in containers handled at the Port of Oakland Seaport. The increase in trucking jobs reflects the increased number of employees needed to move containers to and from the Seaport's terminals and warehouses, container freight stations, transloading operations, distribution centers, and rail yards. The increase in ILWU jobs is directly related to the increase in the manpower needed to load and unload containers on and off vessels calling the Seaport's terminals.

While overall direct jobs increased between 2017 and 2021, a few job categories experienced a decline over this period. The largest decline in direct jobs was the reduction in jobs with marine construction and ship repair. This reduction is driven by the dollar amount spent on Seaport capital projects. The Port of Oakland spent $30.2 million in 2017 compared to $16.6 million in 2021. Pilot jobs slightly decreased over the study periods in relations to the decrease in vessel calls, but also due to several retirements with the San Francisco Bar Pilots.

Table II-7
Comparison of Employment Impacts by Job Category, 2017-2021

IMPACT CATEGORY	2021	2017	JOBS CHANGE
SURFACE TRANSPORTATION			
RAIL	212	203	9
TRUCK	4,114	3,912	202
SUBTOTAL	4,326	4,115	211
MARITIME SERVICES			
TERMINAL	231	216	15
ILWU	2,002	1,808	194
TUG ASSISTS	112	114	-3
PILOTS	45	48	-3
STEAMSHIP LINES/AGENTS	95	90	4
MARITIME SERVICES	567	532	34
FREIGHT FORWARDERS	1,701	1,613	88
WAREHOUSE/DISTRIBUTION CENTERS	2,327	1,980	347
GOVERNMENT	446	441	5
MARINE CONSTRUCTION/SHIP REPAIR	220	287	-67
SUBTOTAL	7,744	7,130	614
DEPENDENT SHIPPERS/CONSIGNEES	88	88	0
PORT AUTHORITY	65	60	5
TOTAL	**12,223**	**11,393**	**830**

*IAM and IBEW included in Terminal Jobs

7. CONCLUSION

Cargo activity at the Seaport increased by about 174,000 TEUs since the last economic impact study in 2017. As a result, the overall economic impact of the Seaport operations increased; direct jobs grew by 830 jobs; total supported jobs grew by 46,031; and total economic value of the Seaport grew from $60.4 billion to $90.3 billion.

The fact that the Seaport continues to increase its importance in the local economy as a major source of job creation, particularly of jobs with an average annual salary of $65,030, underscores the importance of the Seaport as a major catalyst in the Bay Area, Northern California, and the state of California economies. In order to sustain this growth as an economic engine, it is critical that the Seaport continues to invest in terminal, rail and highway access infrastructure to meet future demand, and to continue to attract tenants to stimulate further economic development in Northern California. This economic study suggests that the continued growth and investment in the Seaport will result in further job, income and tax growth for the Bay Area, Northern California, and state of California.

It is important to recognize that as a result of the COVID 19 pandemic, container throughput at major container ports increased to record levels, driven by the growth in imports from Asia. However, as shown in Exhibit II-8, of the top 10 container import ports in the U.S., imported containerized cargo handled at the Port of Oakland recorded the lowest percentage increase. This may reflect the fact that vessels typically call the Port of Los Angeles as a first in-bound port call from Asia, then transit to Oakland for discharge and load of export containers.

Exhibit II-8
Annual Growth of Imports at the Top 10 U.S. Container Ports, 2020-2021

Port	% Change in Imports 2020-2021
Los Angeles/Long Beach	15.05%
New York	18.72%
Savannah	24.51%
Houston	30.54%
Norfolk	31.95%
Charelston	23.40%
Oakland	4.79%
Baltimore	12.62%
Seattle	13.14%
Miami	10.71%

Source: USA Trade OnLine, U.S. Bureau of the Census

Due to the significant back-up of container vessels off the coast of the Ports of Los Angeles and Long Beach during the Pandemic, particularly in 2021, several container lines eliminated the Port of Oakland call in order to improve schedule reliability and expedite the return to Asia to accommodate the growing import demand in the Southern California ports. In addition to the low growth in imported containerized tonnage at the Port of Oakland between 2020 and 2021, the volume of export containerized tonnage declined at the leading West Coast container ports, as shown in Exhibit II-9, also reflecting the fact that empty containers, rather than loaded containers, were returned to Asia during the

Pandemic to accommodate the unprecedented growth in import demand, and the increasing ocean freight rates associated with the eastbound transpacific container flows.

Exhibit II-9
Annual Growth of Exports at the Top 10 U.S. Container Ports, 2020-2021

Port	% Change in Exports 2020-2021
Los Angeles/Long Beach	-13.88%
Savannah	2.81%
New York	9.33%
Houson	-19.82%
Norfolk	15.00%
Oakland	-5.55%
Charleston	6.62%
Tacoma	-15.54%
Seattle	-10.08%
New Orleans	-15.13%

Source: USA Trade OnLine, U.S. Bureau of the Census

As a result of these blank sailings at the Port of Oakland, and the increased return of empty export containers to maximize the availability of containers in Asia for the more profitable eastbound transpacific move, it is possible that the container throughput at the Port of Oakland would have been higher in the absence of the Pandemic.

III. THE ECONOMIC IMPACTS OF OAKLAND INTERNATIONAL AIRPORT

An airport is a diverse economic system. The businesses that have employees at commercial airports such as Oakland International Airport, as well as at general aviation airports cover a spectrum of trade and service sectors. For the purposes of this study, the Airport system is divided into five sectors:

- Airline/airport service
- Air cargo transportation
- Passenger ground transportation
- Contract construction/consulting services
- Visitor industry services

Each of these sectors covers a variety of activities. A discussion of these five sectors is provided below, with a description of the major participants in each.

Airline/Airport Service Sector

The airline/airport service sector consists of airlines providing passenger services, general aviation, and firms providing support services to the airlines, passengers, and to the Airport. This group consists of the following participants:

- Passenger Airlines
- General Aviation, (i.e., corporate hangars and business aircraft, not-for-profit aviation services, flying clubs, etc.)
- Airport Administration
- Catering Firms
- Janitorial Firms
- Sky Caps
- Security Firms
- Aviation Service Firms (including fixed base operators)
- Airport Retail Tenants (i.e., newsstands, retail shops, and food concessions)
- Federal Government Agencies (i.e., F.A.A., TSA, U.S. Border Patrol, Immigration, and U.S. Customs)
- Parking and Miscellaneous

Jobs in this category are typically located on the Airport property.

Air Cargo Transportation Sector

The air cargo transportation includes dedicated freight airlines, freight forwarders, and trucking firms involved in transporting air cargo. The air cargo consists of air freight, express packages and mail transported on dedicated freight airlines and in the cargo section (belly) of passenger airlines. Included in this group are air couriers, freight forwarders, and common carrier trucking firms located throughout the Bay Area. Jobs in this category are located both on and off the Airport.

Passenger Ground Transportation Sector

Passenger ground transportation consists of car rental firms and other ground transportation modes, such as buses, taxis, transportation network companies, and limousines. This group covers all transportation of individuals to and from the Airport and includes both drivers and supporting reservation and maintenance employees.

Contract Construction and Consulting Sector

Individuals employed in this group include those providing construction and remodeling work at Oakland International Airport, as well as architects and engineers providing planning and design services.

Visitor Industry Services Sector

Both domestic and international passengers arrive in the Bay Area via Oakland International Airport for several purposes, including business, pleasure, and conventions. As a result of these out-of-town residents purchasing lodging, food and entertainment, jobs are created in the service and retail sectors in the Bay Area. To evaluate the impacts of visitors using Oakland International Airport, Martin Associates conducted a 900 in-terminal passenger survey.

Impacts were estimated on the basis of interviews with firms in the five economic impact sectors described above. A total of 97 firms were contacted, representing nearly 98 percent coverage of tenants and firms providing services at Oakland International Airport.

1. SUMMARY OF THE ECONOMIC IMPACTS OF OAKLAND INTERNATIONAL AIRPORT

The key economic impacts generated by Airport activity at Oakland are presented in Table III-1.

Table III-1
Summary of Impacts Generated by Oakland International Airport

IMPACTS	AIRPORT GENERATED	VISITOR INDUSTRY	TOTAL IMPACT
JOBS			
DIRECT	8,269	25,397	33,666
INDUCED	5,654	10,187	15,841
INDIRECT	1,896	9,623	11,518
TOTAL	15,818	45,207	61,026
PERSONAL INCOME (MILLIONS)			
DIRECT	$575.2	$965.0	$1,540.2
RE-SPENDING/PERSONAL CONSUMPTION	$945.5	$1,007.4	$1,952.9
INDIRECT	$95.8	$280.0	$375.7
TOTAL	$1,616.4	$2,252.4	$3,868.8
AVERAGE INCOME/DIRECT EMPLOYEE (ACTUAL SALARY)	$69,563	$37,996	$45,749
BUSINESS REVENUE (MILLIONS)	$3,894.1	$4,571.0	$8,465.1
LOCAL PURCHASES (MILLIONS)	$218.4	$651.1	$869.5
STATE & LOCAL TAXES (MILLIONS)	$212.1	$285.3	$497.4
FEDERAL GOVERNMENT AVIATION (MILLIONS) SPECIFIC TAXES	$232.7	NA	$232.7

In 2021, 8.1 million passengers used OAK, and 1.4 billion pounds of air cargo moved via the Airport. This activity at Oakland International Airport and the general aviation activity at the North Field generated the following impacts:

643,697 jobs were in some way related to airport activity in 2021. Of these jobs:

- 15,818 direct, induced, and indirect airport generated jobs for residents of the Bay Area were supported by the Airport activity.
- Of the 15,818 jobs, 8,269 were direct jobs, while 5,654 jobs were induced throughout the region to support the purchase of goods and services by the 8,269 directly dependent employees.
- An additional 1,896 indirect jobs were generated in the local economy due to $218.4 million of local purchases by firms directly dependent on airport activity.
- 45,207 jobs in the local visitor's industry were supported by the 1.77 million visitors to the Bay Area that arrived via Oakland International Airport
- 582,671 related jobs are with manufactures that shipped air freight through the Airport in 2021. These jobs are not as directly dependent on the use of Oakland International Airport as are the Airport generated direct, induced, and indirect jobs, as the level of employment with these manufacturers is driven by the demand for the product not because of the use of the Airport. These manufacturers most likely use other airports to ship and receive air freight in addition to the Oakland International Airport.

