



Economics Research Associates

Final Report

**ECONOMIC IMPACTS,
COSTS AND BENEFITS OF
CONTRA COSTA COUNTY AIRPORTS**

Prepared for

CONTRA COSTA COUNTY

Submitted by

Economics Research Associates

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ERA Project No. 13436

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Section I

INTRODUCTION

In January 2000, Economics Research Associates (ERA) was retained by Contra Costa County to determine the economic impact of the Contra Costa County airports on the County. There are two airports in Contra Costa County: Buchanan Field Airport, a FAR Part 139 non-hub air carrier airport, and Byron Airport, a general aviation reliever airport. As with most airports there are a variety of constituent groups affected by the airport including pilots, fixed base operators, and other direct airport users, as well as residents and business owners surrounding the airports who are often not direct airport users. Contra Costa County felt that the natural friction between user constituents and surrounding neighbors grew to the point that an objective, third-party assessment of the economic impacts and the costs and benefits of the airports would help the County with future planning and operations.

The purpose of this report is to 1) Estimate the current direct, indirect, and induced economic and employment impacts of both Contra Costa County airports on Contra Costa County; 2) To project future impacts based upon hypothetical scenarios for growth at each airport; 3) To identify other qualitative and quantitative benefits and costs of the airports; and 4) To estimate the impact of the airports on surrounding property values.

REPORT ORGANIZATION

The primary conclusions of this report including current and future economic and employment impacts and a summary of key costs and benefits have been brought forward to the beginning of this report in Section II, immediately following this section. Section III presents an economic overview of the County, focusing on the demographics and economic state of Contra Costa County. Section IV explains the methodology that ERA used to estimate the economic impact of Buchanan Field and Byron Airports. The economic and employment impacts of the airports for last year are shown in Section V, and Section VI explores what the economic and employment impact of the airports on the County might be for future potential scenarios. Finally, Section VII identifies the qualitative benefits and costs of the Contra Costa Airports and discusses the impact of the airports on surrounding property values.

The principal in charge of this report was Steven Spickard, Senior Vice President in the San Francisco ERA office. Linda Cheu, Senior Associate, served as day-to-day project manager, and Matt Hetrick, Research Associate, assisted with the research and analysis. Gene Krekorian, Senior Vice President in the Los Angeles ERA office, who has extensive experience with both economic impact studies of airports and real estate analysis for surrounding land uses, served as advisor. Robert Chickering, Principle with the San Francisco ERA office, also served as advisor. Mr. Chickering works extensively with economic impact modeling and previously assisted with the development of the State of California airport economic impact model.

Section II

EXECUTIVE SUMMARY

This section highlights the major conclusions related to the economic impact and costs and benefits of the Contra Costa County airports.

METHODOLOGY AND PROCESS

Economics Research Associates (ERA) utilized many methods to assess the economic and employment impacts, costs, and benefits of the Contra Costa County airports. Specifically, ERA performed the following tasks:

- Held a series of public workshops in Contra Costa County;
- Conducted a written survey of airport businesses (aviation and non-aviation);
- Solicited and received written comments through postal mail, e-mail, and fax;
- Performed numerous in-person and phone interviews with airport businesses;
- Reviewed existing academic and other research on the impacts, costs, and benefits of airports; and
- Developed an economic impact model specific to the Contra Costa County airports.

DIRECT ECONOMIC IMPACTS

There are six major mechanisms through which the Contra Costa County airports have a direct economic impact on Contra Costa County:

- Operating expenditures by airport businesses;
- County operating expenditures on airport administration and operations;
- Visitor expenditures (including students, pilots, passengers, business visitors, and others);
- Property taxes (secured and unsecured); and
- County and airport business expenditures on construction and capital improvements.

ERA analyzed the economic impact of the airports on the County for three scenarios:

1. A baseline scenario for the year 1999;
2. A future scenario based upon potential projected growth at both airports; and
3. A future scenario based upon potential projected growth at both airports and the presence of commercial airline service at Buchanan Field.

The estimated positive direct economic impact of the Contra Costa County airports for these three scenarios, with a breakdown of impact according to categories, is summarized below in **Table II-1**. As shown, the direct economic impact of the Contra Costa County airports in 1999 was estimated to be \$43.9 million. For the future scenario of growth at both airports, the impact was estimated to be \$71.8 million, and with the addition of commercial airline service, was projected to reach \$107.0 million. In all scenarios, visitor expenditures comprise the largest portion, between 55 and 60 percent of the direct economic impact.

**Table II-1:
Summary of Direct Economic Impact of Contra Costa County Airports, 1999**

| Category | Base Case 1999 | Scenario 1: Growth | Scenario 2: Growth with Commercial Airline Service |
|-------------------------------------|-----------------------|---------------------------|---|
| Airport businesses | \$14,842,000 | \$26,698,000 | \$42,567,000 |
| Airport operations | \$1,016,000 | \$1,625,000 | \$1,739,000 |
| Visitors | \$26,414,000 | \$40,484,000 | \$58,859,000 |
| Property Taxes | \$583,000 | \$1,219,000 | \$1,522,000 |
| Construction | \$1,000,000 | \$1,800,000 | \$2,300,000 |
| Total Direct Economic Impact | \$43,855,000 | \$71,826,000 | \$106,987,000 |

TOTAL ECONOMIC AND EMPLOYMENT IMPACTS

The total economic impact includes direct, indirect, and induced economic benefits. A significant economic benefit was found ranging from \$71 million to \$171 million per year. The total employment impact includes direct, indirect, and induced jobs created by the airports in Contra Costa County. These indirect and induced impacts were determined using RIMS II multipliers provided by the U.S. Department of Commerce, Bureau of Economic Analysis.

The total economic and employment impacts of the Contra Costa County airport during base year 1999 and for the two future scenarios are presented below in Table II-2:

Table II-2: Projected Total Economic and Employment Impact of Contra Costa County Airports on Contra Costa County

| Scenario | Direct Economic Impact | Total Economic Impact | Total Employment Impact |
|---|-------------------------------|------------------------------|--------------------------------|
| Base Case 1999 | \$43.9 million | \$71.0 million | 664 jobs |
| Future Growth | \$71.8 million | \$115.1 million | 1,065 jobs |
| Future Growth with Commercial Airline Service | \$107.0 million | \$170.9 million | 1,584 jobs |

Source: Economics Research Associates.

IDENTIFICATION OF COSTS AND BENEFITS

In addition to these quantitative economic and employment impacts, ERA also identified a number of possible mechanisms through which costs and benefits could be created by airports in general. These costs and benefits are summarized in the following table:

| BENEFITS | COSTS |
|--|--|
| <ul style="list-style-type: none"> • Economic impact <ul style="list-style-type: none"> -Revenue to businesses -Job creation • Economic development tool <ul style="list-style-type: none"> -Business location decisions -Increased business revenue • Attraction of residents • Recreational benefits • Transportation benefits <ul style="list-style-type: none"> -Convenience -Decreased transportation times -Decreased ground traffic congestion • Community and emergency services • Fiscal benefit to County • Potential for commercial air service | <ul style="list-style-type: none"> • Aircraft noise <ul style="list-style-type: none"> -Annoyance -Potential speech interference -Potential sleep interference -Potential effect on learning -Potential hearing loss -Non-auditory health effects • Air quality / emissions • Risk of aircraft accidents • Potential property value impacts |

POTENTIAL PROPERTY VALUE IMPACTS

Finally, based upon existing research related to property value impacts, noise contour information from prior airport studies, and demographic information about the quantity and value of homes surrounding the airport, ERA analyzed the possible impact of Buchanan Field Airport on surrounding residential property values. Given these factors, ERA estimates that without the presence of the airport, the most that surrounding property values for 600 to 700 homes might increase is by about 3 percent due to the reduction in noise, or not at all, depending on the ambient noise level in the neighborhoods.

CONCLUSION

From the perspective of the economic impacts that are conducive to quantitative analysis, the ongoing value of the airports to the Contra Costa County economy is approximately \$71 million, year after year. This beneficial impact on the county economy is likely to grow in future years and could more than double, to a level of \$171 million in a future scenario including commercial air carrier service. This ongoing impact clearly outweighs the potential one-time enhancement to residential property values that could be gained by elimination of airport operations.

From the perspective of impacts that are less conducive to quantitative analysis, the costs are primarily localized in relatively small areas surrounding the airports. Potential costs in the area around Buchanan Field Airport have been minimized by a land use pattern that has evolved over many years. As a result, a relatively small number of homes are currently subject to airport noise, and future growth in aviation can be accommodated without impacting many more. This is also an area already impacted by freeway noise on all sides of the airport. Around Byron Airport, much less development currently exists, allowing the County the opportunity to plan ahead for land uses that will not suffer from proximity to active aviation.

Benefits, on the other hand, extend throughout the County. Contra Costa residents benefit from the economic development stimulus that airports provide, the availability of aviation-related recreation, the security of air access in times of emergency, and other positive aspects of airports, even though they may live miles away from either Buchanan Field or Byron Airport.

Section III

ECONOMIC OVERVIEW

Contra Costa County is a large and prosperous county with close to 1,000,000 residents, 19 cities, and thousands of businesses. Contra Costa means "opposite coast" in Spanish, a reference to the county's position opposite San Francisco. Steep rolling hills and various-sized valleys typify Contra Costa County. A 70-mile coastline extends from San Pablo Bay and Suisun Bay to the Sacramento-San Joaquin River delta and large regional parks such as Tilden, Wildcat Canyon, and Briones help keep Contra Costa relatively rural compared to the rest of the Bay Area. Expanding towns like Concord, Walnut Creek, and Lafayette spread over the valleys; while industrial and shipping ports line the shore. This section reviews the past, current, and projected state of Contra Costa County's demographics, economy, and employment.

Demographic Overview

Contra Costa County's current population is 931,946 and is expected to increase .9 percent per year, or to 1,101,725, by the year 2020 (See Table 1). In the 1990s, population increase in Contra Costa County was well on par with historical population increases in the last 30 years (See Table 2). Spurring this increase is an equal mix of migration and natural population growth, contrasting the 80s where 57 percent of population growth derived from migration.

Contra Costa has some of the fastest growing cities in the state and the region, including Brentwood and Pittsburg in the vicinity of Byron Airport (See Table 3). Projected percent increase in population levels for Contra Costa County are on par with the rest of the Bay Area, but slightly below the state average (See Table 3).

Contra Costa has 351,000 households with an average household size of 2.6. These households are relatively affluent with average household income in Contra Costa (\$57,717 in 1999) easily topping the United States average (\$38,885 in 1999). Despite these high incomes, housing in Contra Costa County is relatively affordable. The median price of homes sold in Contra Costa is the lowest in the Bay Area (\$233,000 in 1999). There is a large range of home prices throughout the county allowing the home buyer many options, for instance home sales in Orinda, Lafayette, Danville, and Moraga

averaged over \$500,000 a home in May 2000 compared to San Pablo, Richmond, and Pittsburg where home sale prices averaged less than \$200,000 (See Table 4).

Contra Costa Economy

Like the rest of California, the Contra Costa economy is the strongest it has been in years. Unemployment in Contra Costa is near an all time low at 2.7 percent and employment is currently at 480,000 and growing steadily (See Table 5). Over the past 15 years, the County's unemployment rate has kept pace with Bay Area unemployment figures and has remained significantly lower than California's rate (See Table 6). Contra Costa resident employment has also increased at a higher rate than California in the last 15 years. In fact employment of Contra Costa County residents is projected to increase by as much as 139,000 (46 percent) over the next 20 years, well ahead of the pace of anticipated household growth and well ahead of Santa Clara (43 percent), Alameda (36 percent), or San Mateo County (30 percent). Leading this employment surge is Concord, Richmond, Walnut Creek, and Antioch. These cities provide the largest bulk of Contra Costa County's employment accounting for nearly 40 percent of the county's total employment, or 188,000 jobs (See Table 6).

Retail sales in Contra Costa County jumped by more than \$800 million from 1994 to 1997, an increase of 15 percent. In the same period, building material sales increased 19 percent and new car sales increased 34 percent.

In 1998, Contra Costa County had more than 500 buildings with over 26 million square feet of available office space. Office vacancy rates were at 3.7 percent and price per square foot varied from \$1.40 per square foot to \$2.50. Also in 1998, available industrial space in Contra Costa County equaled 21.5 million square feet and the industrial vacancy rate was 7.7 percent. This is consistent with the past few years for industrial vacancy in Contra Costa.

Contra Costa Employment

69 percent of employed residents in Contra Costa County work in white collar occupations outpacing both the Bay Area (67 percent) and California (61 percent). 19 percent of Contra Costa employed residents work in executive or management positions, 16 percent work in professional capacities and the remainder are employed in sales and administrative roles. One of five County residents works in a blue collar occupation and

one in ten works in a service role. More than 94 percent of the businesses in Contra Costa have fewer than 50 employees. 41 percent of workers in the County are employed in these businesses, compared to 36 percent in the Bay Area and 38 percent in California. (Contra Costa Economic Partnership, 1998)

The distribution of employment in Contra Costa County is dominated by trade and services which accounted for 56 percent of total employment in 1998 (See Table 7). The service industry has grown the quickest of all industries in the last 10 years growing by 4.7 percent per year accounting for nearly 39,000 new jobs. Service now accounts for 33 percent of all jobs up from 25 percent in 1988. Trade, once the dominant industry in Contra Costa county, still accounts for 22 percent of all jobs but growth has been relatively stagnant growing at .4 per year. Manufacturing employment has decreased in the last ten years by 3,500 jobs and by 1.2 percent per year. Jobs in construction have rebounded from the early 90s increasing by 23 percent from 1993 to 1998. The government has provided nearly 5,000 new jobs from 1988 to 1998 and like much of the country, the mining industry has decreased significantly (6.4 percent per year) in Contra Costa County in the last 10 years.