$82.9 billion of total economic activity generated in California is related in some way to the passenger, air cargo and general aviation activity at the Airport. Of this total economic activity impact:

- $72.6 billion is the revenue activity associated with the production of the air freight enplaned at Oakland International Airport. This includes the revenue generated at each stage of production, as well as the revenue associated with the California firms supplying goods and services to the manufacturing process. It is important to stress that the demand for the air freight enplaned at Oakland International Airport is based on the demand for the air freight, not necessarily the use of the Airport. The producers of the enplaned air freight at Oakland International Airport can and most likely do use other airports for air freight shipments, and hence the $72.6 billion of revenue represents the economic value of the air freight exported via the Airport at a specific point in time and is not as directly dependent upon airport activity as is the revenue received by the firms providing services on-site at the Airport to the passengers and air cargo operations. If the firms were to use other airports for the shipment of air freight, the $72.6 billion of revenue would not disappear from the economy, as it is the demand for the product, not use of the Airport that generates this revenue.
- $8.5 billion is received by firms providing direct services to the airline, cargo, and passenger activity that occurs at Oakland International Airport. This includes the $3.9 billion of revenue

received by firms providing the direct services at the Airport, as well as the $4.6 billion of revenue received by the Bay Area Visitors Industry due to the expenditures of the 1.77 million visitors using Oakland International Airport.

- $1.9 billion of induced income and local consumption expenditures.

In summary, of the $82.9 billion of economic value associated with the Oakland International Airport in 2021:

- Businesses received $8.5 billion in direct business revenue, of which:
  - $1.5 billion of direct wages and salaries (excluding benefits) were paid to the 33,666 direct job holders
  - $869.5 million of local purchases were made, supporting the 11,518 indirect job holders, with an annual personal income of $375.7 million
  - $497.4 million were paid in state and local taxes

- $1.9 billion of re-spending and local consumption expenditures were made, supporting the 15,841 induced jobs

- $72.5 billion was the economic value created by the air freight moving via the Airport, of which:
  - $40.6 billion were paid in personal earnings to the 582,671 jobs supporting the air freight shipped via the Oakland International Airport
  - $5.5 billion was paid in state and local taxes.

In addition to the Bay Area and California economic impacts created by the Airport, the Federal Government received $232.7 million in airport-specific taxes from activity at Oakland International Airport, including revenue from the air cargo tax, the international and domestic passenger taxes, and the security fees levied at the Airport.

2. EMPLOYMENT IMPACTS OF AIRPORT ACTIVITY

In this section, the employment generated by Oakland International Airport as well as general aviation and cargo activity at the North Field in 2021 is described. The chapter is organized as follows:

- First, employment that is totally or partially dependent on the activities at the Airport is estimated.
- Second, the subset of total employment that is judged to be totally dependent on Airport activity is analyzed in the following ways:
  - Jobs are estimated in terms of the four economic impact sectors and for job classifications within these categories. Visitor industry sector impacts are discussed separately.

- Jobs are estimated by type of Airport activity, i.e., passenger, air cargo activity and construction/consulting activity.
- Job impacts are allocated to counties and cities within the Bay Area based on the residence of those directly dependent upon airport activity.

➢ Finally, induced, and indirect jobs are estimated.

2.1 Total Job Impacts

In 2021, 643,697 Bay Area residents held jobs that were in some way related to activity at Oakland International Airport. Of these 643,697jobs:

➢ 8,269 direct jobs are dependent upon activity at the Airport. These jobs would be discontinued immediately if airport activity ceased. Also, these jobs would be impacted as a result of changes in the number of flights and passenger levels.

➢ 5,654 induced jobs are created in the region due to the purchases of goods and services within the region by those 8,269 directly dependent upon activity at the Airport.

➢ 1,896 indirect jobs are generated in the local economy due to the $218.4 million of local purchases for office supplies, maintenance and repair work, communications and utilities, professional services, fuel, etc., by those firms completely dependent upon the Airport.

➢ 45,207 visitor industry direct, induced, and indirect jobs are created in the region as a result of visitors arriving via Oakland International Airport. Of these jobs, 25,397 jobs are created with hotels, restaurants, retail outlets, entertainment, and recreational establishments due to direct expenditures by visitors in the Bay Area who have arrived via Oakland. The 10,187 induced jobs due to visitors' expenditures are supported by regional purchases of the 25,397 individuals holding jobs directly created due to expenditures by visitors using OAK. The local visitor industry firms made $651.1 million of local purchases for goods and services to support the visitor generated operations supporting an additional 9,623 indirect jobs in the area economy. Chapter IV presents a more detailed discussion of the job impacts created due to visitor expenditures.

➢ 582,671 jobs are with California manufacturing companies shipping air cargo through Oakland International Airport, including the jobs generated at each stage of the manufacturing activity as well as the support jobs within the state that are employed to produce the value of enplaned cargo moving via the Airport.

2.2 Direct Airport Generated On-site Job Impacts

Direct on-site jobs are those that are generated at the Airport versus in the visitor industry. These are jobs that are held by the tenants of the Airport as well as the taxis, transportation network companies, limos and ground transportation companies moving the passengers to and from the Airport, as well as the air cargo freight forwarders and couriers moving air cargo to and from the Airport.

Direct Jobs by Sector

As Exhibit III-1 shows, 65.2 percent of the 8,269 on-site jobs directly generated by Airport activity in 2021 are concentrated in the airline/airport service category, followed by 22.7 percent with the air cargo transportation sector. Of the 8,269 direct jobs, 10.9 percent are with the ground transportation sector, and 1.3 percent with construction contractors involved in the capital expansion projects at Oakland International Airport. The direct jobs are derived from the interviews with 97 tenants of Oakland International Airport and the North Field. In essence the direct jobs are a census of the jobs provided to Martin Associates by the Airport tenants and service providers. In addition, data derived from the personal and telephone interviews with the 97 firms was also used to develop a taxi, transportation network companies, and limo transportation model that converted origin/destination passengers into taxi and limo full time equivalent jobs.

Exhibit III-1
Direct Job Impacts by Sector

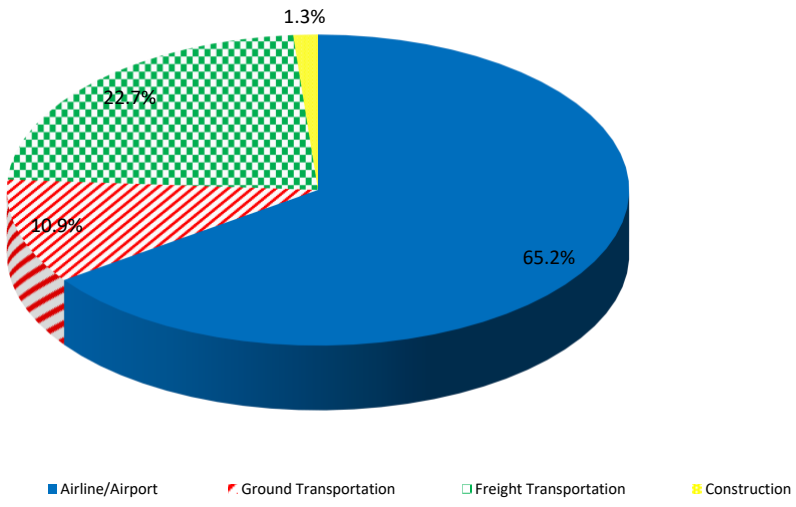


Table III-2 shows the distribution of employment within each major sector. The majority of the direct jobs are with the passenger airlines, 2,935 direct jobs. The jobs include flight crews, administration, ticket agents, ramp employees, and maintenance workers.