Employment in high-tech industries in Contra Costa county has grown at a strong rate in the last five years. The telecommunications industry grew 29 percent from 1995-2000 compared to 20 percent for the Bay Area and 15 percent for California. Computer related employment has grown 32 percent compared to 24 percent in the Bay Area and 25 percent in California. Bioscience has grown 18 percent in the last five years, compared to 11 percent for the Bay Area and 8 percent for California. (Source: PG&E)

Table 1

DEMOGRAPHIC PROFILE OF CONTRA COSTA COUNTY

| | Contra Costa County | |
|-----------------------------------|---------------------|----------|
| Current Population | 931,946 | |
| 20-Yr Projected Population | 1,101,725 | |
| Projected Avg. Annual Growth Rate | 0.9% | |
| # of Households | 351,602 | |
| Average Household Size | 2.6 | |
| <u>Population by Race</u> | <u>1999</u> | <u>%</u> |
| White (non Hispanic) | 655,198 | 70.3% |
| Black (non Hispanic) | 88,061 | 9.4% |
| American Indian, Eskimo, or Aleu | 5,960 | 0.6% |
| Asian & Pacific Islander | 121,100 | 13.0% |
| All Other | 55,949 | 6.0% |
| <u>Population by Age</u> | <u>1999</u> | <u>%</u> |
| Under 13 | 200,336 | 21.5% |
| 14 to 17 | 49,189 | 5.3% |
| 18 to 29 | 122,387 | 13.1% |
| 30 to 39 | 151,799 | 16.3% |
| 40 to 49 | 158,972 | 17.1% |
| 50 to 59 | 108,949 | 11.7% |
| 60 to 64 | 32,548 | 3.5% |
| 65 and Over | 112,088 | 12.0% |
| Median Age | 36.6 | |
| <u>Income Levels</u> | <u>1999</u> | <u>%</u> |
| Under \$20,000 | 41,884 | 11.9% |
| \$20,000 to \$29,999 | 28,860 | 8.2% |
| \$30,000 to \$39,999 | 35,233 | 10.0% |
| \$40,000 to \$49,999 | 39,900 | 11.3% |
| \$50,000 to \$74,999 | 84,429 | 24.0% |
| \$75,000 to \$99,999 | 51,344 | 14.6% |
| Higher than \$100,000 | 69,936 | 19.9% |
| Median Household Income | \$57,717 | |
| US Median Household Income | \$38,885 | |

Source: ArcView Business Analyst.

Table 2

CONTRA COSTA COUNTY POPULATION ESTIMATES, 1971-1999

| Year | Population | Increase | % Increase | % Increase | % Increase |
|-----------------------------|------------|---------------|--------------|---------------|----------------------|
| | | | | Due to Births | Due to Net Migration |
| | | | Minus Deaths | | |
| 1970 | 557,500 | - | - | - | - |
| 1971 | 567,700 | 10,200 | 1.8% | 46% | 54% |
| 1972 | 572,100 | 4,400 | 0.8% | 88% | 12% |
| 1973 | 576,200 | 4,100 | 0.7% | 82% | 18% |
| 1974 | 579,600 | 3,400 | 0.6% | 88% | 13% |
| 1975 | 586,600 | 7,000 | 1.2% | 46% | 54% |
| 1976 | 602,100 | 15,500 | 2.6% | 21% | 79% |
| 1977 | 618,200 | 16,100 | 2.7% | 24% | 76% |
| 1978 | 632,100 | 13,900 | 2.2% | 28% | 72% |
| 1979 | 644,700 | 12,600 | 2.0% | 37% | 63% |
| Average for the 70s: | | 9,689 | 1.6% | 51% | 49% |
| 1980 | 658,500 | 13,800 | 2.1% | 37% | 63% |
| 1981 | 667,200 | 8,700 | 1.3% | 58% | 42% |
| 1982 | 678,500 | 11,300 | 1.7% | 42% | 58% |
| 1983 | 689,700 | 11,200 | 1.7% | 46% | 54% |
| 1984 | 698,000 | 8,300 | 1.2% | 65% | 35% |
| 1985 | 710,900 | 12,900 | 1.8% | 41% | 59% |
| 1986 | 725,800 | 14,900 | 2.1% | 39% | 61% |
| 1987 | 740,800 | 15,000 | 2.1% | 40% | 60% |
| 1988 | 760,800 | 20,000 | 2.7% | 30% | 70% |
| 1989 | 785,000 | 24,200 | 3.2% | 28% | 72% |
| Average for the 80s: | | 14,030 | 2.0% | 43% | 57% |
| 1990 | 810,300 | 25,300 | 3.2% | 31% | 69% |
| 1991 | 821,500 | 13,900 | 1.4% | 54% | 46% |
| 1992 | 838,700 | 17,200 | 2.1% | 44% | 56% |
| 1993 | 851,400 | 12,700 | 1.5% | 54% | 46% |
| 1994 | 860,200 | 8,800 | 1.0% | 74% | 26% |
| 1995 | 867,300 | 7,100 | 0.8% | 90% | 10% |
| 1996 | 877,900 | 10,600 | 1.2% | 57% | 43% |
| 1997 | 896,200 | 18,300 | 2.1% | 32% | 68% |
| 1998 | 916,900 | 20,700 | 2.3% | 28% | 72% |
| 1999 | 932,000 | 15,100 | 1.6% | 38% | 62% |
| Average for the 90s: | | 14,970 | 1.7% | 50% | 50% |
| Average 1970s-1990s: | | 12,933 | 1.8% | 48% | 52% |

Source: California Department Of Finance

Table 3

SELECTED COUNTY AND CONTRA COSTA COUNTY POPULATION ESTIMATES

| City | 1998 | 1999 | Projected 2010 | Projected % Change 1999-2010 | % of Contra Costa Total Population /1 |
|----------------------|-------------------|-------------------|-------------------|------------------------------------|---|
| Antioch | 79,800 | 81,500 | 106,000 | 30.1% | 8.9% |
| Brentwood | 17,100 | 20,050 | 42,100 | 110.0% | 2.2% |
| Clayton | 10,650 | 11,100 | 12,600 | 13.5% | 1.2% |
| Concord | 114,200 | 114,500 | 122,900 | 7.3% | 12.5% |
| Danville | 39,450 | 39,900 | 45,000 | 12.8% | 4.4% |
| El Cerrito | 23,750 | 23,800 | 31,100 | 30.7% | 2.6% |
| Hercules | 19,200 | 19,250 | 24,100 | 25.2% | 2.1% |
| Lafayette | 24,150 | 24,250 | 27,400 | 13.0% | 2.6% |
| Martinez | 36,350 | 36,600 | 46,200 | 26.2% | 4.0% |
| Moraga | 16,650 | 16,750 | 17,100 | 2.1% | 1.8% |
| Orinda | 17,300 | 17,350 | 18,100 | 4.3% | 1.9% |
| Pinole | 18,550 | 18,600 | 28,700 | 54.3% | 2.0% |
| Pittsburg | 52,500 | 53,000 | 85,000 | 60.4% | 5.8% |
| Pleasant Hill | 32,750 | 32,900 | 38,400 | 16.7% | 3.6% |
| Richmond | 93,400 | 93,800 | 116,600 | 24.3% | 10.2% |
| San Pablo | 26,600 | 26,750 | 30,700 | 14.8% | 2.9% |
| San Ramon | 43,800 | 44,700 | 46,600 | 4.3% | 4.9% |
| Walnut Creek | 63,600 | 63,900 | 87,200 | 36.5% | 7.0% |
| Unincorporated | 176,800 | 177,700 | 123,800 | -30.3% | 19.4% |
| CONTRA COSTA | 906,500 | 916,400 | 1,049,600 | 14.5% | 100.0% |
| ALAMEDA | 1,413,400 | 1,433,300 | 1,654,485 | 15.4% | |
| MARIN | 244,100 | 247,900 | 258,569 | 4.3% | |
| SAN FRANCISCO | 783,400 | 790,500 | 782,469 | -1.0% | |
| SAN MATEO | 716,500 | 722,800 | 815,532 | 12.8% | |
| SANTA CLARA | 1,686,400 | 1,715,400 | 2,021,417 | 17.8% | |
| CALIFORNIA | 33,226,000 | 33,773,000 | 39,957,616 | 18.3% | |

1/ Population as of 1999

Source: California Department Of Finance

Table 4
CONTRA COSTA COUNTY HOME PRICES, 2000

| City | Zip Code | Approximate | |
|----------------------------------|----------|--------------|--------------|
| | | Median Price | 1-year |
| | | 2000 /1 | % Change |
| Alamo | 94507 | \$757,500 | 24.2% |
| Antioch | 94509 | \$206,250 | 17.5% |
| Brentwood | 94513 | \$270,500 | 3.4% |
| Byron | 94514 | \$370,000 | 41.8% |
| Clayton | 94517 | \$419,000 | 16.4% |
| Concord | 94518 | \$263,000 | 5.4% |
| Concord | 94519 | \$213,000 | 20.9% |
| Concord | 94520 | \$153,000 | 9.3% |
| Concord | 94521 | \$228,000 | 14.7% |
| Danville | 94506 | \$650,000 | 10.1% |
| Danville | 94526 | \$478,500 | 15.6% |
| El Cerrito | 94530 | \$316,250 | 15.4% |
| El Sobrante | 94803 | \$237,000 | 43.6% |
| Hercules | 94547 | \$176,500 | -1.7% |
| Lafayette | 94549 | \$586,500 | 12.6% |
| Martinez | 94553 | \$259,000 | 38.9% |
| Moraga | 94556 | \$521,000 | 27.1% |
| Oakley | 94561 | \$185,000 | 13.0% |
| Orinda | 94563 | \$700,000 | 44.3% |
| Pinole | 94564 | \$220,500 | 20.5% |
| Pittsburg | 94565 | \$175,000 | 26.8% |
| Pleasant Hill | 94523 | \$329,250 | 34.4% |
| Richmond | 94801 | \$140,000 | 27.3% |
| Richmond | 94804 | \$144,000 | -3.5% |
| Richmond | 94805 | \$170,000 | 6.3% |
| Rodeo | 94572 | \$219,000 | 39.0% |
| San Pablo | 94806 | \$150,000 | 30.4% |
| San Ramon | 94583 | \$415,000 | 15.1% |
| Walnut Creek | 94595 | \$350,000 | 3.3% |
| Walnut Creek | 94596 | \$280,000 | -5.1% |
| Walnut Creek | 94598 | \$425,000 | 20.7% |
| AVERAGE 1-year change /2: | | | 19.0% |

1/ Median prices include all attached and detached homes, both new and resale

2/ Averages are not weighted averages and therefore do not represent averages for Contra Costa as a whole

Source: Acxiom/DataQuick

Table 5
CONTRA COSTA COUNTY AND CALIFORNIA EMPLOYMENT, 1985-2000

| Year | Contra Costa County | | | State Of California | | | | |
|----------|---------------------|--------------|-------------|---------------------|-----------------|----------------|-------------|-------------|
| | Employment | Increase | % Increase | Unemp. Rate | Employment | Increase | % Increase | Unemp. Rate |
| 1985 | 343,500 | - | - | 5.9% | 12,047,800 | - | - | 7.2% |
| 1986 | 356,100 | 12,600 | 3.7% | 5.5% | 12,442,500 | 394,700 | 3.3% | 6.7% |
| 1987 | 370,100 | 14,000 | 3.9% | 4.9% | 12,946,500 | 504,000 | 4.1% | 5.8% |
| 1988 | 392,300 | 22,200 | 6.0% | 4.5% | 13,383,800 | 437,300 | 3.4% | 5.3% |
| 1989 | 404,400 | 12,100 | 3.1% | 4.2% | 13,780,000 | 396,200 | 3.0% | 5.1% |
| 1990 | 421,600 | 17,200 | 4.3% | 4.0% | 14,319,200 | 539,200 | 3.9% | 5.8% |
| 1991 | 413,000 | -8,600 | -2.0% | 5.4% | 14,004,200 | -315,000 | -2.2% | 7.7% |
| 1992 | 445,600 | 32,600 | 7.9% | 6.5% | 13,973,300 | -30,900 | -0.2% | 9.3% |
| 1993 | 419,400 | -26,200 | -5.9% | 6.5% | 13,918,300 | -55,000 | -0.4% | 9.4% |
| 1994 | 426,000 | 6,600 | 1.6% | 6.2% | 14,122,100 | 203,800 | 1.5% | 8.6% |
| 1995 | 429,900 | 3,900 | 0.9% | 5.7% | 14,202,800 | 80,700 | 0.6% | 7.8% |
| 1996 | 437,000 | 7,100 | 1.7% | 4.9% | 14,391,500 | 188,700 | 1.3% | 7.2% |
| 1997 | 453,200 | 16,200 | 3.7% | 4.1% | 14,942,500 | 551,000 | 3.8% | 6.3% |
| 1998 | 461,600 | 8,400 | 1.9% | 3.6% | 15,355,600 | 413,100 | 2.8% | 5.9% |
| 1999 | 474,500 | 12,900 | 2.8% | 3.0% | 15,721,700 | 366,100 | 2.4% | 5.2% |
| Mar 2000 | 480,000 | 5,500 | 1.2% | 2.7% | 15,913,900 | 192,200 | 1.2% | 5.0% |
| | Average: | 9,100 | 2.3% | 4.9% | Average: | 257,740 | 1.9% | 6.8% |

Source: California Department of Finance

**Table 6
CONTRA COSTA COUNTY EMPLOYMENT BY
SELECTED CITY AND CENSUS DESIGNATED PLACE
March 2000**

| Area Name | Labor Force Employment | | Unemployment | | % Of County's Total Employment |
|-----------------------------|------------------------|-------------------|----------------|-------------|-----------------------------------|
| | | | Number | Rate | |
| Alamo (CDP) | 7,340 | 7,250 | 90 | 1.3% | 1.5% |
| Antioch | 36,320 | 34,990 | 1,330 | 3.7% | 7.3% |
| Concord | 73,090 | 71,250 | 1,840 | 2.5% | 14.8% |
| Danville | 20,620 | 20,350 | 270 | 1.3% | 4.2% |
| El Cerrito | 14,050 | 13,770 | 280 | 2.0% | 2.9% |
| El Sobrante (CDP) | 5,880 | 5,660 | 220 | 3.7% | 1.2% |
| Hercules | 11,320 | 11,050 | 270 | 2.4% | 2.3% |
| Lafayette | 14,960 | 14,780 | 180 | 1.2% | 3.1% |
| Martinez | 21,050 | 20,580 | 470 | 2.2% | 4.3% |
| Moraga Town | 9,680 | 9,590 | 90 | 0.9% | 2.0% |
| Oakley (CDP) | 10,380 | 10,090 | 290 | 2.8% | 2.1% |
| Orinda | 9,830 | 9,670 | 160 | 1.6% | 2.0% |
| Pinole | 11,130 | 10,860 | 270 | 2.4% | 2.3% |
| Pittsburg | 26,850 | 25,810 | 1,040 | 3.9% | 5.4% |
| Pleasant Hill | 21,780 | 21,400 | 380 | 1.7% | 4.5% |
| Richmond | 48,410 | 45,850 | 2,560 | 5.3% | 9.6% |
| Rodeo (CDP) | 4,260 | 4,140 | 120 | 2.8% | 0.9% |
| San Pablo | 12,650 | 11,930 | 720 | 5.7% | 2.5% |
| San Ramon | 25,250 | 24,870 | 380 | 1.5% | 5.2% |
| Tara Hills (CDP) | 3,130 | 3,030 | 100 | 3.3% | 0.6% |
| Vine Hill (CDP) | 1,890 | 1,840 | 50 | 2.8% | 0.4% |
| Walnut Creek | 37,340 | 36,680 | 660 | 1.8% | 7.6% |
| West Pittsburg | 9,320 | 8,890 | 430 | 4.6% | 1.9% |
| Contra Costa - Total | 493,500 | 480,000 | 13,500 | 2.7% | 100.0% |
| Alameda County | 725,800 | 705,600 | 20,200 | 2.8% | |
| Marin County | 136,400 | 134,300 | 2,100 | 1.5% | |
| San Francisco County | 423,100 | 412,800 | 10,300 | 2.4% | |
| San Mateo County | 400,700 | 394,800 | 5,900 | 1.5% | |
| California Total | 33,773,000 | 33,226,000 | 547,000 | 1.6% | |

Source: State of California, Employment Development Department

**Table 7
CONTRA COSTA COUNTY - DISTRIBUTION OF WAGE AND
SALARY EMPLOYMENT**

| Industry Sector | Total Employment | | Avg. Ann. Growth | Distribution | | |
|-----------------------------------|------------------|----------------|------------------|---------------|---------------|---------------|
| | 1988 | 1993 | | 1988 | 1993 | |
| Total Farm | NA | 1,300 | 1,000 | - | 0.5% | 0.3% |
| Mining | 2,700 | 2,900 | 1,400 | 1.0% | 1.0% | 0.4% |
| Construction | 18,100 | 16,900 | 20,800 | 6.7% | 5.9% | 6.5% |
| Manufacturing | 30,000 | 28,800 | 26,500 | 11.1% | 10.1% | 8.3% |
| Trans - Communication - Utilities | 17,800 | 18,800 | 20,100 | 6.6% | 6.6% | 6.3% |
| Trade | 67,800 | 66,600 | 70,800 | 25.2% | 23.4% | 22.2% |
| Finance - Ins - Real Estate | 25,500 | 29,000 | 28,200 | 9.5% | 10.2% | 8.8% |
| Services | 66,600 | 76,400 | 105,200 | 24.7% | 26.8% | 32.9% |
| Total Government | 40,900 | 44,000 | 45,500 | 15.2% | 15.5% | 14.2% |
| Total - All Industries | 269,400 | 284,700 | 319,500 | 100.0% | 100.0% | 100.0% |

Note: These numbers are based on employees who work in Contra Costa County, residents who work outside Contra Costa County will not be counted, whereas nonresidents who work in Contra Costa will be counted.

Source: State of California, Employment Development Department

Section IV

ECONOMIC IMPACT METHODOLOGY

This section presents the methodology used by ERA to estimate the economic impact of the Contra Costa County Airports on Contra Costa County. Many questions regarding what is considered an economic benefit to Contra Costa County and its residents, and what is not, are answered by this section before the quantitative analysis is presented in Section V.

THE ECONOMIC CONCEPT OF THE MULTIPLIER

In the field of regional economic analysis, industries and employment within them may be separated conceptually into two types: those that form the base to the local economy, and those that serve the residents who live in the local area. Industries which are part of the base of the economy have the power to create wealth by drawing new money into the area, while industries serving residents merely circulate money which is already in the local economy.

An airport functions as part of the base of the local economy in two ways. First, the airport, airport tenants, and airport businesses employ Contra Costa residents, pay salaries and benefits, and purchase supplies in the local economy. Second, it also functions as a business in the tourism industry (a basic industry) because it draws visitors, such as flight training students and pilots into the area who spend money in the local economy. The initial spending by all of these groups, as it is recirculated, has a multiplied effect on expanding the local economy.

An example of the first case is a fixed-based operator (FBO) at Buchanan Field that spends \$10,000 at Contra Costa businesses on supplies. An example of the "tourism" impact is a flight training student who comes to Buchanan Field twice a week for flight lessons and spends \$100 a month eating in Concord or Pacheco restaurants.

This \$10,000 spent by the FBO, or the \$100 spent by the flight student, has a "direct impact" on the Contra Costa County economy in that it is new money in the County which would not have been there without the airport; it supports jobs in businesses and restaurants and generates local tax revenue. But the impact of this new

money does not stop with the direct effect. There is an “indirect effect” as the suppliers to the businesses and restaurants also experience increased revenues, add staff to provide goods and services, and pay additional taxes. Furthermore, “induced effects” result from employees in these businesses who, feeling the direct and indirect expansion caused by new money flowing into Contra Costa County, have more money in their pockets as a consequence and spend their pay checks on the full variety of goods and services necessary to support their lifestyles.

Taken together, the indirect and induced economic expansion is referred to as the “multiplier effect” over and above the direct impact. Input-output models are used to estimate the interrelationships between the various sectors in the local economy, and to provide “multipliers” which estimate the indirect and induced effects created from direct impacts. For example, if the multiplier for food sold in Contra Costa County is 1.5, then approximately \$50 of indirect and induced economic activity will be generated by the original \$100 spent by the flight training student at local restaurants, for a total economic impact on Contra Costa County of \$150.

ASSUMPTIONS

One of the most fundamental criteria for determining what is of true economic benefit, and what is not, is the geographic area selected for the analysis. ERA’s analysis is based on Contra Costa County. It does not include any other portions of other Bay Area counties which also contribute to the local economy. As will be seen in the sections that follow, a significant portion of the spending by airport-related businesses and airport visitors occurs in Contra Costa County.

A second element in the framework for analysis is the time period being analyzed. Economic impact estimates are generally expressed in annual terms. In this case, calendar year 1999 was selected by ERA as the baseline year for analysis. In some cases, data from Fiscal Year 1998-99 was used due to data collection constraints.

Additionally, ERA has analyzed two future scenarios for growth in the future, based upon the Shutt Moen Associates Contra Costa County Airport Land Use Compatibility Plan: Major Issues document. This document presents two potential scenarios for Byron’s future growth, and three potential scenarios for Buchanan’s growth. In this report, ERA analyzes two potential future scenarios that reflect growth at both

airports, with and without commercial passenger airline service. These scenarios are described in more detail in Section VI during the discussion of future impacts.

The third element in the analytical framework addresses the question, "What is the alternative to the presence of the airports?" The alternative scenario analyzed in this report projects a situation where there are no airports in Contra Costa County and the land that they occupy is vacant. For example, if the Contra Costa County Airports did not exist, pilots with aircraft based at Buchanan Field or Byron Airports would most likely move their aircraft to another local airport. The aviation-related businesses would cease to exist in Contra Costa County, and given the proximity of general aviation airports in Alameda and Napa Counties, it is likely that both of these counties would be the recipient of the airport-related impact.

Another related question is "What is not included in the economic impact?" There are several non-aviation related businesses on airport property, such as Sam's Club and Sportmart. There are other businesses that clearly provide services to airport visitors, such as the Sheraton, car rental agencies, and golf course. Under the alternative scenario, these non-aviation related uses would not exist on the airport property, especially given that the land would revert back to the federal government under FAA guidelines. However, it is likely that the expenditures associated with these non-aviation businesses would still continue to exist within the County, but would move to another location. For example, if the Sam's Club closed, the retail spending of Contra Costa residents at the Sam's Club would most likely shift to another similar retail outlet within the County. For this reason, only airport visitor related expenditures at non-aviation related businesses are included as part of the direct economic impact. Thus, the economic impact and jobs generated at all rental car agencies, retail stores, golf course, and hotels within the County are included through visitor expenditures.

Finally, all projections and estimates in this report are expressed in year 2000 constant dollars unless otherwise noted. Using constant dollars allows direct comparison between the base year and future years, making it possible to identify the economic impact of the airports' presence over time.

ANALYTICAL FRAMEWORK

The analytical framework created by the elements discussed in the above section is presented graphically in Figure IV-1. The goal of this framework is to be

comprehensive in accounting for every quantifiable mechanism through which Contra Costa County benefits economically due to the presence of the two airports. The analysis begins (at the left of the diagram) with the elements which comprise the airport and through which dollars flow. As shown, ERA has divided these elements into three categories: airport administration, airport businesses, and visitors (including students, pilots, passengers, and other miscellaneous visitors) to the airport. Expenditures from businesses, individuals, and other entities in these categories have a direct impact on Contra Costa County.

Not all of the direct economic spending, however, can be thought of as truly adding value to the Contra Costa County economy. Some of the expenditures leak outside to other counties. For example, a portion of an FBO's expenditures on supplies and services might be made outside Contra Costa County, perhaps in a neighboring county. Another possibility is that expenditures are made at other airport businesses, and thus are not included in order to avoid double counting. For example, a flight school may pay another airport tenant to have repairs performed on an airplane. This revenue, in turn, is spent by the airport repair firm for salaries, supplies and services, and proprietor's income. For this reason, expenditures paid to other airport businesses are excluded in order to avoid double counting.

The remaining spending either flows into Contra Costa County businesses or households and directly adds value to the local economy. The goal of this study is to first identify the airport-related expenditures that would not exist if there were no airports in Contra Costa County, then to isolate the portion of these expenditures that is solely spent in Contra Costa County, and to avoid double-counting. In technical terms, this direct value is an increase in "change in final demand" for goods and services produced in Contra Costa County. It is the items in the next to last column in Figure IV-1 which generate further multiplier effects for the Contra Costa County economy.

THE INPUT-OUTPUT MODEL

The analytical tool used to estimate the macroeconomic impact of Contra Costa County Airport on Contra Costa County is the Regional Input-Output Modeling System, otherwise known as RIMS II. The RIMS II model was prepared by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA). It is based on an accounting

framework called the input-output (I-O) model. The model shows industrial interrelationships between sectors of the economy and reveals how various parts relate to the whole. RIMS II is a standard tool used throughout the economic analysis industry and throughout the United States. After being calibrated to capture the unique characteristics of the Contra Costa County economy, it was used to provide the economic multipliers in this report. A “multiplier” in the RIMS II model represents the factor by which an initial change in output in an economic sector is multiplied to arrive at the total change in various economic measures, such as jobs and earnings.

The entities in a typical RIMS II model derive mainly from two data sources: BEA’s 1992 national I-O table and BEA’s four-digit Standard Industrial Classification (SIC) 1997 county wage-and-salary data. The latter is used to adjust the national I-O table to derive a region’s industrial structure and trading patterns. For this impact study, ERA commissioned the BEA to prepare industry multipliers specific to Contra Costa County.

Table IV-1 summarizes the multipliers derived from RIMS II. A brief description of the multipliers and what measures of economic impact they produce is useful at this point:

Output Multipliers

Output multipliers reflect the change in total regional economic output of a given change in final demand in a given sector. “Final demand” changes refer to purchases of goods and services, typically by businesses and consumers outside the region, by investors, and by government.

Output multipliers measure the extent to which specific industries are integrated with the rest of the regional economy; the higher the output multiplier of a given sector, the more integrated it is within the regional economy. According to RIMS II, the sectors which are most integrated within the Contra Costa County economy are Electric, Gas, and Sanitary Services (2.3912), Insurance (2.2244), and Hotels and Lodging Places, Amusement and Recreation Services, and Motion Pictures (1.9315).

Earnings Multipliers

Earnings multipliers measure the total earnings generated by a dollar change in final demand. According to RIMS II, Contra Costa County’s highest income generators

per dollar change in final demand are Health Services (.5400), Farm Products and Agricultural, Forestry, and Fishing Services (.5261), Personal and Repair Services, excluding auto (.4898) and Hotels and Lodging Places Amusement and Recreation Services, and Motion Pictures (.4824).