Table III-2
Direct Job Impacts by Category

	DIRECT JOBS
Airline/Airport Sector	
Passenger Airlines	2,935
Catering	11
Federal Government	580
Port of Oakland - Aviation Division	237
Retail Concessions	396
Fixed Base Operators/GA	568
Skycap/Security	321
Parking	253
Miscellaneous	88
Subtotal	5,389
Freight Transporation Sector	
Freight Airlines and Couriers	1,579
Freight Forwarders	294
Subtotal	1,873
Ground Transportation	
Rental Cars	335
Taxis/TNCs	466
Limos/Bus/Vans	101
Subtotal	902
Construction	106
Total	8,269

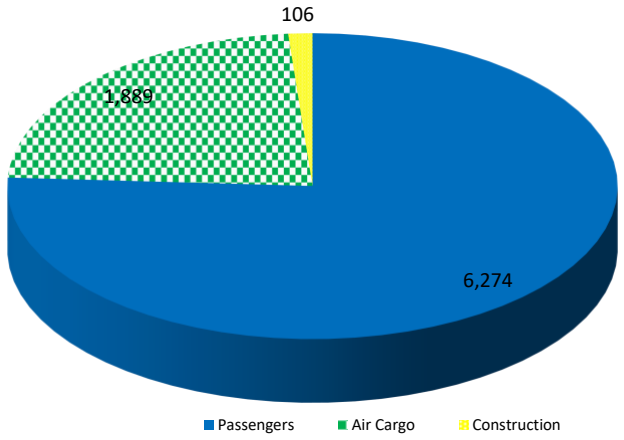
Direct Jobs by Type of Activity

The direct jobs are next allocated to types of activity at Oakland International Airport.

- Passenger Activity
- Air Cargo
- Construction

Exhibit III-2 shows the distribution of direct jobs by type of activity.

Exhibit III-2
Distribution of Direct Jobs by Type of Activity



Direct Jobs Dependent upon Passenger Activity

A total of 6,274 direct jobs were generated by passenger activity. These jobs include jobs with airlines dedicated to passenger activity, jobs with the ground transportation of the passengers, fixed base operations servicing the passenger aircraft, janitorial services, etc. Of these 6,274 direct jobs, 2,919 jobs are with the airlines (excluding jobs dedicated to air cargo with the commercial passenger airlines). These airline jobs include flight crew and pilots living in the Bay Area who are based out of the Airport, ticket agents, dispatchers, equipment mechanics and technicians, custodial workers who are employees of the airlines (and not contractors to the airlines), and airline management and clerical jobs. From this diverse set of jobs with airlines, certain jobs are dependent upon the number of flights at the Airport, others are dependent upon the number of passengers at the Airport, while still other jobs, such as pilots and crew based out of Oakland are dependent upon airline corporate decisions and airline system activity throughout the U.S.

As a result of this diversity in the types of jobs with airlines and their dependency upon the Airport activity, changes in the level of airport activity will not have a proportionate impact on the level of total direct airline jobs. For example, the airline flight attendants living in the Bay Area, and based out of Oakland, as well as system maintenance facilities, are not necessarily dependent upon the level of flights in and out of Oakland International Airport, but instead on the growth in the specific airline system of which they are employees. In contrast, certain jobs are directly dependent on the number of flights at Oakland International Airport, such as the equipment service technicians and dispatchers

Based on analysis of employee job classifications for the airlines servicing the Airport, it is estimated that 21 percent of the direct airline employment would be dependent upon the actual number of flights and passengers at Oakland International Airport. The remaining 79 percent of airline employees, such as flight crews, are dependent upon airline system wide performance.

Direct Jobs Dependent on Air Cargo Activities

In 2021, 1.4 billion pounds of air freight moved on commercial air carriers and dedicated air cargo carriers at Oakland International Airport. Of the 8,269 jobs directly generated by airport activity, 1,889 jobs are directly generated as a result of total air cargo activity.

Direct Jobs Dependent on Construction and Consulting Activities

In 2021, $38.8 million was spent by the Port of Oakland for construction, consulting, and engineering services at the Airport. These expenditures generated 106 direct jobs.

Direct Jobs by Place of Residency

In order to estimate the local economic impact created by airport activity, data on residency of employees was collected from the interviews with airport tenants, airport employee records, and interviews with the leading airlines serving Oakland International Airport. The 8,269 direct jobs were then allocated based on city and county of residence. Table III-3 shows the distribution of job impacts by residency.

Table III-3
Distribution of Job Impacts by City and County of Residence

OAKLAND AREA JURISDICTIONS	DIRECT JOBS	PERCENT OF DIRECT JOBS
Oakland	1,643	19.87%
Alameda	376	4.54%
San Leandro	836	10.11%
Hayward	612	7.40%
Fremont	136	1.65%
Other Alameda County	860	10.40%
Total Alameda County	**4,463**	**53.97%**
Richmond	324	3.92%
Other Contra Costa	1,121	13.56%
Total Contra Costa County	**1,445**	**17.48%**
San Jose	107	1.30%
Other Santa Clara County	90	1.09%
Total Santa Clara County	**198**	**2.39%**
San Francisco	123	1.49%
Solano County	395	4.78%
Sacramento County	126	1.53%
Sonoma County	110	1.33%
San Mateo County	147	1.78%
Marin County	46	0.55%
Napa County	32	0.39%
Other CA	791	9.57%
Other US	391	4.73%
TOTAL	**8,269**	**100%**

As this exhibit indicates, approximately 54 percent of all directly dependent airport employees reside in Alameda County. Of the 54 percent, nearly 20 percent live in the city of Oakland.

2.3 Induced Job Impact

A portion of the income received by those 8,269 directly employed due to Airport activity is saved; another portion is used to pay federal, state, and local taxes, while another portion is used to purchase goods and services from firms located in the Bay Area, as well as out-of-region firms. The purchase of goods and services from Bay Area firms creates induced jobs for area residents in the firms

supplying the goods and services. Furthermore, those individuals supplying the goods and services also receive income from their employers and use a portion of it for additional purchases from firms located in the area. This re-spending of an initial income dollar of income results in a multiplier effect throughout the Bay Area economy known as the personal income multiplier. As a result of this re-spending, 5,654 additional jobs in other sectors of the regional economy are created. These jobs are with state and local government agencies (excluding those state and local government jobs included as direct impacts i.e., airport administration), financial/business and educational services, retail, housing/construction, transportation services (including service stations, auto parts suppliers, automobile dealers, body shops, etc.), entertainment/recreational services, apparel, and health care services.

2.4 Indirect Job Impact

In addition to these induced jobs created due to purchases by the 8,269 individuals directly employed due to activity at the Airport, other jobs in the Bay Area regional economy will be created indirectly due to the purchase of goods and services by the firms involved in Airport activity.

For example, airlines purchase such items as fuel, catering services, parts, and office supplies from local firms, thereby creating jobs in these supplying industries. Similarly, the Airport itself purchases such services as contract construction, utilities, and maintenance services from local suppliers, also creating jobs in the local economy. For the most part, the jobs resulting from such purchases are included in the direct job impacts. For example, the 11 jobs with caterers, the 568 jobs with fixed base operators, and the 106 jobs with contract construction firms are all included as direct job impacts. In some studies, impacts in these supplying industries are included as indirect jobs and measured through the use of a regional input/output model. For the purposes of this study, a more detailed assessment of jobs in the supplying industries was more appropriate since many are located on the Airport facility and these impacts are considered as direct job impacts.

In addition to these purchases, another $218.4 million of local purchases were made by the firms' dependent upon the Airport. These local purchases include purchases for goods, maintenance and repair services, utilities and communications, transportation, insurance and fueling. The $218.4 million of local purchases supported 1,896 indirect jobs.

2.5 Related User Impact

In this section, jobs related to, but not dependent upon Oakland International Airport, are estimated. These related jobs should be viewed only as an indicator of the importance of Oakland International Airport to the local business community. It is to be emphasized that the level of defensibility of the related jobs is lower than for the direct and induced jobs, primarily due to the fact that a sample of users and the results of other published studies are used rather than a 100% survey of all current, past and potential users of the

Airport. Such a 100% survey would require resources not in the scope of the current study. Furthermore, since related jobs are not based on a 100 percent survey of all users, Martin Associates does not recommend that related jobs be considered when using the airport impact model to evaluate planning decisions. With these caveats in place, the remainder of the chapter provides an overview of the airport related jobs.

Related jobs are with air freight users of Oakland International Airport. These shippers use Oakland International Airport as well as other airports for air cargo shipments. Therefore, these shippers are not directly dependent upon Oakland in the same sense as are the firms that supply direct services to the airlines and/or passengers. However, the use of Oakland International Airport by these shippers is important in stimulating economic activity in the region.

To estimate related jobs, the composition of the types of enplaned air freight loaded at Oakland International Airport was estimated from the U.S. Bureau of the Census, USA Trade On-Line data for air freight loaded in the Oakland Customs District. Using this data, the types of industries in the Oakland area associated with the production of the types of air freight enplaned at Oakland International Airport were identified. Using data from the U.S. Bureau of Economic Analysis, Regional Income Modeling System, jobs to value of output multipliers were developed for the specific air cargo producing industries. Next, the value per pound of air freight enplaned at Oakland International Airport was estimated from USA Trade On-Line data.8 To estimate related jobs with air freight shippers, a weighted value per pound of all enplaned air freight at Oakland International Airport was developed and multiplied by the average jobs to value of output ratio developed for the air freight producing industries.

Using this methodology, it was estimated that the average value of air freight shipments at Oakland International Airport is about $105.41 per pound. Multiplying this value per pound estimated by the 688.5 million pounds of air freight (both domestic and international) enplaned at Oakland International Airport in CY 2021, it is estimated that the total value of air freight shipped via Oakland is about $72.6 billion. Using the jobs to value of output ratio developed from the Bureau of Economic Analysis for the Oakland area, it is estimated that about 582,671 jobs are related to air freight shipments via Oakland International Airport. These related job holders received $40.6 billion of personal income and supported $5.5 billion of related state and local taxes.

In conclusion, it is to be emphasized that these jobs are related to, not dependent upon, Oakland International Airport. The level of employment with these users is determined by the demand for the firms' products instead of the use of Oakland International Airport.

[8] It is recognized that the USA Trade On-Line data base, published by the U.S. Bureau of the Census, represents international cargo statistics. However, this data base it is used only as a proxy for the type and value of air cargo loaded at Oakland International Airport since domestic data is not available.

3. REVENUE, INCOME AND TAX IMPACTS CREATED BY OAKLAND INTERNATIONAL AIRPORT ACTIVITY

In 2021, $82.9 billion of total economic activity in the state of California was related to passenger, air cargo and general aviation activity at the Oakland International Airport. Of the $82.9 billion, $3.9 billion is the direct business revenue received by the firms directly dependent upon the cargo and passenger activity at the Airport. Another $4.6 billion is generated by the spending of visitors in the Bay Area that arrive via the Oakland International Airport, while $1.9 billion of re-spending and local consumption expenditures is created in the local economy. The remaining $72.5 billion represents the value of the output to the state of California that is created due to the air freight enplaned at Oakland International Airport. This includes the value added at each stage of producing the air freight enplaned at the Airport.

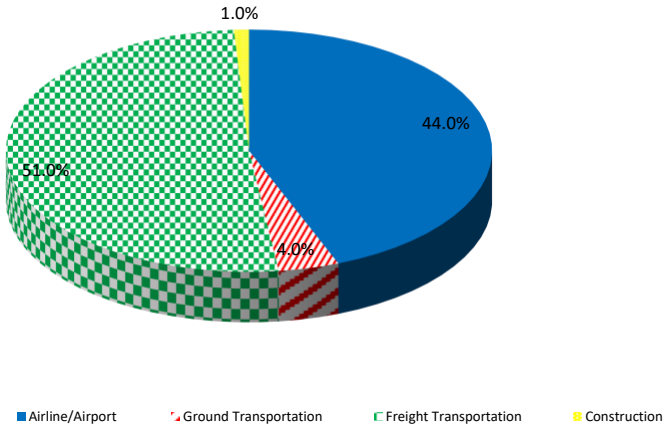
3.1 Direct Business Revenue

The balance of the discussion focuses on the $3.9 billion of direct business revenue generated from the provision of services to the passenger and air cargo via Oakland International Airport. The passenger, air cargo and general aviation activity generates revenue for firms. For example, in the airline/airport service category, revenue is received by the airlines for enplaned passengers at the Airport, catering firms providing services to the airlines, and by Airport tenants who sell retail merchandise to passengers in the Airport. In the air cargo transportation category, airlines receive revenue from moving the air cargo to and from the Airport and freight forwarders receive revenue from arranging air transportation for the cargo. Similarly, the rental car agencies and the firms providing ground transportation receive revenue from transporting passengers to and from the Airport, while contract construction and consulting firms receive revenue from the Airport and airlines that have contracted these services. The $4.6 billion of revenue generated in the Bay Area Visitors industry is generated by the purchases of hotel, restaurant, and retail, and other visitor services by passengers visiting the Bay Area. This visitor industry sector revenue is discussed in a separate section of this chapter.

Revenue generated by airport activity is dispersed throughout the economy in several ways. For example, gross revenue is used to pay employee salaries and taxes, it is distributed to stockholders, and it is used for purchases of goods and services. Only part of this revenue can be traced geographically with any degree of accuracy, the portion of the revenue paid out in salaries and state and local taxes. These impacts are addressed in separate sections of this chapter.

In 2021, passenger, air cargo and airport construction activity generated $3.9 billion of business revenue to firms providing services at the Airport. Exhibit III- 3 indicates the distribution, by economic impact sector, of the $3.9 billion of revenue generated by airport activity at Oakland International Airport.

Exhibit III-3
Distribution of Revenue by Sector



As with the employment impact, the majority of revenue generated by airport activity is concentrated in the airline/airport service category, followed by 44 percent with the freight transportation sector.

4. PERSONAL INCOME IMPACTS

An estimated total of $575.2 million was paid in wages and salaries to the 8,269 direct airport generated employees. This income impact is estimated based on the average wages and salaries for each job category multiplied by the corresponding direct jobs in that category. The spending of this personal income within the Bay Area creates additional employment estimated as induced jobs, which results in an additional $945.5 million of personal income and consumption purchases.

It is to be emphasized that the re-spending effect measures the total re-spending impact in the Bay Area. The induced jobs, which are generated by this re-spending of the direct income, only include jobs generated at the retail and wholesale level due to consumer purchases, since it is assumed that these jobs will most likely occur in the Bay Area. In addition to these induced retail and wholesale jobs, there are also additional induced and indirect jobs created to support purchases by those induced jobs in the wholesale and retail sectors, i.e., a second round of induced and indirect jobs. These second level induced, and indirect jobs are not estimated, since it is not possible to identify with any degree of defensibility the geographic location where these second round induced, and indirect jobs are created. Because the total number of induced and indirect jobs (second, third and fourth levels, etc.) generated by airport activity is not estimated, it is not possible to divide the induced income ($945.5 million) by the

estimated induced jobs (5,654) to estimate the salary and wage income associated with the estimated induced jobs. To do so would result in an overestimation of the personal income associated with the induced jobs.

In addition to the direct and induced income and consumption impacts, the 1,896 indirect job holders received $95.8 million in indirect personal wages and salaries.

The total airport generated direct, induced, and indirect personal income and consumption impact is estimated at $1.6 billion, annually.

5. LOCAL PURCHASES

A total of $218.4 million of local purchases were made by airlines and tenants of the Airport. These purchases supported the 1,896 indirect jobs created by Airport activity. The local purchases are developed from the interviews with the 97 firms interviewed as part of the Airport impact study.

6. TAX IMPACTS

Airport activity in 2021 generated government revenue through an assortment of tax payments by airport businesses and employees. The tax impacts are estimated at the state and local government levels. Federal aviation-specific taxes are estimated for domestic passengers boarding flights at the Airport, for international passengers using the Airport and for air cargo loaded on planes. The federal aviation-specific taxes on cargo, departing international passengers and domestic passengers are paid to the Federal Aviation Trust Fund, which is in turn used to finance airport development throughout the United States. Also included in the federal aviation taxes are taxes and fees levied for security purposes.

To estimate the state and local tax impact, state and local individual tax indices were developed from data collected by Martin Associates from the Tax Foundation. This data provides the total state and local taxes paid as a percent of per capita income in the state of California.

Using these state and local tax to per capita income indices, it is estimated that airport activity generated $212.1 million of state and local tax revenues. Table III-4 shows the breakdown of the state and local tax impacts.

Table III-4
State and Local Tax Impacts Generated by Oakland International Airport ($Million)

	TAXES ($MILLIONS)
State & Local Taxes	
State	$131.5
Local	$80.6
Total State & Local Taxes	**$212.1**

Federal aviation-specific taxes were estimated based on the appropriate tax formulas, including security fees on enplaning and deplaning passengers. The domestic passenger tax is based on an ad valorem tax levied on enplaned domestic passenger revenue. The international departure tax is based on a tax per enplaning international passenger, while the INS/Customs tax is based on a tax levied on deplaning international passengers. The federal air cargo tax is based on an ad valorem tax levy on the value of enplaned air cargo. The average transportation cost of air cargo was provided to Martin Associates by air cargo carriers. As a result of the Airport activity, $232.7 million in airport specific tax revenues were paid to the federal government. These taxes include air cargo taxes, INS taxes, airport security taxes, and international and domestic passenger taxes.

7. VISITOR INDUSTRY IMPACTS

The impact of visitors on the local and regional economy is measured in terms of jobs, income, revenue, and taxes created in the hotels, retail establishments, entertainment activities, and transportation service firms.

Individuals visit the Bay Area for a variety of reasons, including business, pleasure, and for participation in conventions. Furthermore, both domestic and international visitors use the Airport. These visitors purchase hotel rooms, pay for meals and entertainment, and make retail purchases while in the Bay Area. These purchases of goods and services stimulate the local economy, in turn generating jobs with hotels, restaurants, retail outlets, and local entertainment establishments. Those individuals employed in the Bay Area visitor industry due to visitors' purchases receive income. This income is re-spent in the local economy generating induced jobs in the regional economy.

The magnitude of the economic impact generated by visitors using Oakland International Airport varies directly with the volume of out-of-town visitors and the length of time the visitors stay in the Bay Area. Also, the impacts depend upon the amount of money spent by visitors on a daily basis, as well as the types of purchases made. The volume of air visitors to the area depends upon the number of origin and destination passengers compared to connecting passengers, as well as the number of out-of-town airport users versus the number of local resident users of the Airport. The length of time visitors stays in the Bay Area, as well as how they spend their money, further depends upon the purpose of the trip to

the Bay Area, as well as whether the visitor is a domestic air traveler or an international visitor. For example, domestic business travelers tend to spend more per day on hotels than a visitor on a pleasure trip, but the pleasure traveler may spend more on retail and entertainment than the business traveler and stay in the Bay Area for a longer period of time.

To estimate the economic impact of visitors arriving via Oakland International Airport, the Airport conducted a 900 passenger in-terminal intercept survey of enplaning passengers. The survey results were used to develop passenger characteristics, including trip purpose, spending patterns and length of time spent in the Bay Area.