Employment Multipliers

The employment multiplier measures the total number of jobs created by a million dollar change in a given sector. In this sense, it assesses the distributive role of a given sector; the more jobs created, the more people take part in the benefits of growth or economic development efforts.¹ Because this multiplier is based upon the relationship of 1997 dollars to jobs, when using this multiplier, it is necessary to convert all dollar amounts in 1997 dollars before calculating the corresponding number of jobs. The Contra Costa County industries which generate the highest number of jobs per million dollar change in final demand or output are Personal and Repair Services, excluding auto (27.7), Farm Products and Agricultural, Forestry, and Fishing Services (26.4) and Eating and Drinking Places (23.5).

Earnings and Employment Ratios

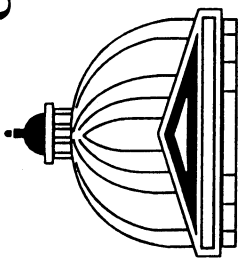
Table IV-2 presents earnings and employment ratios derived from RIMS II. These ratios allow the analyst to estimate total impact, including jobs, earnings, and output, based on either the direct jobs or direct earnings attributable to a specific project. For instance, for every job created in the Real Estate Sector (Sector 31), an additional 2.6073 jobs, on the average, are created in Contra Costa County (2.0624 plus the initial job in the Real Estate Sector adds up to a multiplier of 3.0624). Using the total number of jobs and the employment multipliers in Table IV-1, an analyst can estimate the remaining measures of impact.

The sector used for the majority of Contra Costa County airport jobs is one described in the more detailed 38-by-471 multiplier table and is Sector 65.0500, Air Transportation. The earnings multiplier for this sector is 2.1759, and the employment

¹ In using the employment multipliers, it is necessary to make a technical adjustment to the change in final demand from year 2000 dollars to 1997 dollars because the employment multipliers are based on the relationship of 1997 dollars to jobs. However, the output, or number of jobs created, still applies to the year 2000.

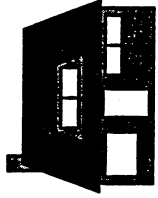
multiplier is 2.5758. Thus, for every \$100 change in earnings of households employed by airport businesses, there is an additional \$217.59 in earnings created in Contra Costa County. Similarly, for every 100 jobs created at the airports, an additional 258 jobs, on average, are created in Contra Costa County.

CONTRA COSTA COUNTY AIRPORTS ECONOMIC IMPACT MODEL



**Contra Costa County
Airport Administration**

- Wages and Benefits
- Supplies and Services
- Subcontractors, etc.

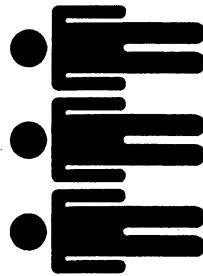


**Contra Costa County
Households**

- Wages and Benefits
- Supplies & Services
- Construction Expenditures
- Subcontractors, etc.

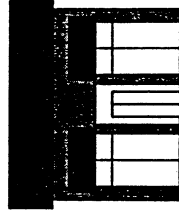


Airport Businesses



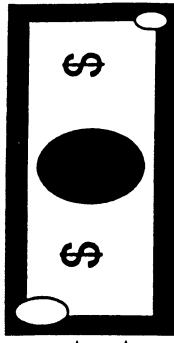
Airport Visitors and Users

- Students
- Pilots
- Passengers and crew
- Other business visitors



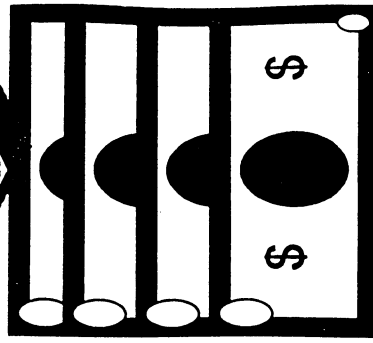
**Contra Costa County
Businesses**

- Property Taxes on Aircraft
- Lodging
- Food
- Recreation/Entertainment
- Retail Spending



**Direct
Impact**

M U L T I P L I E R



Total Impact

- Direct
- Indirect
- Induced

Table IV-1

CONTRA COSTA COUNTY OUTPUT, EARNINGS, & EMPLOYMENT FINAL DEMAND MULTIPLIERS

| Sector Number | Sector Name | Output ¹ (dollars) | Earnings ² (dollars) | Employment ³ (jobs) |
|------------------|--|----------------------------------|------------------------------------|-----------------------------------|
| 1 | Farm Products and agricultural, forestry, and fishing services | 1.7898 | 0.5261 | 26.4 |
| 2 | Forestry and fishing products | 1.5677 | 0.2539 | 8.2 |
| 3 | Coal Mining | 1.0000 | 0.0000 | 0.0 |
| 4 | Oil and gas extraction | 1.7826 | 0.2067 | 5.2 |
| 5 | Metal mining and nonmetallic minerals, except fuels | 1.6122 | 0.3142 | 7.7 |
| 6 | Construction | 1.7756 | 0.3971 | 12.9 |
| 7 | Food and kindred products and tobacco products | 1.5628 | 0.1592 | 5.2 |
| 8 | Textile mill products | 1.4724 | 0.2296 | 8.6 |
| 9 | Apparel and other textile products | 1.4951 | 0.2808 | 12.5 |
| 10 | Paper and allied products | 1.7077 | 0.2851 | 8.0 |
| 11 | Printing and publishing | 1.6205 | 0.3292 | 9.7 |
| 12 | Chemicals and allied products and petroleum and coal products | 1.8753 | 0.1667 | 4.3 |
| 13 | Rubber and miscellaneous plastics products, leather and leather products | 1.5602 | 0.2291 | 7.5 |
| 14 | Lumber and wood products and furniture and fixtures | 1.5283 | 0.2495 | 9.0 |
| 15 | Stone, clay, and glass products | 1.8018 | 0.3393 | 10.0 |
| 16 | Primary metal industries | 1.7477 | 0.3082 | 8.5 |
| 17 | Fabricated metal products | 1.7238 | 0.2786 | 8.2 |
| 18 | Industrial machinery and equipment | 1.4854 | 0.2334 | 5.5 |
| 19 | Electronic and other electric equipment | 1.4886 | 0.2520 | 6.1 |
| 20 | Motor vehicles and equipment | 1.5278 | 0.2318 | 6.3 |
| 21 | Other transportation equipment | 1.4895 | 0.2356 | 5.5 |
| 22 | Instruments and related products | 1.5038 | 0.2771 | 6.3 |
| 23 | Miscellaneous manufacturing industries | 1.5003 | 0.2137 | 8.0 |
| 24 | Transportation | 1.7532 | 0.3502 | 11.0 |
| 25 | Communication | 1.6390 | 0.2354 | 5.9 |
| 26 | Electric, gas, and sanitary services | 2.3912 | 0.2480 | 6.0 |
| 27 | Wholesale trade | 1.6145 | 0.3665 | 10.3 |
| 28 | Retail trade | 1.6546 | 0.3862 | 17.8 |
| 29 | Depository and nondepository institutions, security & commodity brokers | 1.6942 | 0.3165 | 8.6 |
| 30 | Insurance | 2.2244 | 0.5181 | 14.7 |
| 31 | Real estate | 1.3651 | 0.1137 | 4.5 |
| 32 | Hotels & lodging places, amusements & rec. services, & motion pictures | 1.9315 | 0.4824 | 18.4 |
| 33 | Personal and repair services (except auto) | 1.8207 | 0.4898 | 27.7 |
| 34 | Business services | 1.7230 | 0.4455 | 13.7 |
| 35 | Eating and drinking places | 1.6835 | 0.3719 | 23.5 |
| 36 | Health services | 1.8310 | 0.5400 | 15.5 |
| 37 | Miscellaneous services | 1.8385 | 0.3992 | 16.8 |
| 38 | Private households | 1.0567 | 0.2194 | 8.2 |

¹ Each entry in this column represents the total dollar change in output that occurs in all row industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

² Each entry in column 2 represents the total dollar change in earnings of household employed by all row industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

³ Each entry in column 3 represents the total change in number of jobs in all row industries for each additional 1 million dollars of output delivered to final demand by the industry corresponding to the entry. Because the employment multipliers are based on 1997 data, the output delivered to final demand should be in the same years dollars.

Source: U.S. Department of Commerce, Bureau of Economic Analysis (BEA).

Table IV-2

CONTRA COSTA COUNTY OUTPUT, EARNINGS, & EMPLOYMENT DIRECT-EFFECT MULTIPLIERS

| <u>Sector Number</u> | <u>Sector Name</u> | <u>Earnings¹ dollars</u> | <u>Employment² (jobs)</u> |
|----------------------|--|---|--|
| 1 | Farm Products and agricultural, forestry, and fishing services | 1.4592 | 1.3196 |
| 2 | Forestry and fishing products | 1.9188 | 2.1996 |
| 3 | Coal Mining | 0.0000 | 0.0000 |
| 4 | Oil and gas extraction | 2.0338 | 2.8580 |
| 5 | Metal mining and nonmetallic minerals, except fuels | 1.5455 | 1.9164 |
| 6 | Construction | 1.6745 | 1.7449 |
| 7 | Food and kindred products and tobacco products | 2.6666 | 2.8195 |
| 8 | Textile mill products | 1.6749 | 1.5675 |
| 9 | Apparel and other textile products | 1.5736 | 1.3830 |
| 10 | Paper and allied products | 1.8129 | 2.1024 |
| 11 | Printing and publishing | 1.5959 | 1.7239 |
| 12 | Chemicals and allied products and petroleum and coal products | 3.7504 | 5.6271 |
| 13 | Rubber and miscellaneous plastics products, leather and leather products | 1.7518 | 1.7610 |
| 14 | Lumber and wood products and furniture and fixtures | 1.7010 | 1.6435 |
| 15 | Stone, clay, and glass products | 1.8027 | 1.9567 |
| 16 | Primary metal industries | 1.8808 | 2.2125 |
| 17 | Fabricated metal products | 1.9280 | 2.0578 |
| 18 | Industrial machinery and equipment | 1.6989 | 2.2942 |
| 19 | Electronic and other electric equipment | 1.6331 | 2.1018 |
| 20 | Motor vehicles and equipment | 1.8280 | 2.2438 |
| 21 | Other transportation equipment | 1.6527 | 2.2897 |
| 22 | Instruments and related products | 1.5763 | 2.1123 |
| 23 | Miscellaneous manufacturing industries | 1.8860 | 1.7221 |
| 24 | Transportation | 1.7265 | 1.8166 |
| 25 | Communication | 2.1038 | 3.0068 |
| 26 | Electric, gas, and sanitary services | 4.2404 | 8.8303 |
| 27 | Wholesale trade | 1.5150 | 1.7080 |
| 28 | Retail trade | 1.4816 | 1.3310 |
| 29 | Depository and nondepository institutions, security & commodity brokers | 1.8148 | 2.1543 |
| 30 | Insurance | 2.0539 | 2.2983 |
| 31 | Real estate | 2.6073 | 2.1317 |
| 32 | Hotels & lodging places, amusements & rec. services, & motion pictures | 1.6819 | 1.6227 |
| 33 | Personal and repair services (except auto) | 1.5151 | 1.2915 |
| 34 | Business services | 1.5223 | 1.6199 |
| 35 | Eating and drinking places | 1.5373 | 1.2449 |
| 36 | Health services | 1.4396 | 1.5866 |
| 37 | Miscellaneous services | 1.6814 | 1.5014 |
| 38 | Private households | | |

¹ Each entry in this column measures the total dollar change in earnings of households employed by all row industries that results from a \$1 change in earnings paid directly to households employed by the industry corresponding to the entry.

² Each entry in this column measures the total change in number of jobs in all row industries that results from a change of one job in the industry corresponding to the entry.

Source: U.S. Department of Commerce, Bureau of Economic Analysis (BEA).

Section V

ECONOMIC AND EMPLOYMENT IMPACTS: BASE CASE 1999

This section quantifies the direct economic impact of the Contra Costa County airports on Contra Costa County for calendar year 1999¹ and, using RIMS II multipliers, estimates the total direct, indirect, and induced economic and employment impacts during this base case year. Additionally, a breakdown of the total economic impact by airport is estimated at the end of the section.

The direct economic impact of the Contra Costa County airports can be separated into the following categories:

- Operating expenditures by airport businesses;
- Operating expenditures by the Contra Costa County Airport Enterprise Fund for airport operations;
- Visitor expenditures (including those derived from itinerant operations, business visitors, and students);
- Property taxes, both secured and unsecured (aircraft); and
- Expenditures by the County Airport Enterprise Fund and airport businesses on construction and capital improvements.

ERA has conducted a survey of airport businesses at both Buchanan Field and Byron Airports. As part of this survey, ERA requested detailed information related to operating revenue and expenditures for aviation and non-aviation related businesses located on airport property. Nearly 85 percent of approximately 40 airport businesses completed and returned surveys. Furthermore, ERA gathered even more detailed information and clarified written responses through phone and in-person interviews with a portion of these businesses. Appendix A includes a list of all airport businesses that were sent a survey, and Appendix B contains a sample survey. For businesses that did not return surveys or phone calls, ERA relied upon rent payment, business models

¹ In some cases, FY1998-99 was used due to the format of available data.

developed through the airport business survey, and other general economic and business factors to estimate relative business size and type.

OPERATING EXPENDITURES BY AIRPORT BUSINESSES

Operating expenditures by airport businesses are a major component of the total direct economic impact of Buchanan Field and Byron Airports on Contra Costa County. Businesses spend large amounts of money annually on wages and salaries, services and supplies, subcontractors, and other items. As shown in Table V-1, ERA estimates that airport-related businesses located at Contra Costa County airports spent approximately \$29.4 million in 1999. There are a few general principles upon which ERA based its calculation of total business expenditures:

- The \$29.4 million in eligible expenditures does not include expenditures of non-aviation related businesses. As described in more detail in Section IV, only expenditures which would not have existed were it not for the presence of the airport function, rather than airport property, were included. For example, expenditures by an aircraft maintenance business would be considered part of the impact because this business would have to move to another County to provide services if there were not airports in Contra Costa County. However, expenditures by Sam's Club were not included because if the airport did not exist, there are two likely scenarios. First, the Sam's Club would find another site within the County, or second, if there was not another available site, Contra Costa County resident retail spending would transfer to another big box retail outlet.
- However, a portion of spending at non-aviation related businesses is reflected in the visitor spending category through estimates of visitor expenditures on transportation, retail, personal services, etc. This was included because without the function of the airport, the County would most likely lose these out-of-town dollars.

Of this \$29.4 million spent by eligible airport businesses in 1999, approximately 50.5 percent, or \$14.8 of this amount remained within Contra Costa County and contributed to the direct economic impact of the airports on the County. In order to determine this percentage, ERA used a number of assumptions:

- Expenditures made by airport businesses at other airport businesses were not included, as these represent transfers rather than a change in final demand.
- Similarly, payments made by airport businesses that went directly into the Contra Costa County Airport Enterprise Fund were not included in the estimate of business spending, as these are included in category of County expenditures on airport operations.
- Property taxes, including both secured and unsecured, were counted separately and are discussed later in this section.
- Depreciation and amortization were not included. Amortization is reflected in expenditures on construction and capital improvements. Depreciation was not included for a few reasons: 1) Not all aircraft purchases are made within the County; and 2) For aircraft purchases by an airport business from an individual in Contra Costa County, this individual would most likely have realized the income from the sale of the aircraft even if airport did not exist. It is likely that this aircraft owner would have simply sold the aircraft to a business or pilot outside of the County. In both cases, the County would have realized the impact of this sale, with or without the presence of the airport.

Airport Business Expenditures by Category

A breakdown of airport business operating expenditures by category is also presented in Table V-1. As shown, wages and salaries comprise the largest portion of this category, accounting for slightly over 63 percent. Expenditures on services and supplies accounted for 20 percent, spending on subcontractors comprised approximately 7 percent of the direct economic impact, and benefits, cost of goods and fuel, insurance, and other miscellaneous items accounted for the remaining 10 percent.

As discussed previously, ERA used detailed information for each airport businesses to determine expenditures in each category, and due to the proprietary nature of the information, it was necessary to group all spending into several major categories. While specific assumptions regarding how much of each businesses' expenditures are confidential, there are some guidelines that ERA used within each category:

- Within the wages and salaries category, ERA assumed that between 85 and 90 percent of income to employees that lived in Contra Costa County and 15 percent of income to employees that live outside of the County remain within

Contra Costa County. This category also includes profit, which was treated by ERA as owner's income. Using these assumptions and survey data regarding percentage of employees within the County, ERA determined that approximately 71 percent, or \$9.4 million of all expenditures on wages and salaries remained within Contra Costa County in 1999.

- Approximately one-third of all airport business expenditures on benefits remain within Contra Costa County. This percentage is based upon extensive surveys conducted as part of other economic impact reports prepared by ERA for a variety of industries that analyzed the percentage of benefits that typically remains within the County of employment. Based upon this assumption, approximately \$451,000 of airport business expenditures on employee benefits remained within the County.
- The portion of subcontractor expenditures that remained within the County was based upon interviews with airport businesses regarding the types and location of subcontractors retained. As shown, 83 percent, or \$996,000 of spending on subcontractors stayed locally within Contra Costa County.
- Approximately 10 percent of spending on insurance stayed within the County. This amount primarily reflects local broker commission and totals slightly less than \$101,000.
- A relatively small portion of airport business expenditures for the cost of goods that are sold remain within the County, since most goods sold are fairly specialized aircraft parts not manufactured within the County. Based upon interviews with airport businesses, ERA estimates that between 10 and 15 percent of goods sold are purchased within Contra Costa County.
- The majority of the cost of retail fuel sold was not included as part of the direct economic impact of the Contra Costa County airports. Although the refined fuel produced in Contra Costa County refineries is used in the fuel ultimately sold at retail by the fixed base operators at the airport, it is important to consider the alternative to the existence of the airports. If the Contra Costa County airports did not exist, pilots would most likely locate their aircraft at other local airports which would provide retail fuel that also used refined fuel from the Contra Costa County refineries. Based upon this alternative scenario, ERA determined that although the refined fuel is

produced in the County, the demand for this product would be at nearly the same level if the airports did not exist, because the same aircraft now based at other airports would continue to create a similar level of demand for retail fuel that would, in turn, still utilize refined fuel produced in Contra Costa County. Refined fuel accounts for approximately 85 percent of the cost of retail fuel. ERA included 10 percent of the total cost of fuel as part of the economic impact – this portion primarily includes local transportation, as well as a small factor to include the loss in demand for refined fuel from pilots who would sell their aircraft if there were no airports in the County.

- Airport business expenditures on supplies and services totaled approximately \$6.0 million in 1999. Based upon the survey and interviews with airport businesses, ERA determined that approximately 49 percent, or nearly \$3.0 million remained within Contra Costa County.
- Finally, there were other miscellaneous expenditures by airport businesses including leased aircraft, other types of fees and taxes, and other types of services. A small portion, 15.6 percent or \$550,000, of these expenditures remained within the County.

AIRPORT OPERATIONS

In addition to the annual operating expenses of airport businesses, Contra Costa County also spends money in the County on airport operations. A breakdown of these expenditures by category is presented in Table V-2. The operating expenditures are part of the Contra Costa County Airport Enterprise Fund, and primary sources of revenue include aircraft storage fees, rent and concessions, and fuel flowages fees. Since ERA excluded these payments as part of airport business expenditures, all County expenditures for airport operations were analyzed.

Expenditures for Contra Costa County Airport Enterprise Fund in 1999 totaled slightly over \$3.3 million. Based upon a line-by-line review of the Enterprise Fund budget, ERA estimated that approximately one-third, or \$1 million or this amount remained within the County during 1999. Estimates of the percentage of spending which remained within the County for specific categories are shown in Table V-2 and based upon information such as the type of expenditure, percentage of employees living within the County, and other similar factors.

VISITOR EXPENDITURES

Visitor expenditures typically comprise the largest portion of direct economic impact for airports, between 40 and 60 percent. ERA divided visitor spending into three categories: primary airport users, business visitors, and student.

Primary Airport Users

In order to measure the direct economic impact of the primary airport users (i.e. pilots and their passengers) at Contra Costa County airports, ERA analyzed data provided by the airport management staff on itinerant, or non-local, operations in order to calculate total visitor days generated by primary airport users. The calculation of the impact of this category of visitors is shown in Table V-3. As indicated, there were 120,271 itinerant operations at Buchanan Field Airport and approximately 29,000 itinerant operations at Byron Airport², for a total of 149,271 itinerant operations during 1999. Of these, 50 percent are assumed to reflect arrivals.

In order to determine what percentage of the arrivals should be included in the calculation of visitor days, ERA relied on information collected as part of the previous economic impact study, since a pilot survey was not part of the scope of this study. It is ERA's opinion that these assumptions are still reasonable. The assumptions are as follows:

- Of the arrivals at the Contra Costa County airports, approximately two-thirds were assumed to be non-local arrivals.
- Of these non-local arrivals, 46 percent were assumed to represent people who would not have visited Contra Costa County if there were no airports.
- The average length of stay for Buchanan Field Airport arrivals was assumed to be 2.21 days, and for Byron Airport was assumed to be 1.5 days.
- Average occupancy of the aircraft was assumed to be 2.55.

Using these assumptions, nearly 120,000 visitor days were generated in Contra Costa county as a result of the airports. Average daily visitor spending for business visitors was based upon information provided by the Contra Costa County Convention

² Since there is not airport traffic control tower at Byron Airport, exact data on number of aircraft and itinerant operations is limited. The estimates provided are from Shutt Moen Associates.

and Visitors Bureau (CVB) and estimated at \$200 for Buchanan Field Airport visitors and \$150 for Byron Airport visitors, for a weighted average of \$193. Total spending from these visitors was calculated to total approximately \$23.1 million, of which, Byron Airport users comprised \$2.5 million.

Finally, ERA included a modest additional amount of visitor spending as part of this category to reflect spending by local arrivals who would have spent money on food or other supplies in another County if there were no airports. An example of this might be a pilot who lives in Contra Costa County and, given the absence of airports in the County, locates his plane in Oakland and buys lunch there instead of in Concord. Assuming that \$15 is lost for each local arriving aircraft, an additional \$356,000 is generated by local residents that would have likely been lost to other Bay Area counties.

Business Visitors

In addition to visitation as a result of primary airport users, the airports also generate visitors due to its function as a business in Contra Costa County. Vendors, contractors, clients, and other miscellaneous visitors come to the County and spend money as a result of the presence of the airports. While there is no "gate" for the airport and therefore no way of measuring exactly how many people visited the airport for business-related reasons, based upon the airport business survey and interviews with airport businesses and management, ERA estimates that there were approximately 5,000 business visitor days generated in 1999 (see Table V-4). With average expenditures of \$30, this group of visitors generated approximately \$150,000 that had a direct economic impact on Contra Costa County.

Student Visitors

Several businesses at the Contra Costa County airports offer various types of training programs (fixed-wing, helicopter, and skydiving) that attract hundreds of students locally, regionally, and even internationally. These students spend money in the local economy that would not be spent if not for the presence of the airports. As shown in Table V-4, for purposes of analysis, ERA divided student visitors into two categories: long-term and short-term stay visitors. Long-term stay student visitors refer primarily to students who move to Contra Costa County for a period of several months solely for the purpose of participating in a flight training program. Short-term stay students refer to those students who live in the region and commute to the Contra Costa County airports

on a regular basis for training. It should be noted that for this category of short-term stay students, the expenditures of local, Contra Costa County residents who take flight training lessons are also included because as it is assumed that they would go elsewhere for lessons if the airports did not exist.

Based upon interviews with airport businesses, ERA estimates that in 1999 there were approximately 200 long-term student visitors and 3,500 short-term visitors. Assuming that the long-term students stayed an average of 240 days out of the year, and that the short-term students visited a weighted average of 14 times per year, in 1999 there were approximately 102,000 visitor days generated as a result of the Contra Costa County airports. Given average daily spending of \$38 for long-term students and \$20 for short-term students, student visitors contributed nearly \$3 million of direct economic impact to Contra Costa County in 1999.

OTHER EXPENDITURES

There are two other major categories of economic impact generated by the Contra Costa County airports in 1999: property taxes and expenditures on construction.

As discussed previously, property taxes were not included as part of the airport business expenditures. Instead, ERA obtained information from the Contra Costa County Assessor's office on property taxes, including both unsecured and secured, related to the airports. According to the Assessor's office, in FY1998-99 there were \$45.9 million of aircraft registered in the County. At a rate of 1.0259%, these aircraft generated \$470,557 in property taxes for the County. These taxes went towards the County General Fund and towards supporting Contra Costa County schools. Additionally, there was \$112,000 of possessory interest and other unsecured taxes generated during this year, which went into a variety of funds in the County, including the General Fund, parks, schools, and water.

Estimates for construction expenditures made by both the County and by airport businesses during 1999. ERA estimates that in 1999, there was approximately \$1,000,000 expended in Contra Costa County on construction and capital improvements for the two airports. These expenditures were made by the Airport Enterprise Fund and by airport businesses at both Byron and Buchanan Field Airports. Of this amount, approximately \$350,000 reflects spending on capital improvements by the Airport Enterprise Fund, another \$300,000 was spent by businesses at Byron Airport for capital projects, and the remaining \$350,000 was spent within the County by businesses based at Buchanan Airport.

SUMMARY OF DIRECT ECONOMIC IMPACT

A summary of the direct economic impact of the Contra Costa County airports during 1999 is provided in **Table V-5**. As shown, in 1999, Contra Costa County airports had a direct economic impact on the County of nearly **\$43.9 million**. Of this amount, visitor expenditures comprised 60 percent, expenditures by airport businesses accounted for 34 percent, County expenditures on airport operations and spending by the County and airport businesses on capital improvements and construction each accounted for approximately 2.3 percent, and property taxes comprised 1.4 percent of the total impact.

TOTAL ECONOMIC IMPACT

The total economic impact includes the direct, indirect, and induced impacts created by the Contra Costa County airports and was calculated using the RIMS II multipliers, as described in Section IV. ERA first sub-divided the six major categories of impacts into industry sectors and then applied the appropriate final demand output multiplier, as shown in **Table V-6**.

In 1999, Contra Costa County airports generated a total output, including direct, indirect, and induced impacts of **\$71.0 million**. Of this, visitor expenditures comprised the largest portion at \$42.4 million. The visitor expenditures percentage of total increased because of higher multipliers in the hotel, entertainment, and restaurant sectors. Airport business expenditures accounted for \$19.5 million. This percentage decreased slightly because of the relatively low multiplier for the household sector (i.e. wages and salaries).

TOTAL EMPLOYMENT IMPACT

The total employment impact, including direct, indirect, and induced jobs created by Contra Costa County airports was determined by sub-dividing the direct economic impact into the same sub-categories used for deriving the total economic impact and applying the RIMS II final demand employment multipliers. As shown in **Table V-7**, Contra Costa County airports generated nearly 664 jobs in Contra Costa County in 1999.