In 2017, about 4.1 million passengers boarded commercial aircraft at the Airport. Of the 4.1 million enplaning passengers, about 49.9 percent of the passengers were not residents of the Bay Area and 12.9 percent were connecting to other flights and spent no time in the Bay Area as part of the trip. Therefore, of the 4.1 million enplaning passengers, about 1.77 million passengers were not residents of the Bay Area and were not connecting to other flights at Oakland International Airport. It is the travel and spending characteristics of these 1.77 million visitors that will contribute to the local and state economy through lodging, retail purchases, eating in restaurants, and local transportation services. Table III-5 shows the purpose of the trip of the 1.77 million non-resident visitors arriving via air.

Table III-5
Estimated Non-Resident Visitors by Purpose of Trip

TRIP PURPOSE	ENPLANEMENTS	PERCENTAGE
DOMESTIC		
Business	658,740	37.1%
Pleasure	1,054,052	59.4%
Subtotal	1,712,792	96.5%
INTERNATIONAL		
Business	5,136	0.3%
Pleasure	56,520	3.2%
Subtotal	61,656	3.5%
TOTAL	**1,774,448**	**100%**

Table III-6 shows the average length of stay and total trip expenditures by purpose of trip. As this table indicates, domestic business travelers generate the greatest dollar value in terms of local purchases per day followed by international business travelers. International business travelers spend the greatest number of days in the Oakland area.

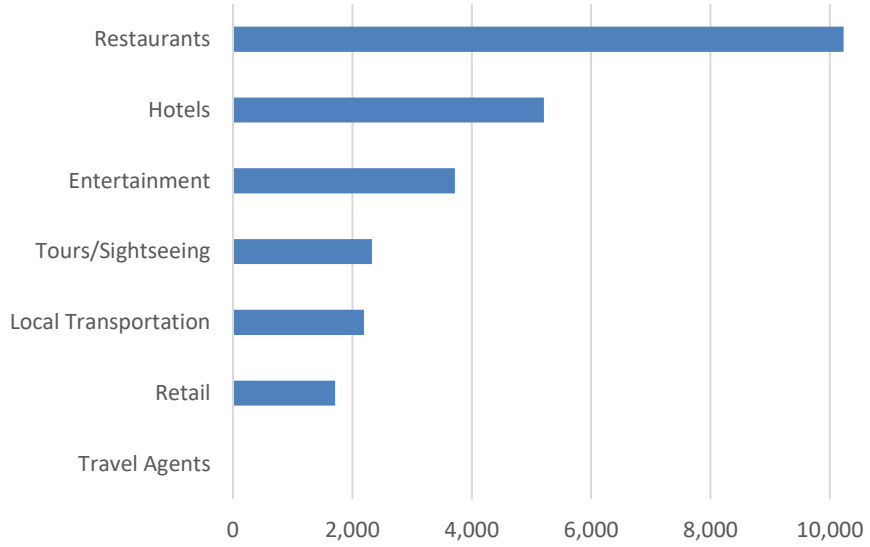
Table III-6
Visitor Characteristics

TRIP PURPOSE	DAYS SPENT	DOLLARS/DAY
Domestic Business	5.7	$547
Domestic Pleasure	5.2	$488
International Business	8.0	$536
International Pleasure	7.3	$393

7.1 Visitor Industry Job Impact

Using the results of the passenger survey, the 1.77 million visitors arriving via Oakland International Airport are estimated to have spent nearly $4.6 billion in the Bay Area for lodging, food, entertainment, and transportation. This spending supported 25,397 direct jobs in the Bay Area visitor industry. Exhibit III-4 summarizes these direct visitor industry impacts by sector within the visitor's industry.

Exhibit III-4
Direct Job Impacts Due to Visitors Arriving Via Oakland International Airport



Most of the impacts are generated in restaurants, 10,231 jobs, followed by jobs with hotels 5,208 jobs, and 3,720 jobs with local entertainment, recreational and tourism establishments (including movie theaters; amusements; sporting events and facilities such as health clubs, country clubs, golf, skiing, basketball; national and state parks; museums; escorted tours; city festivals; etc.) There were 1,713 jobs with local retail stores and 2,193 jobs with local transportation, including cabs and transportation network

companies, supported by these visitors. There were about 2,330 jobs with sightseeing and tours supported by the visitors arriving via Oakland International Airport. Jobs with travel agents is minimal. [9]

Furthermore, the re-spending of the direct personal income due to visitors arriving via the Airport supported 10,187 induced jobs within the Bay Area economy.

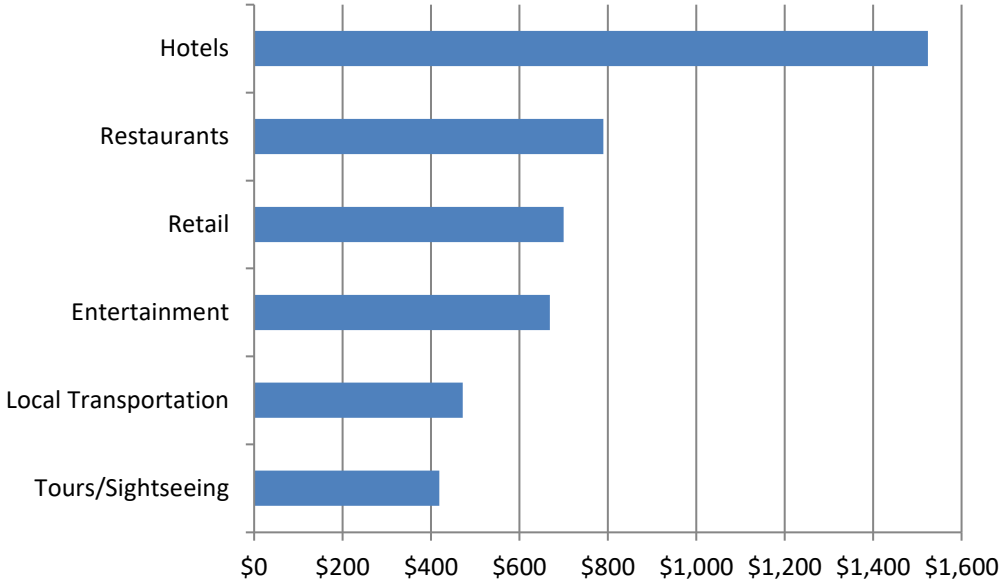
Finally, the local visitor industry firms made $651.1 million of local purchases for goods and services to support the visitor generated operations. These local purchases for goods and services by the firms supported an additional 9,623 indirect jobs in the area economy.

7.2 Visitor Industry Business Revenue Impact

The purchases made by visitors to the Bay Area in 2021 generated nearly $4.6 billion of business revenue to hotels, restaurants, retail outlets, entertainment establishments and local transportation firms. The distribution of the business revenue by visitor sector industry is shown in Exhibit III-5. As this exhibit demonstrates, local hotels received $1.5 billion in revenue due to visitors using the airport, while restaurants received $789.3 million in sales as a result of visitors using Oakland International Airport. Another $418.6 million was spent on tours, sightseeing, and activities using Oakland International Airport, while visitors spent about $699.7 million at local retail stores and $471.3 million on local transportation. Visitors using Oakland International Airport spent $668.4 million in local entertainment in CY 2021.

[9]The local transportation jobs exclude the Airport-generated jobs with rental cars, cabs, transportation network companies, and buses moving passengers to and from the Airport.

Exhibit III-5
Distribution of Visitor Industry Purchases, Revenue ($Million)



7.3 Visitor Industry Personal Income and State and Local Tax Impacts

The 25,397 individuals directly employed in the Bay Area visitor industry as the result of expenditures by the 1.77 million visitors to the area received $965 million in wages and salaries. A portion of this personal income is also used for regional purchases of goods and services, creating induced jobs. Applying the personal income multiplier for the local area visitor's industry (estimated by the U.S. Bureau of Economic Analysis), an additional re-spending and consumption income impact of $1.0 billion was generated locally.

The 9,623 indirect job holders received $280 million of indirect wages and salaries. Therefore, the total personal income and consumption impact generated by visitors arriving via the Airport is $2.3 billion. Finally, as a result of the visitors arriving via Oakland, $285.3 million of state and local taxes are created, including local hotel tax receipts.

8. COMPARISON OF IMPACTS GENERATED BY OAKLAND INTERNATIONAL AIRPORT

Martin Associates has quantified the economic impact of Oakland International Airport in 1991, 1997, 2010, 2017 and 2021. While the methodology to measure the direct economic impacts has not changed since these earlier studies, there have been significant structural shifts in the airline and airport industry sector, particularly after the terrorist attacks in 2001, the economic recession of 2007-2009 and the global COVID-19 pandemic starting in March 2020.

In addition to the structural and economic changes that have occurred since the first economic impact study of the Oakland International Airport, the induced methodology has remained the same, but the personal income multiplier used to derive the Bay Area local consumption and re-spending impact has changed. Prior to 2005, the U.S. Bureau of Economic Analysis only estimated personal income multipliers for the entire transportation sector of the Bay Area. However, beginning in 2005, separate personal income multipliers for the waterborne, trucking, rail, aviation, and pipeline transportation sectors are estimated by the U.S. Bureau of Economic Analysis. The airport personal income multiplier has changed significantly over time, and as a result it is difficult to compare induced impacts and local consumption expenditures for studies prior to 2005. This change in the measurement of local consumption impacts and the re-spending impact also results in a much larger state and local tax impact, and therefore state and local taxes should not be compared prior to 2005.