IMPACTS BY AIRPORT

An estimate of the direct and total economic and employment impacts of Contra Costa County airports broken down by airport is shown in **Tables V-8 and V-9**. As shown, Buchanan Field Airport had a direct economic impact of **\$39.2 million** on Contra

Costa County in 1999 and accounted for nearly 90 percent, or \$63.1 million of the total economic impact. Byron Airport generated approximately \$4.6 million of direct economic impact for the County and accounted for slightly over 10 percent, or \$7.8 million of the total economic impact in 1999.

Of the 664 total jobs created by both airports, approximately 589 were generated by Buchanan Field Airport, with the remaining 75 jobs created by Byron Airport.

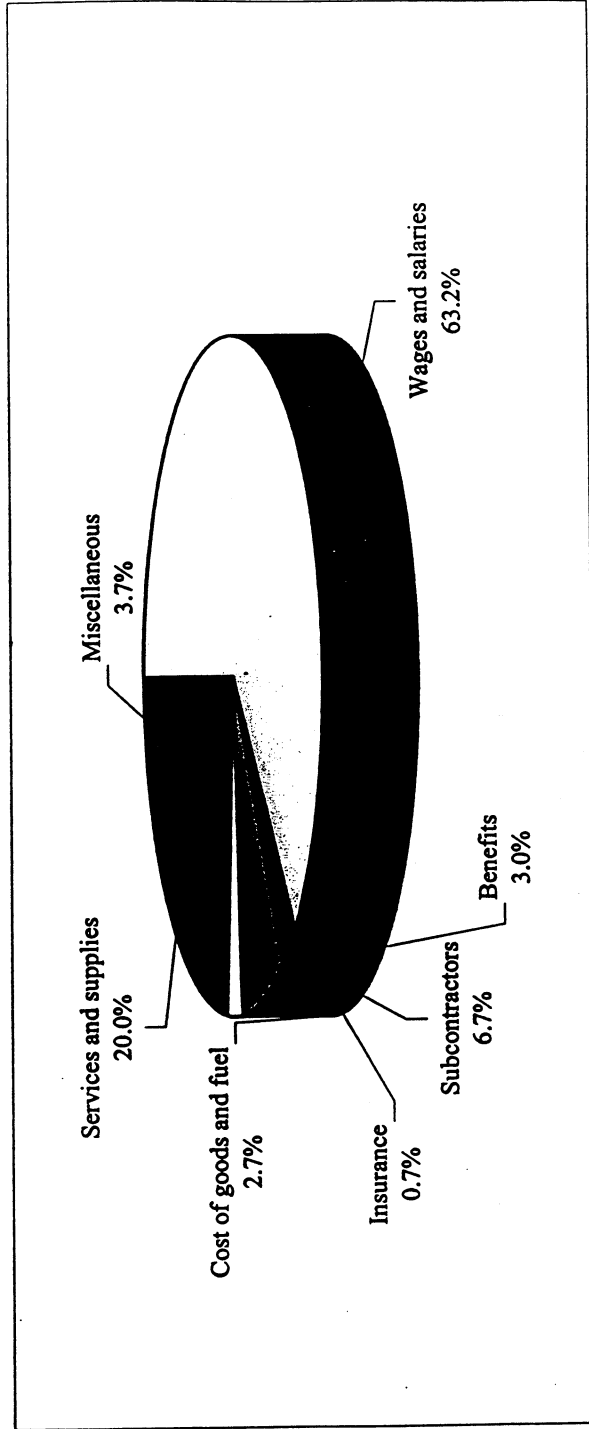
OTHER IMPACTS

Finally, there are several other important impacts that have not been included as part of the quantitative economic impact analysis. If these impacts were quantified, they could significantly increase the total economic and employment impact of the Contra Costa County Airports. All of these impacts are discussed more fully in Section VII of this report.

- There are several important community services that are provided by the airport, including emergency medical services.
- ERA's interviews with the Contra Costa County Convention and Visitors Bureau, the Concord Chamber of Commerce, and airport businesses indicated that the airports play an important economic development role in both attracting businesses to the County and in the ability of County-based businesses to generate revenue for providing services outside of the County. If the airports did not exist, it is possible that businesses would either move out of the County to another location with an airport or would lose significant revenue due to inability to fly easily to other locations throughout California and in the United States and generate business from these areas.
- There are potentially many aviation enthusiasts with aircraft based at Contra Costa County airports who have chosen to live in the County due to either Buchanan Field Airport or Byron Airport. If the airports did not exist, it is possible that some of these individuals would not have located in the County and that all of their productive efforts and expenditures would have gone to another County.
- In addition to an economic impact, the airports also have a fiscal impact on Contra Costa County. Through taxes, rent payments, and other fees, the airports generate revenue for the County's General Fund.

**Table V-1
DIRECT ECONOMIC IMPACT OF AIRPORT BUSINESSES ON CONTRA COSTA COUNTY, 1999**

| Category | 1999 Expenditures | % of Expenditures Included | Direct Economic Impact on Contra Costa County | % of Direct Economic Impact |
|------------------------|---------------------|----------------------------|---|-----------------------------|
| Wages and salaries | \$13,307,500 | 70.5% | \$9,381,000 | 63.2% |
| Benefits | \$1,468,000 | 30.0% | \$451,000 | 3.0% |
| Subcontractors | \$1,202,500 | 82.8% | \$996,000 | 6.7% |
| Insurance | \$948,500 | 10.6% | \$101,000 | 0.7% |
| Cost of goods and fuel | \$2,889,000 | 13.8% | \$400,000 | 2.7% |
| Services and supplies | \$6,016,500 | 49.2% | \$2,963,000 | 20.0% |
| Miscellaneous | \$3,536,000 | 15.6% | \$550,000 | 3.7% |
| GRAND TOTAL | \$29,368,000 | 50.5% | \$14,842,000 | 100.0% |



Source: Airport Business Survey, Economics Research Associates.

**Table V-2
ECONOMIC IMPACT OF AIRPORT OPERATIONS¹ ON CONTRA COSTA COUNTY, 1999**

| Category | 1999 Expenditures ¹ | % of Expenditures Included | Direct Economic Impact on Contra Costa County | % of Direct Economic Impact |
|--|--------------------------------|----------------------------|---|-----------------------------|
| Wages and salaries | \$760,000 | 76.1% | \$578,000 | 56.9% |
| Benefits | \$231,000 | 50.0% | \$116,000 | 11.4% |
| Subcontractors | \$76,000 | 35.0% | \$27,000 | 2.7% |
| Insurance | \$21,000 | 10.0% | \$2,000 | 0.2% |
| Services and supplies | \$266,000 | 85.0% | \$226,000 | 22.2% |
| Miscellaneous | \$333,000 | 20.0% | \$67,000 | 6.6% |
| Depreciation and Amortization ² | \$1,615,000 | 0.0% | \$0 | 0.0% |
| GRAND TOTAL | \$3,302,000 | 30.8% | \$1,016,000 | 100.0% |

¹ Based on Contra Costa County Airport Enterprise Fund for the Fiscal Year Ended June 30, 1999.

² Depreciation and amortization are not included as part of the airport's annual operations, but are instead reflected through the estimate for construction expenditures.

Source: Contra Costa County Airport, Economics Research Associates.

**Table V-3
DIRECT ECONOMIC IMPACT OF PRIMARY USER VISITORS TO CONTRA COSTA COUNTY AIRPORTS, 1999**

| | Buchanan | Byron | Total |
|--|---------------------|--------------------|---------------------|
| Itinerant Operations in 1999 | 120,271 | 29,000 | 149,271 |
| % Arrivals | 50% | 50% | 50% |
| % Non-Local Arrival | 66% | 66% | 66% |
| % who would not visit if no airport | 46% | 46% | 46% |
| Average length of stay (days) | 2.21 | 1.5 | 2.21 |
| Average occupancy | 2.55 | 2.55 | 2.55 |
| Visitor Days | 102,888 | 16,838 | 119,727 |
| Avg. Daily spending | \$200 | \$150 | \$193 |
| Visitor Spending from Non-Local Itinerant Operations | \$20,578,000 | \$2,526,000 | \$23,103,000 |
| Additional Spending from Local Itinerant Operations ¹ | \$307,000 | \$49,000 | \$356,000 |
| TOTAL PRIMARY USER VISITOR SPENDING | \$20,885,000 | \$2,575,000 | \$23,460,000 |

¹ Reflects spending from Contra Costa County residents that would have been lost to other counties.

Source: Contra Costa County Airports, 1990 Contra Cost County Economic Impact Report, Contra Costa County CVB, Economics Research Associates.

**Table V-4
DIRECT ECONOMIC IMPACT OF OTHER VISITORS TO CONTRA COSTA COUNTY AIRPORTS**

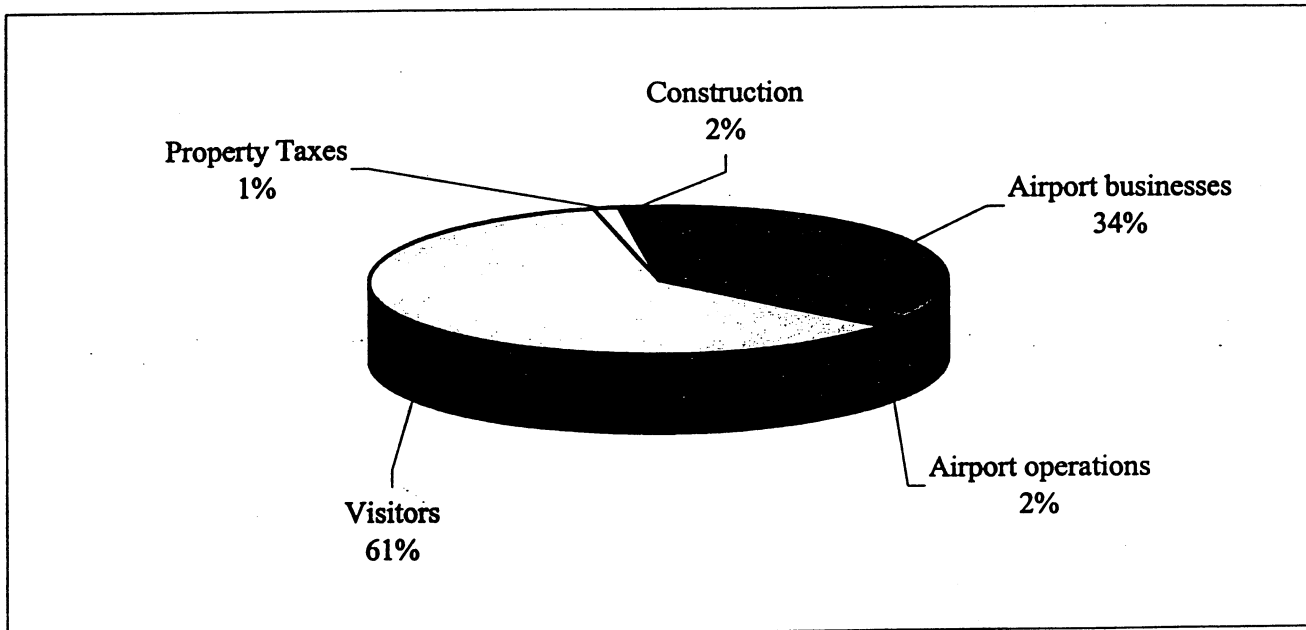
| | Business Visitors | Student Visitors | | Total All Visitors |
|---|-------------------|--------------------|------------------|--------------------|
| | | Long Term | Short Term | |
| Estimated visitors in 1999 ¹ | 5,000 | 200 | 3,500 | 8,700 |
| Average visits per year | 1 | 240 | 14 | n/a |
| Estimated visitor days | 5,000 | 48,000 | 49,000 | 102,000 |
| Average visitor spending per day ¹ | \$30 | \$38 | \$20 | n/a |
| Total estimated visitor spending | \$150,000 | \$1,824,000 | \$980,000 | \$2,954,000 |

¹ Based upon interviews with airport businesses in both airports and with the Contra Costa County CVB.

Source: Contra Costa County Airports Business Survey, Economics Research Associates.

**Table V-5
SUMMARY OF DIRECT ECONOMIC IMPACTS OF CONTRA COSTA
COUNTY AIRPORTS ON CONTRA COSTA COUNTY, 1999**

| Category | Amount | % of Total Direct Impact |
|--|---------------------|---------------------------------|
| Airport businesses | \$14,842,000 | 33.8% |
| Airport operations | \$1,016,000 | 2.3% |
| Visitors | \$26,414,000 | 60.2% |
| Property Taxes | | |
| Aircraft (unsecured) | \$471,000 | 1.1% |
| Secured | \$112,000 | 0.3% |
| Construction | \$1,000,000 | 2.3% |
| TOTAL DIRECT ECONOMIC IMPACT - 1999 | \$43,855,000 | 100.0% |



Source: Economics Research Associates.