The global aviation industry was hit by the COVID-19 pandemic starting in March 2020. At the onset of the pandemic, public health directives, the lack of vaccines and effective treatments, and the negative impact on economic activity severely limited demand for air transportation. Passenger traffic at Oakland International Airport decreased 96 percent in March 2020 compared to March 2019. As vaccines and treatments became available, passenger demand increased, especially in the leisure and visiting friends and relatives' segments. Passenger traffic at Oakland International Airport towards the end of 2020 was approximately 80 percent below pre-pandemic levels of 2019. Throughout 2021, passenger demand increased at Oakland International Airport to levels approximately 30 percent below pre-pandemic levels. Business and long-haul international demand recovery has lagged other segments, but airlines have begun to report the return of business travel from small and medium sized businesses. As more people have been vaccinated in the United States and public health restrictions have been relaxed, people have resumed leisure travel and some business travel. To date, passenger demand recovery has been strongest in the domestic and short-haul international segments, which are strengths of Oakland International Airport. Air cargo and general aviation was not negatively impacted by the pandemic. Total enplaned air freight grew by 65.5 million pounds during the same period. Growth in air cargo is directly related to the continual growth in e-commerce.

Because of these significant structural changes between 1997 and 2021, and furthermore because of the economic changes since 1991, it is difficult to compare the economic impacts of the Airport over time. However, Table III-7 shows the direct economic impacts that were generated by Oakland International Airport in 1991, 1997, 2010, 2017 and 2021.

Table III-7
Comparison of Airport Generated Economic Impacts of Oakland International Airport 1991, 1997, 2010, 2017 and 2021

IMPACTS	AIRPORT GENERATED 1991	AIRPORT GENERATED 1997	AIRPORT GENERATED 2010	AIRPORT GENERATED 2017	AIRPORT GENERATED 2021
	3.1 Million Enplanements	4.9 Million Enplanements	4.8 Million Enplanements	6.5 Million Enplanements	4.1 Million Enplanements
JOBS					
DIRECT	6,100	10,212	7,680	8,892	8,269
INDUCED	2,700	4,724	5,578	6,575	5,654
INDIRECT	NA	1,378	1,408	1,943	1,896
TOTAL	8,800	16,314	14,666	17,411	15,818
PERSONAL INCOME ($MILLIONS)					
DIRECT	$214.0	$297.1	$465.5	$608.3	$575.2
RE-SPENDING/PERSONAL CONSUMPTION	$204.0	$309.7	$543.7	$904.9	$945.5
INDIRECT	NA	NA	$64.2	$102.4	$95.8
TOTAL	$418.0	$606.8	$1,073.4	$1,615.6	$1,616.4
BUSINESS REVENUE ($MILLIONS)	$1,747.0	$3,842.9	$2,544.8	$4,315.4	$3,894.1
LOCAL PURCHASES ($MILLIONS)	NA	NA	$152.6	$230.0	$218.4
STATE & LOCAL TAXES ($MILLIONS)	$42.5	$93.9	$112.7	$217.0	$212.1
FEDERAL GOVERNMENT AVIATION ($MILLIONS) SPECIFIC TAXES	$111.7	$86.3	$154.4	$259.9	$232.7

As this table shows, despite the fact that enplanements in 1997 and 2010 were nearly the same, direct airport generated employment impact was 2,532 jobs less in 2010 than in 1997. In fact, as shown in Table III-8, the ratio of direct employment to enplanements fell over the 30-year period, particularly between 1997 and 2010, reflecting the impact of the September 11, 2001, terrorist attacks on the aviation industry. Direct jobs to enplanements rebounded in 2021 reflecting pent up demand, delayed trips, and increased consumer savings following the COVID-19 pandemic.

Table III-8
Direct Jobs/Total Enplanements

YEAR	DIRECT JOBS	ENPLANEMENTS (1,000)	DIRECT JOBS PER 1,000 ENPLANEMENTS
1991	6,100	3,100	1.97
1997	10,212	4,900	2.08
2010	7,680	4,800	1.60
2017	8,892	6,530	1.36
2021	8,269	4,083	2.03

The reason for this sharp contraction was the loss of direct jobs with airlines, catering firms and air cargo transportation serving the Airport. Direct jobs with airlines fell from 3,923 in 1997 to 2,562 jobs in 2010, and catering jobs fell from 140 to 10 jobs. Airline jobs experience a growth from 2,562 in 2010 to 2,849 in 2017. Government jobs increased from 196 jobs in 1997 to 528 jobs in 2010, reflecting the growth of TSA employment after September 11, 2001. Air cargo transportation jobs and jobs with air couriers fell from 3,226 in 1997 to 2,180 jobs in 2010, as air cargo fell from 641.3 thousand metric tons to 512.1 thousand metric tons in 2010. Between 2010 and 2017 freight transportation jobs decreased by another 188 jobs. Although freight forwarding jobs decreased during this time period, air cargo airlines and express couriers actually saw an increase in direct jobs. Jobs with the freight transportation sector fell between 2017 and 2021 due to a loss of jobs with freight forwarders. This reflects the high concentration of FedEx and UPS cargo, and the fact that FedEx and UPS usually handle the freight forwarding in house. Furthermore, the multipliers in freight forwarding declined from 2017 to 2021 because enhancements in technology reduced the number of required personnel to fulfill these operations. However, the value of the air freight enplaned at Oakland International Airport grew from $40.0 per pound in 1991 and 1997, to $85.0 per pound in 2010, and $98 per pound in 2017, and $105.41 in 2021. The total value of the air freight enplaned at Oakland International Airport was $72.6 billion in 2021 compared to $60.9 billion in 2017, $48.4 billion in 2010 to $26.2 billion in 1997, and $9.8 billion in 1991. The growth in the value of the cargo, as well as the composition of the cargo, resulted in the strong growth in related users shipping air freight through Oakland International Airport. In addition, the related users' jobs estimated in 2010 also include those jobs with supportive industries to the manufacturers producing the air freight. With the doubling of the value of the air freight enplaned at Oakland in 2010, and a similar job creation multiplier as a function of the value of output produced, the user jobs would be expected to nearly double from 1997 levels, as indicated by the actual findings. The value of the cargo did not increase as drastically between 2017 and 2010 as it did between 2010 and 1997.

Between 2010 and 2017 the airline/airport services sector experienced an 828-person increase, resulting from the increase in jobs with airlines, fixed based operators, and parking. Off-airport parking jobs were surveyed and included in 2017. Only on-airport parking jobs were included in 2010. Jobs with the freight transportation sector fell from 2010 to 2017 due to a loss of jobs with freight forwarders. This reflects the high concentration of FedEx and UPS cargo, and the fact that FedEx and UPS usually

handle the freight forwarding in house. Furthermore, the multipliers in freight forwarding declined from 2010 to 2017 because enhancements in technology reduced the number of required personnel to fulfill these operations. Ground transportation jobs grew due to the increase in passenger activity. Taxis, including transportation network companies (i.e., Uber and Lyft), grew from 3.48 percent in 2010 to 15.95 percent in 2017 and exhibited the strongest growth in this category. The growth of 336 jobs is directly related to the number of individuals using taxis and transportation network companies. The increase in construction jobs from 2010 to 2017 reflects the increase in capital expenditures from $25.7 million to $58.7 million.

Between 2017 and 2021 the airline/airport services sector experienced a 221-person loss, resulting from the decrease in jobs with retail and concessions, Port of Oakland aviation department, and an engine repair tenant formerly located on the North Field. In 2019, Oakland International Airport rehauled their entire food and beverage program through a competitive bid process. The dining transformation at Oakland International Airport incorporates an increased presence of local concepts. Local Oakland favorites Cancun Taqueria and Tay Ho Oakland were under construction during the time of the study. Rolls Royce closed their North Field engine repair facility in December 2018. In addition, the Aviation Institute of Maintenance moved from North Field to Fremont, CA in 2018. The Port of Oakland aviation department fell from 255 jobs in CY 2017 to 237 jobs in CY 2021.

Growth in passenger airlines between 2017 and 2021 is due to the increased number of customer service agents and ramp/ground crew for one airline. The airline indicated they typically higher more individuals than needed due to the attrition rate of employees. The cost of living in the Bay Area creates a greater attrition rate than other metropolitan areas. Once the employees have passed their probationary period they can apply for a transfer to an airport with a lower cost of living. Two additional off-airport parking companies were surveyed and included in 2021. TSA jobs grew between calendar 2017 and 2021. There was a growth in the number of full-time employees compared to the number of part time employees in 2021.

Ground transportation jobs, particularly with taxis, transportation networks, and shuttles/vans fell due to the decrease in passenger activity. Rental car companies were further impacted by the loss of business travelers. The global COVID-19 Pandemic changed the demographics of rental car business. Remote work and the shift to virtual meetings has decreased the number of business travelers. Business travel has not recovered to the extent of personal and pleasure travel. Due to these factors the number of individuals per rental car has increased. The decrease in construction jobs reflects the decrease in capital expenditure from $58.7 million to $38.8 million.

With respect to the visitor industry impacts, Table III-9 shows that direct jobs with the visitor industry decreased sharply between 1997 and 2010. This period reflects three major events: the September 11, 2001, terrorist attacks, an increase of productivity in the service sector, and the 2007-2009 recession. The terrorist attacks of September 11, 2001, resulted in a dramatic shift in air travelers' behavior, as well as consolidation of airlines; the productivity in the service sector nearly doubled during

this time, meaning that for a dollar value of services, only 50 percent of the labor would be required to deliver this service. This gain in productivity also accompanied the overall increased use of information technology in hotel reservations, retail, and food services. Finally, the year 2009 represents a major economic downturn period as consumers reduced discretionary spending, reflecting the greater than 9.0 percent unemployment rate as well as the loss of 30-40 percent of asset value during the 2007-2009 period. As a result, the impact of visitors in the Bay Area arriving via Oakland International Airport was curtailed.

Table III-9
Comparison of Visitor Industry Impacts at Oakland International Airport, 1991, 1997, 2010, 2017 and 2021

IMPACTS	VISITOR INDUSTRY 1991	VISITOR INDUSTRY 1997	VISITOR INDUSTRY 2010	VISITOR INDUSTRY 2017	VISITOR INDUSTRY 2021
	3.1 Million Enplanements	4.9 Million Enplanements	4.8 Million Enplanements	6.5 Million Enplanements	4.1 Million Enplanements
JOBS					
DIRECT	34,681	64,851	15,173	18,615	25,397
INDUCED	7,495	24,627	6,532	6,910	10,187
INDIRECT	NA	NA	2,723	7,423	9,623
TOTAL	42,176	89,478	24,428	32,949	45,207
PERSONAL INCOME ($MILLIONS)					
DIRECT	$447.0	$1,091.5	$347.5	$488.4	$965.0
RE-SPENDING/PERSONAL CONSUMPTION	$425.0	$1,138.0	$368.5	$493.2	$1,007.4
INDIRECT	NA	NA	$79.3	$216.1	$280.0
TOTAL	$872.0	$2,229.5	$795.3	$1,197.6	$2,252.4
BUSINESS REVENUE ($MILLIONS)	$1,896.2	$4,252.4	$1,671.2	$2,816.5	$4,571.0
LOCAL PURCHASES ($MILLIONS)	NA	NA	$118.4	$502.6	$651.1
STATE & LOCAL TAXES ($MILLIONS)	$203.0	$562.6	$83.5	$156.3	$285.3

Between 1997 and 2010, the number of visitors increased from 2.2 million air visitors to 2.4 million air visitors.; however, the level of expenditures fell from $4.3 billion to $1.7 billion. This is due to the reduced expenditures per day over the 13-year period, particularly with domestic visitors, where average expenditures per day were reduced by more than 60 percent. This reflects the fact that a large share of domestic visitors are staying with friends or relatives (52 percent), as well as the depressed economic conditions in 2009 and 2010, when consumer expenditures were curtailed significantly. Between 2010 and 2017, expenditures per day have increased for all travel categories. Domestic business

travelers spending per day increased from $210 per day to $388 per day, foreign business travelers spending per day increased slightly from $341 per day to $350 per day, domestic pleasure travelers spending increased from $135 per day to $232 per day and foreign pleasure travelers spending increased from $141 per day to $216 per day.

It is to be emphasized that in 1997, no passenger surveys were conducted, while in 2010 the expenditures per day and visitor spending patterns were derived from a 500-passenger survey conducted by Martin Associates. In 1997, the expenditure data was developed from surveys conducted in 1995 by the Metropolitan Planning Commission and did not have the same level of detail as the 500-passenger survey conducted as part of this current study. Expenditures per day and visitor spending patterns in 2021 were derived from a 900-passenger survey conducted by Nichols Research and Martin Associates

Reflecting the decrease in total passengers at Oakland International Airport between 2017 and 2021, the number of visitors using Oakland International Airport decreased from 2.56 million passengers in 2017 to 1.77 million passengers in 2021. The decrease in total and enplaning passengers is directly related to the COVID-19 pandemic. Survey data from the in-terminal passenger survey indicates 49.6 percent of the enplaning passengers were non-residents compared to 47.5 percent in 2017.

Although the number of visitors fell between 2017 and 2021, duration of stay and dollars spent per day for each visitor significantly increased over time. The number of days spent by visitors has increased between 2017 and 2021 for all traveler types. International business visitors' days spent increased the most from 5.5 days in 2017 to 8 days in 2021. Domestic business visitors' days spent increased the second greatest from 3.52 days spent in 2017 to 5.69 days spent in 2021. Domestic pleasure slightly increased from 4.54 days spent to 5.24 days spent over the same period. International pleasure visitors' days spent remained relatively constant spending 7 days in 2017 and 7.33 days in 2021.

Between 2017 and 2021, expenditures per day have significantly increased for all travel categories. Domestic business travelers spending per day increased from $388 per day to $547 per day, foreign business travelers spending per day increased from $350 per day to $536 per day, domestic pleasure travelers spending increased from $232 per day to $488 per day and foreign pleasure travelers spending increased from $216 per day to $393 per day. Reflecting pent up demand, delayed trips, and increased consumer savings, growth in the visitor industry impacts is directly related to the number of days spent and spending per day for all visitor types.

Table III-10
Comparison of Visitor Expenditure Patterns 1997-2021

2021		
TRIP PURPOSE	**DAYS SPENT**	**DOLLARS/DAY**
Domestic Business	5.69	$547
Domestic Pleasure	5.24	$488
International Business	8.00	$536
International Pleasure	7.33	$393
2017		
TRIP PURPOSE	**DAYS SPENT**	**DOLLARS/DAY**
Domestic Business	3.5	$388
Domestic Pleasure	4.5	$232
International Business	5.5	$350
International Pleasure	7.0	$216
2010		
TRIP PURPOSE	**DAYS SPENT**	**DOLLARS/DAY**
Domestic Business	3.3	$210
Domestic Pleasure	6.6	$135
International Business	6.0	$341
International Pleasure	2.9	$141
1997		
TRIP PURPOSE	**DAYS SPENT**	**DOLLARS/DAY**
Domestic Business	3.5	$336
Domestic Pleasure	6.1	$354
International Business	4.9	$375
International Pleasure	5.5	$247

IV. ECONOMIC IMPACTS OF THE PORT OF OAKLAND COMMERCIAL REAL ESTATE TENANTS

This chapter presents the economic impacts generated by tenants and subtenants of the non-maritime and non-aviation real estate holdings of the Port of Oakland. The impacts are measured for 2021, and are measured in terms of jobs, personal income, business revenue and taxes generated by economic activity of the firms that are tenants of Port of Oakland-owned real estate. Impacts are measured for all Port tenants and subtenants, including those located in Jack London Square, Embarcadero Cove, Embarcadero Business Park, Oakland Airport Business Park, as well as other commercial real estate tenants within the Port area. The real estate impacts exclude the impacts generated by the Port's marine terminals and airport operations, as these impacts have been quantified in previous studies conducted by Martin Associates.

With respect to the real estate analysis, the impacts with the tenants of Port of Oakland real estate are generated by the demand for the goods and services produced by the firms, and not by activity specific to transportation services provided by the Port of Oakland. In contrast, the capital investments made by the Port of Oakland at the Airport (i.e., runways, passenger terminals, hangars, etc.) and the marine terminals (i.e., container terminals, container cranes, surface transportation access corridors to the terminals, dredging, etc.) are essential for the existence of air service and commercial marine cargo operations in Oakland. As a result, the impacts generated by tenants of the Port of Oakland commercial real estate holdings are not as directly dependent upon the Port of Oakland and its investment, as are the maritime and airport impacts. Some of these companies are located on Port-owned property as a direct result of efforts by the Port of Oakland to recruit them and would likely not have located in Oakland otherwise. Other firms would likely have located in Oakland regardless of the Port's efforts and infrastructure investment.

Commercial real estate activity at the Port of Oakland contributes to the local and regional economy by generating business revenue to local and national firms providing services to these sectors. These firms, in turn, provide employment and income to individuals, and pay taxes to state and local governments.

Martin Associates conducted a telephone survey of 103 tenants and subtenants of the Port of Oakland's Commercial Real Estate Division. The focus of the telephone surveys conducted by Martin Associates was to collect data at the firm level regarding jobs, revenue, wages and salary data, and expenditure profiles. These 103 tenants and subtenants represent two industry sectors, the Industrial and Commercial Sectors, which include offices, restaurants, retail establishments, industrial and distribution firms, hotels, and government agencies.

Jobs, personal wage and salary income, revenue, and local purchase data are collected for each individual tenant and subtenant of the Commercial Real Estate Division. This individual firm data is then summed over the firms included in each industry category.

The individual firms providing the data are then grouped into the larger industry categories.

Impacts of Commercial real estate tenants and subtenants, by industry category, are then estimated based on the individual survey results. The estimated impacts at the industry category level are then combined to estimate the impacts at the industry sector level of detail.

It is to be emphasized that the direct and induced job impacts are the major focus of the analysis. This focus is on job impacts, since the direct jobs are typically the most defensible measure of the economic contribution of an industry or firm to the local economy, and these direct job impacts drive the personal income impact as well as the induced job impacts and tax impacts. Furthermore, the induced jobs are driven by earnings and the re-spending of earnings throughout the economy. For example, industries and firms in those industries paying higher salaries will generate a greater induced job impact than firms paying lower salaries. Therefore, the level of induced jobs generated by an industry or typical firm in that industry will reflect the personal earnings impact as well.

Finally, the revenue impact is, in many cases, a national rather than local impact, since only that portion of the revenue paid out in salaries to local residents or in state, county and local taxes can be isolated to a regional level. Other portions of the revenue impact are distributed throughout the country. For example, for facilities in Oakland that are branch plants or facilities with parent firms located outside of the region, the portions of revenue used for retained earnings will flow out of the region to company headquarters. Similarly, corporate taxes will be paid by such out-of-region headquarters to the states in which the company is incorporated.