Table V-6

TOTAL ECONOMIC IMPACT OF CONTRA COSTA COUNTY AIRPORTS: 1999

| Category | Sector | Change in Final Demand | Final Demand Output Multiplier | Total Output |
|---|--------------------------------------|------------------------|--------------------------------|---------------------|
| Airport Businesses | | | | |
| Wages and Salaries | Private households | \$9,381,000 | 1.0567 | \$9,913,000 |
| Benefits | Health services | \$451,000 | 1.8310 | \$826,000 |
| Subcontractors | Personal and repair services | \$996,000 | 1.8207 | \$1,813,000 |
| Insurance | Insurance | \$101,000 | 2.2244 | \$225,000 |
| Cost of goods and fuel | Wholesale trade, transportation | \$400,000 | 1.7055 | \$682,000 |
| Services and supplies | Wholesale trade, business services | \$2,963,000 | 1.6888 | \$5,004,000 |
| Miscellaneous | Miscellaneous services | \$550,000 | 1.8385 | \$1,011,000 |
| Subtotal Airport Businesses | | \$14,842,000 | 1.3121 | \$19,474,000 |
| Airport Operations | | | | |
| Wages and salaries | Private households | \$578,000 | 1.0567 | \$611,000 |
| Benefits | Health services | \$116,000 | 1.8310 | \$212,000 |
| Subcontractors | Personal and repair services | \$27,000 | 1.8207 | \$49,000 |
| Insurance | Insurance | \$2,000 | 2.2244 | \$4,000 |
| Services and supplies | Retail trade, business services | \$226,000 | 1.6888 | \$382,000 |
| Miscellaneous | Miscellaneous services | \$67,000 | 1.8385 | \$123,000 |
| Subtotal Airport Operations | | \$1,016,000 | 1.3593 | \$1,381,000 |
| Primary User Visitors | | | | |
| Food and beverage | Eating and drinking places | \$8,680,000 | 1.6835 | \$14,613,000 |
| Souvenirs and shopping | Retail trade | \$2,346,000 | 1.6546 | \$3,882,000 |
| Transportation | Transportation | \$2,346,000 | 1.7690 | \$4,150,000 |
| Personal services | Personal and repair services | \$1,173,000 | 1.8207 | \$2,136,000 |
| Lodging and recreation | Hotels and other lodging places, etc | \$8,446,000 | 1.9315 | \$16,313,000 |
| Communication | Communication | \$469,000 | 1.6390 | \$769,000 |
| Subtotal Primary User Visitors | | \$23,460,000 | 1.7844 | \$41,863,000 |
| Student and Business Visitors | | | | |
| Food and beverage | Eating and drinking places | \$886,000 | 1.6835 | \$1,492,000 |
| Supplies, purchases | Retail trade | \$295,000 | 1.6546 | \$488,000 |
| Transportation | Transportation | \$207,000 | 1.7690 | \$366,000 |
| Personal services | Personal and repair services | \$177,000 | 1.8207 | \$322,000 |
| Lodging | Hotels and other lodging places, etc | \$1,034,000 | 1.9315 | \$1,997,000 |
| Recreation | Hotels and other lodging places, etc | \$295,000 | 1.9315 | \$570,000 |
| Utilities/communication | Communication | \$59,000 | 1.6390 | \$97,000 |
| Subtotal Student and Business Visitors | | \$2,953,000 | 1.8056 | \$5,332,000 |
| Property Taxes | Local government | \$583,000 | 1.9822 | \$1,156,000 |
| Construction | Construction | \$1,000,000 | 1.7756 | \$1,776,000 |
| GRAND TOTAL | | \$43,855,000 | 1.6186 | \$70,982,000 |

Source: Bureau of Economic Analysis, Economics Research Associates.

Table V-7

TOTAL EMPLOYMENT IMPACT OF CONTRA COSTA COUNTY AIRPORTS: 1999

| Category | Sector | Change in Final Demand | Final Demand Multiplier ¹ | Total Jobs |
|---|--------------------------------------|------------------------|--------------------------------------|------------|
| Airport Businesses | | | | |
| Wages and Salaries | Private households | \$9,381,000 | 8.2 | 72 |
| Benefits | Health services | \$451,000 | 15.5 | 7 |
| Subcontractors | Personal and repair services | \$996,000 | 27.7 | 26 |
| Insurance | Insurance | \$101,000 | 14.7 | 1 |
| Cost of goods and fuel | Wholesale trade, transportation | \$400,000 | 10.7 | 4 |
| Services and supplies | Wholesale trade, business services | \$2,963,000 | 12.0 | 33 |
| Miscellaneous | Miscellaneous services | \$550,000 | 16.8 | 9 |
| Subtotal Airport Businesses | | \$14,842,000 | | 151 |
| Airport Operations | | | | |
| Wages and salaries | Private households | \$578,000 | 8.2 | 4 |
| Benefits | Health services | \$116,000 | 15.5 | 2 |
| Subcontractors | Personal and repair services | \$27,000 | 27.7 | 1 |
| Insurance | Insurance | \$2,000 | 14.7 | 0 |
| Services and supplies | Retail trade, business services | \$226,000 | 10.7 | 2 |
| Miscellaneous | Miscellaneous services | \$67,000 | 12.0 | 1 |
| Subtotal Airport Operations | | \$1,016,000 | 16.8 | 10 |
| Primary User Visitors | | | | |
| Food and beverage | Eating and drinking places | \$8,680,000 | 23.5 | 190 |
| Souvenirs and shopping | Retail trade | \$2,346,000 | 17.8 | 39 |
| Transportation | Transportation | \$2,346,000 | 11.0 | 24 |
| Personal services | Personal and repair services | \$1,173,000 | 27.7 | 30 |
| Lodging and recreation | Hotels and other lodging places, etc | \$8,446,000 | 18.4 | 145 |
| Communication | Communication | \$469,000 | 5.9 | 3 |
| Subtotal Primary User Visitors | | \$23,460,000 | | 431 |
| Student and Business Visitors | | | | |
| Food and beverage | Eating and drinking places | \$886,000 | 23.5 | 19 |
| Supplies, purchases | Retail trade | \$295,000 | 17.8 | 5 |
| Transportation | Transportation | \$207,000 | 11.0 | 2 |
| Personal services | Personal and repair services | \$177,000 | 27.7 | 5 |
| Lodging | Hotels and other lodging places, etc | \$1,034,000 | 18.4 | 18 |
| Recreation | Hotels and other lodging places, etc | \$295,000 | 18.4 | 5 |
| Utilities/communication | Communication | \$59,000 | 5.9 | 0 |
| Subtotal Student and Business Visitors | | \$2,953,000 | | 54 |
| Property Taxes | Local government | \$583,000 | 9.8 | 5 |
| Construction | Construction | \$1,000,000 | 12.9 | 12 |
| GRAND TOTAL | | \$43,855,000 | | 664 |

¹ Each multiplier measures the total change in number of jobs resulting from a \$1 million change in output. Since the employment multipliers are based on 1997 regional data and 1992 national data, the change in final demand must be calculated using 1997 dollars.

Source: Bureau of Economic Analysis, Economics Research Associates.

**Table V-8
ESTIMATED ECONOMIC IMPACTS OF CONTRA COSTA COUNTY AIRPORTS BY AIRPORT, 1999**

| Category | Buchanan | | Byron | | Total | | Percentage of Total | |
|-----------------------------------|---------------------|---------------------|--------------------|--------------------|---------------------|---------------------|---------------------|--------------|
| | Direct | Total | Direct | Total | Direct | Total | Buchanan | Byron |
| Airport Businesses and Operations | \$15,176,000 | \$19,958,000 | \$682,000 | \$897,000 | \$15,858,000 | \$20,855,000 | 95.7% | 4.3% |
| Primary User Visitors | \$20,885,000 | \$37,268,000 | \$2,575,000 | \$4,595,000 | \$23,460,000 | \$41,863,000 | 89.0% | 11.0% |
| Business and Student Visitors | \$2,005,000 | \$3,619,000 | \$949,000 | \$1,713,000 | \$2,954,000 | \$5,332,000 | 67.9% | 32.1% |
| Property Taxes | \$496,000 | \$983,000 | \$87,000 | \$173,000 | \$583,000 | \$1,156,000 | 85.0% | 15.0% |
| Construction | \$700,000 | \$1,332,000 | \$300,000 | \$444,000 | \$1,000,000 | \$1,776,000 | 75.0% | 25.0% |
| Total | \$39,262,000 | \$63,160,000 | \$4,593,000 | \$7,822,000 | \$43,855,000 | \$70,982,000 | 89.5% | 10.5% |

Source: Economics Research Associates.

**Table V-9
ESTIMATED EMPLOYMENT IMPACTS OF CONTRA COSTA COUNTY AIRPORTS BY AIRPORT, 1999**

| Category | Buchanan | | Byron | | Total | | Percentage of Total | |
|-----------------------------------|---------------------|------------|--------------------|-----------|---------------------|------------|---------------------|--------------|
| | Direct Econ. | Jobs | Direct Econ. | Jobs | Direct Econ. | Jobs | Buchanan | Byron |
| Airport Businesses and Operations | \$15,176,000 | 154 | \$682,000 | 7 | \$15,858,000 | 161 | 95.7% | 4.3% |
| Primary User Visitors | \$20,885,000 | 384 | \$2,575,000 | 47 | \$23,460,000 | 431 | 89.0% | 11.0% |
| Business and Student Visitors | \$2,005,000 | 37 | \$949,000 | 17 | \$2,954,000 | 54 | 67.9% | 32.1% |
| Property Taxes | \$496,000 | 5 | \$87,000 | 0.5 | \$583,000 | 5 | 85.0% | 15.0% |
| Construction | \$700,000 | 9 | \$300,000 | 3 | \$1,000,000 | 12 | 75.0% | 25.0% |
| Total | \$39,262,000 | 589 | \$4,593,000 | 75 | \$43,855,000 | 664 | 89.5% | 10.5% |

Source: Economics Research Associates.

Section VI

FUTURE SCENARIOS

In order to estimate the future potential economic and employment impacts for the Contra Cost County Airports, ERA has analyzed two future scenarios. Both scenarios are based on the scenarios for Buchanan Field and Byron Airports discussed in the "Major Issues" paper as part of the Contra Costa County Airport Land Use Compatibility Plan prepared by Shutt Moen Associates in March 1999. It is important not to think of these scenarios as a specific date in the future or as the only two possibilities for the future, but rather as two separate possible build-out scenarios. Depending upon a variety of factors such as the general state of the national and local economy, growth of aviation, and public policy decisions, these or other scenarios could take place anywhere from 15 to 50 years into the future. The two scenarios basically reflect growth of both airports, with the second including the addition of commercial airline service at Buchanan Field Airport.

THE GROWTH SCENARIO

For the purposes of analysis, ERA has labeled the first case the "growth scenario." This potential scenario reflects growth of general aviation at both airports, as shown in **Table VI-1**. In the case of Buchanan Field Airport, this growth scenario is based on Shutt Moen Associates' forecasts "Future Scenario B." Under this scenario, the total number of based aircraft at the airport reach the capacity indicated on the current Airport Layout Plan (i.e. 850 aircraft), and operations per based airplane drop slightly from the current average. Helicopter training flights in this scenario continue at approximately the present volume, and projected activity for Buchanan Field total 300,000 annual operations.

Assumptions for Byron Airport under the growth scenario were based upon Shutt Moen's "Scenario A," which assumes that the number of based aircraft increases to 380, and the number of operations increases to 61,000.

Based upon these assumptions, ERA estimated that the number of itinerant operations under the growth scenario is likely to total 260,400 for both airports, with itinerant operations at Byron comprising nearly 30 percent or 92,000 operations and Buchanan Field accounting for the remaining 70 percent or 168,400 itinerant operations.

Direct Economic Impact

The direct economic impact that could be expected to be generated by Contra Costa County Airports in the future growth scenario is presented in **Tables VI-2** through **VI-6**. The estimates were developed according to the following set of assumptions:

- Airport business expenditures, shown in **Table VI-2**, were assumed to increase approximately in accordance with the number of based aircraft at the airport, a percentage increase of approximately 80 percent. ERA assumed that as the number of based aircraft and total operations increases at the airports, the services provided by airport businesses will increase somewhat proportionally. Based upon this percentage increase, total expenditures by airport businesses were projected to reach \$52.9 million by the time that build-out reaches the level described as part of the growth scenario. ERA assumed that approximately the same proportion would remain within the County and form part of the direct economic impact on the County. This amount totaled \$26.7 million.
- County expenditures on airport operations were projected to increase at a percentage rate slightly lower than the increase in total operations and number of based aircraft, as shown in **Table VI-3**. Since a large portion of County expenditures are for administrative and management functions, it is reasonable to assume that the administration cost will increase at a slower pace. For purposes of analysis, ERA assumed that County expenditures would only increase 60 percent, for a total of \$1.6 million expended within Contra Costa County annually.
- Visitor expenditures for the growth scenario were calculated using the same methodology used for the 1999 analysis and basically increased with the increase in itinerant operations. As indicated in **Table VI-4**, visitor expenditures for primary airport users are expected to increase to \$37.4 million by full build-out in this scenario.
- Business visitor expenditures were projected to increase at a rate proportional to business expansion, as shown in **Table VI-5**. However, student expenditures were expected to remain relatively constant. Using these assumptions, ERA projected the direct economic impact of these other airport visitors on Contra Costa County under the growth scenario to total approximately \$3.1 million.

- The increase in County revenue from property taxes was expected to increase slightly more than the increase in number of based aircraft. This projection was based on the assumption that the added based aircraft would most likely have higher values than the average value of existing aircraft at both airports. Thus, the property taxes were projected to total approximately \$1.2 million under the growth scenario.
- Construction expenditures were expected to experience an increase similar to general business expansion, from \$1 million annually to \$1.8 million annually. This number reflects average annual expenditures only – the actual amount spent in any given year is likely to be higher or lower than this number.

Based upon these assumptions, ERA developed an estimate for the direct economic impact of Buchanan Field and Byron Airports on Contra Costa County for some point in the future if airport activity were to reach a level similar to the growth scenario. The direct economic impact is estimated at \$71.8 million, of which, visitor expenditures and expenditures by airport businesses account for 57 and 37 percent respectively. (see Table VI-6).