To the extent that the local companies use a portion of the revenue for purchases of goods and services provided by local firms, then this portion will remain in the region and generate indirect jobs. These indirect job impacts, or jobs generated by the purchases by firms in the region are measured based on the survey results. The types of purchases are associated with the industries supplying the goods and services. The local employment to sales multipliers for these supplying industries was developed for the Bay Area by the Bureau of Economic Analysis, Regional Input-Output Modeling System. The local purchases are then multiplied by the respective coefficients to estimate the indirect jobs and wages and salaries associated with each industry.

1. TOTAL COMMERCIAL REAL ESTATE IMPACTS

The economic impacts created by the Commercial Real Estate tenants and subtenants of the Port of Oakland are summarized in Table IV-1.

Table IV-1
Economic Impacts of the Commercial Real Estate Tenants

	ECONOMIC IMPACTS
JOBS	
DIRECT	3,870
INDUCED	1,989
INDIRECT	1,246
TOTAL	7,104
PERSONAL INCOME/LOCAL CONSUMPTION ($1,000)	
DIRECT	$241,281
RE-SPENDING/LOCAL CONSUMPTION	$239,480
INDIRECT	$52,676
TOTAL	$533,437
BUSINESS REVENUE ($1,000)	$698,447
STATE AND LOCAL TAXES ($1,000)	$72,584
LOCAL PURCHASES ($1,000)	$82,352

Totals may not add due to rounding

As this table shows, the non-maritime and non-airport tenants of the Port of Oakland generated 7,104 direct, induced, and indirect jobs in the Oakland region. Of these total jobs, the tenants and subtenants directly employed 3,870 individuals.

The 3,870 directly employed individuals earned $241.3 million of wages and salaries. A portion of this income was spent on local purchases, in turn generating additional consumption expenditures and income in the Oakland region. The personal income multiplier used to estimate this re-spending impact is based on data developed by the Bureau of Economic Analysis, Regional Input-Output Division.

Using the income multiplier, the use of the direct earnings for local purchases resulted in additional re-spending and local consumption expenditures totaling $239.5 million. These local purchases supported the 1,989 induced jobs in the region.

The Commercial Real Estate tenants and subtenants reported $698.4 million of direct business sales. Part of this $698.4 million gross revenue is also used to purchase goods and services from other local firms. The 103 tenants identified $82.4 million of purchases from other local businesses. These local purchases include purchases for goods and parts, office supplies, communication services and utilities, contract services, transportation services, and maintenance and repair services. These local purchases supported 1,246 indirect jobs in the Bay Area. Finally, the tenants and subtenants also generated about $ 72.6 million in state and local tax revenues.

In total, the economic value of the Commercial Real Estate tenants of the Port of Oakland is estimated at $937.9 million in 2021. This consists of the $698.4 million direct business revenue impact and the $239.5 million induced income and local consumption impact.

A very important indicator of the contribution of the Commercial Real Estate tenant activity to the local economy is where the employees of the tenants and subtenants reside. Table IV-2 shows that 28.7 percent of the direct jobs reside in the City of Oakland and another 40.6 percent of those directly employed by the Port's tenants live in other parts of the County of Alameda. In total, nearly 69.3 percent of the direct job holders live in Alameda County.

Table IV-2
Distribution of Direct Jobs by Place of Residence

JURISDICTION	PERCENT	DIRECT JOBS
Alameda	15.0%	582
Fremont	0.3%	13
Hayward	3.3%	128
Oakland	28.7%	1,109
San Leandro	1.6%	60
Other Alameda County	20.4%	789
Total Alameda County	**69.3%**	**2,681**
San Francisco	16.3%	629
Contra Costa County	13.1%	505
Other CA	1.4%	54
Total	**100%**	**3,870**

2. ECONOMIC IMPACTS BY INDUSTRY SECTOR

In this section the economic impacts generated by Commercial Real Estate tenants and subtenants in each of the industry sectors are discussed. Table IV-3, on the following page, summarizes the economic impacts generated by industries in each of the industry sectors.

Table IV-3
Distribution of Total Direct, Induced, and Indirect Impacts by Type of Business

	DIRECT JOBS	INDUCED JOBS	INDIRECT JOBS	TOTAL JOBS	DIRECT INCOME ($1,000)	RE-SPENDING LOCAL CONSUMPTION ($1,000)	INDIRECT INCOME ($1,000)	TOTAL INCOME ($1,000)	REVENUE ($1,000)	LOCAL PURCHASES ($1,000)	TAXES ($1,000)
Office	1,360	780	195	2,335	$105,065	$103,135	$10,866	$219,066	$361,182	$20,631	$30,695
Distribution	925	473	6	1,404	$57,720	$56,660	$524	$114,904	$158,175	$666	$15,632
Government	557	294	135	986	$36,908	$36,230	$7,535	$80,674	$13,295	$9,112	$9,753
Restaurants	478	192	657	1,326	$17,167	$16,852	$20,858	$54,877	$57,144	$31,350	$7,433
Hotel	357	153	180	690	$15,265	$14,984	$9,078	$39,327	$50,422	$14,392	$5,392
Retail	88	35	29	152	$3,092	$3,036	$1,751	$7,879	$14,439	$3,173	$1,137
Industrial	49	24	6	80	$2,914	$2,861	$367	$6,142	$21,438	$556	$1,011
Marinas	30	25	34	89	$1,677	$4,277	$1,413	$7,367	$14,335	$2,109	$1,045
Entertainment	26	13	5	43	$1,473	$1,446	$283	$3,201	$8,019	$364	$486
	3,870	**1,989**	**1,246**	**7,104**	**$241,281**	**$239,480**	**$52,676**	**$533,437**	**$698,447**	**$82,352**	**$72,584**

As this Table indicates, office tenants generate the largest number of direct jobs, followed by the distribution facilities. Government generates the third largest number of direct jobs and restaurants, the fourth largest. Most of the restaurant jobs are located at Jack London Square. The government sector includes jobs with the Port of Oakland Commercial Real Estate Division. The largest employer within the government sector is jobs with the City of Oakland.

3. COMPARISON OF ECONOMIC IMPACTS OF OAKLAND REAL ESTATE OPERATIONS

Between 2017 and 2021, the total number of jobs generated by Port of Oakland commercial real estate tenants grew by 1,052. Direct jobs increased by 369 jobs and induced employment increased by 460. Indirect jobs increased by 222 jobs, reflecting the growth of $14.3 million in local purchases. The overall gains were driven by growth in offices, in particular a new coworking/ small private office space located at 66 Franklin Street at Jack London Square. In addition, there was an increase in jobs associated with Alameda County Behavioral Health offices located at 1900 and 2000 Embarcadero. Restaurants experienced a decline in jobs due to the covid 19 pandemic. As the restaurant business has grown in 2021, it hasn't achieved pre pandemic numbers and restaurants have had difficulty finding workers. This decline is also attributed to the closing of several restaurants such as Kincaid's Bay House and Belcampo. Several new restaurants, Left Bank, Kuidaore Sushi, and Dragon Gate are scheduled to open at Jack London Square in late 2022 or early 2023. Hotel jobs remained relatively unchanged over time. The unchanged impacts on hotel jobs. The average wage has grown from $52,764 in 2017 to $62,353 in 2021. Exhibit III-4 compares the total impacts from 2021 against those from 2017.

Exhibit IV-4
Total Economic Impacts generated by Port of Oakland's Commercial Real Estate Tenants, 2017 and 2021

	2017	2021	CHANGE
JOBS			
DIRECT	3,500	3,870	369
INDUCED	1,529	1,989	460
INDIRECT	1,024	1,246	222
TOTAL	6,052	7,104	1,052
PERSONAL INCOME/LOCAL CONSUMPTION ($1,000)			
DIRECT	$184,682	$241,281	$56,599
RE-SPENDING/LOCAL CONSUMPTION	$136,322	$239,480	$103,158
INDIRECT	$37,841	$52,676	$14,834
TOTAL	$358,846	$533,437	$174,591
BUSINESS REVENUE ($1,000)	$563,347	$698,447	$135,100
STATE AND LOCAL TAXES ($1,000)	$43,495	$72,584	$29,089
LOCAL PURCHASES ($1,000)	$68,071	$82,352	$14,281

4. SUMMARY

The Port of Oakland's commercial real estate tenants create significant economic impact to the Oakland and Bay Area economy, creating 7,104 total direct, induced, and indirect jobs. These 103 tenants and subtenants further add $533.4 million of personal wages and salaries to the local economy and contribute $72.6 million of tax revenue to the state and local governments. Approximately 28.7 percent of the 3,870 directly employed individuals reside in the city of Oakland and another 40.6 percent live in other parts of Alameda County.

Key job generators of the Port of Oakland's Commercial Real Estate Division include offices, distribution facilities, restaurants, government agencies (primarily City of Oakland) and hotels. When evaluating existing or potential real estate tenants or opportunities, it is necessary to consider not only the job creation potential, but the average wages and salaries paid, as well as the purchases that the tenant will likely make from the local economy. The Port's commercial real estate division continues transforming former industrial land into vibrant new developments through private investment. Defunct warehouses, parking lots, and vacant lots are being converted to hotels, offices, shops, restaurants, residences, along the San Francisco Bay and Oakland Estuary. This economic study suggests that the continued investment in Commercial Real Estate will result in further job, income, and tax growth for the Oakland area.