Total Economic Impacts

The total economic impact, including the direct, indirect, and induced impacts created by the Contra Costa County airports for the future growth scenario was calculated using RIMS II multipliers. Similar to the calculation of the direct impact of the airports in 1999, ERA first sub-divided the six major categories of impacts into industry sectors and then applied the appropriate final demand output multiplier, as shown in Table VI-7.

If airport activity were to reach a level consistent with the growth scenario, it is ERA's estimate that Contra Costa County airports could generate a total economic impact of \$115.1 million. Of this, visitor expenditures would be expected to comprise the largest portion at \$66.8 million, and airport business expenditures would be expected to generate approximately slightly over \$35.0 million.

Total Employment Impact

The total employment impact of Contra Costa County airports in this future growth scenario were also calculated using RIMS II multipliers, in this case final demand employment multipliers. Based upon this method, under this scenario Contra Costa

County airports would create approximately 1,065 jobs within the County (see **Table VI-8**).

GROWTH WITH COMMERCIAL AIRLINE SERVICE

The second future scenario basically makes the same assumptions as the first scenario analyzed, but adds 20,000 commercial aviation operations per year at Buchanan Field Airport. This scenario is based on the “Future Scenario C” described in the Shutt Moen report. It is important to note that this does not necessarily reflect the most likely scenario, and certainly does not reflect projected airport activity at a specific point in time, particularly in the short-term. The level of activity under this scenario is instead a description of what could happen in the long term, based upon airport capacity and a number of other factors.

Direct Economic Impact

In order to analyze the impact of this commercial airline service scenario, ERA focused on identifying the additional marginal impact of commercial airline service. This amount, when added to the impact projected for the future growth scenario, represents the complete direct economic impact of this scenario. ERA identified five major areas where commercial airline service would increase airport-related expenditures in Contra Costa County:

- Airline passenger (and crew) visitor expenditures;
- Operating expenditures by the commercial airline(s);
- A marginal increase in other airport business expenditures in order to provide supplies and services to the additional aircraft;
- A significant increase in County Airport Enterprise Fund expenditures on airport operations as a result of additional staffing and daily operations; and
- Additional expenditures on construction and capital improvements.

A summary of the additional economic impact of these expenditures is provided in **Table VI-9**, and specific assumptions are discussed in the sections below.

Passenger Expenditures

One of the most important impacts of commercial airline service would be the expenditures of passengers arriving into Contra Costa County. However, not all of the passenger spending would be part of the direct economic impact, as some of the spending would have occurred whether or not commercial airline service was provided. ERA used the following assumptions for calculating the direct economic impact of passenger expenditures:

- The total operations projected for airline service was 20,000.
- Of these, 50 percent were assumed to be arrivals.
- Of the arrivals, 35 percent were assumed to be non-local arrivals.
- ERA estimated that 25 percent of the non-local arrivals would not have visited the County were it not for commercial airline service.
- The average length of stay was estimated to be 2.5 days.
- The average capacity of the aircraft was estimated to be 70 persons.¹
- Average occupancy was estimated at 60 percent.
- Average daily spending was estimated to be \$200 (year 2000 dollars).

Based upon these assumptions, ERA estimates that in a future scenario where commercial airline activity reaches 20,000 operations per year, approximately 92,000 visitor days would be generated with total spending of \$18.4 million. This number represents the impact of passenger spending as a result of commercial airline service.

Other Expenditures

Additionally, there were a number of other assumptions used by ERA in identifying additional direct economic impacts of commercial airline service:

- Expenditures by the commercial airline businesses in Contra Costa County were assumed to be approximately \$14 million. This is a rough estimate that

¹ It should be noted that this number was used to be consistent with Shutt Moen estimates for a mix of aircraft types, which were based upon the 1989 Airport Master Plan. It is likely that, given changes in the airline industry over the past ten years, this number could be higher, depending on the mix of aircraft types.

was based on feedback from commercial airline businesses that are similar to those that might locate at Buchanan Field Airport.

- Other airport business expenditures and County expenditures on airport operations were also projected to increase in order to support the additional aircraft and operations generated by the commercial airline service. For purposes of this analysis, ERA estimated that these sets of expenditures would increase between 5 and 10 percent over the amount set forth under the growth scenario.
- Expenditures in Contra Costa County on capital improvements and construction for the commercial airline service were estimated at approximately \$500,000 annually. This reflects an average annual amount spent within the County specifically for improvements related to commercial airline service and does not reflect total construction expenditures at the airport.
- Expenditures on property taxes to Contra Costa County would increase due to the additional value of structures located on airport property. ERA estimated that the secured property tax payments made to Contra Costa County would increase by approximately 50 percent.

Based upon all these assumptions, the total additional direct economic impact of commercial airline service on Contra Costa County, given an activity level of 20,000 operations annually, could be expected to total nearly \$35 million.

Summary of Direct Economic Impact

Estimates for the direct economic impact of the Contra Costa County airports in 1999 and given two potential future scenarios (growth and growth with commercial airline service) are summarized in Table VI-10. As shown, the economic impact of the airports given the growth with commercial airline service was determined by adding the impact of the commercial airline service to the projected growth scenario. As shown, the total direct economic impact of the airports on Contra Costa County was estimated to reach \$107 million given this scenario, compared to \$71.8 million for the growth without commercial airline service and \$44.4 million in 1999.

Total Economic and Employment Impacts

Total economic and employment impacts for the future growth with commercial airline service are shown in **Tables VI-11 and VI-12**. As indicated, the total economic impact of the Contra Costa County airports on the County given this future scenario could be expected to total \$170.9 million, and total jobs generated in the County as a result of the airports are estimated at 1,584.

**Table VI-1
FUTURE GROWTH SCENARIO PROJECTIONS FOR BASED AIRCRAFT AND OPERATIONS**

| | Buchanan | Byron | Total |
|--|-----------------|--------------|--------------|
| <u>Based Aircraft</u> | | | |
| Current total based aircraft | 580 | 120 | 700 |
| Future growth scenario based aircraft | 850 | 380 | 1,230 |
| <u>Aircraft Operations</u> | | | |
| Current total operations | 232,939 | 61,000 | 293,939 |
| Current itinerant operations | 120,271 | 29,000 | 149,271 |
| Itinerant operations % of total operations | 51.6% | 47.5% | 50.8% |
| Future total operations | 300,000 | 190,200 | 490,200 |
| Future itinerant operations | 168,400 | 92,000 | 260,400 |
| Itinerant operations % growth | 40.0% | 217.2% | 74.4% |

Source: Contra Costa County Airport Land Use Compatibility Plan: Major Issues and ERA.

Table VI-2
FUTURE GROWTH SCENARIO AIRPORT BUSINESS EXPENDITURE ESTIMATES
 In Year 2000 dollars

| Category | 1999 | | FUTURE GROWTH SCENARIO | |
|------------------------|---------------------|------------------------|------------------------|------------------------|
| | Total Expenditures | Direct Economic Impact | Total Expenditures | Direct Economic Impact |
| Wages and salaries | \$13,307,500 | \$9,381,000 | \$23,954,000 | \$16,886,000 |
| Benefits | \$1,468,000 | \$451,000 | \$2,642,000 | \$793,000 |
| Subcontractors | \$1,202,500 | \$996,000 | \$2,165,000 | \$1,793,000 |
| Insurance | \$948,500 | \$101,000 | \$1,707,000 | \$182,000 |
| Cost of goods and fuel | \$2,889,000 | \$400,000 | \$5,200,000 | \$720,000 |
| Services and supplies | \$6,016,500 | \$2,963,000 | \$10,830,000 | \$5,334,000 |
| Miscellaneous | \$3,536,000 | \$550,000 | \$6,365,000 | \$990,000 |
| GRAND TOTAL | \$29,368,000 | \$14,842,000 | \$52,863,000 | \$26,698,000 |

Source: Economics Research Associates.

Table VI-3
FUTURE GROWTH SCENARIO COUNTY EXPENDITURES ON AIRPORT OPERATIONS
 In Year 2000 dollars

| Category | 1999 | | Future Growth Scenario | |
|------------------------|--------------------|------------------------|------------------------|------------------------|
| | Total Expenditures | Direct Economic Impact | Total Expenditures | Direct Economic Impact |
| Wages and salaries | \$760,000 | \$578,000 | \$1,216,000 | \$925,000 |
| Benefits | \$231,000 | \$116,000 | \$370,000 | \$185,000 |
| Subcontractors | \$76,000 | \$27,000 | \$122,000 | \$43,000 |
| Insurance | \$21,000 | \$2,000 | \$34,000 | \$3,000 |
| Cost of goods and fuel | \$266,000 | \$226,000 | \$426,000 | \$362,000 |
| Services and supplies | \$333,000 | \$67,000 | \$533,000 | \$107,000 |
| Miscellaneous | \$1,615,000 | \$0 | \$2,584,000 | \$0 |
| GRAND TOTAL | \$3,302,000 | \$1,016,000 | \$5,285,000 | \$1,625,000 |

Source: Contra Costa County Airports, ERA.

**Table VI-4
PRIMARY AIRPORT USER VISITOR EXPENDITURES
FUTURE GROWTH SCENARIO**

| | Buchanan | Byron | Total |
|--|---------------------|--------------------|---------------------|
| Projected Itinerant Operations | 168,400 | 92,000 | 260,400 |
| % Arrivals | 50% | 50% | 50% |
| % Non-Local Arrival | 66% | 66% | 66% |
| % who would not visit if no airport | 46% | 46% | 46% |
| Average length of stay (days) | 2.21 | 1.5 | 2.21 |
| Average occupancy | 2.55 | 2.55 | 2.55 |
| Visitor Days | 144,061 | 53,418 | 197,479 |
| Avg. Daily spending | \$200 | \$150 | \$186 |
| Visitor Spending from Non-Local Itinerant Operations | \$28,812,000 | \$8,013,000 | \$36,825,000 |
| Additional Spending from Local Itinerant Operations ¹ | \$429,000 | \$156,000 | \$585,000 |
| TOTAL PRIMARY USER VISITOR SPENDING | \$29,241,000 | \$8,169,000 | \$37,410,000 |

¹ Reflects spending from Contra Costa County residents that would have been lost to other counties.

Source: Contra Costa County Airports, 1990 Contra Cost County Economic Impact Report, Contra Costa County CVB, Shutt Moen Associates, ERA.

**Table VI-5
OTHER AIRPORT VISITOR EXPENDITURES
FUTURE GROWTH SCENARIO**

| | Business Visitors | Student Visitors | | Total All Visitors |
|---|-------------------|--------------------|------------------|--------------------|
| | | Long Term | Short Term | |
| Estimated visitors in 1999 | 9,000 | 200 | 3,500 | 12,700 |
| Average visits per year | 1 | 240 | 14 | n/a |
| Estimated visitor days | 9,000 | 48,000 | 49,000 | 106,000 |
| Average visitor spending per day | \$30 | \$38 | \$20 | n/a |
| Total estimated visitor spending | \$270,000 | \$1,824,000 | \$980,000 | \$3,074,000 |

Source: Contra Costa County Airports Business Survey, Economics Research Associates.

**Table VI-6
SUMMARY OF DIRECT ECONOMIC IMPACT OF CONTRA COSTA COUNTY AIRPORTS
FUTURE GROWTH SCENARIO**

| Category | 1999 | Future Growth Scenario |
|-------------------------------------|---------------------|-------------------------------|
| Airport businesses | \$14,842,000 | \$26,698,000 |
| Airport operations | \$1,016,000 | \$1,625,000 |
| Visitors | \$26,414,000 | \$40,484,000 |
| Property Taxes | | |
| Aircraft (unsecured) | \$471,000 | \$1,017,000 |
| Secured | \$112,000 | \$202,000 |
| Construction | \$1,000,000 | \$1,800,000 |
| Total Direct Economic Impact | \$43,855,000 | \$71,826,000 |

Table VI-7

**TOTAL ECONOMIC IMPACT OF CONTRA COSTA COUNTY AIRPORTS
FUTURE GROWTH SCENARIO**

| Category | Sector | Change in Final Demand | Final Demand Output Multiplier | Total Output |
|---|--------------------------------------|------------------------|--------------------------------|----------------------|
| Airport Businesses | | | | |
| Wages and Salaries | Private households | \$16,886,000 | 1.0567 | \$17,843,000 |
| Benefits | Health services | \$793,000 | 1.8310 | \$1,452,000 |
| Subcontractors | Personal and repair services | \$1,793,000 | 1.8207 | \$3,265,000 |
| Insurance | Insurance | \$182,000 | 2.2244 | \$405,000 |
| Cost of goods and fuel | Wholesale trade, transportation | \$720,000 | 1.7055 | \$1,228,000 |
| Services and supplies | Wholesale trade, business services | \$5,334,000 | 1.6888 | \$9,008,000 |
| Miscellaneous | Miscellaneous services | \$990,000 | 1.8385 | \$1,820,000 |
| Subtotal Airport Businesses | | \$26,698,000 | 1.3117 | \$35,021,000 |
| Airport Operations | | | | |
| Wages and salaries | Private households | \$925,000 | 1.0567 | \$977,000 |
| Benefits | Health services | \$185,000 | 1.8310 | \$339,000 |
| Subcontractors | Personal and repair services | \$43,000 | 1.8207 | \$78,000 |
| Insurance | Insurance | \$3,000 | 2.2244 | \$7,000 |
| Services and supplies | Retail trade, business services | \$362,000 | 1.6888 | \$611,000 |
| Miscellaneous | Miscellaneous services | \$107,000 | 1.8385 | \$197,000 |
| Subtotal Airport Operations | | \$1,625,000 | 1.3594 | \$2,209,000 |
| Primary User Visitors | | | | |
| Food and beverage | Eating and drinking places | \$13,842,000 | 1.6835 | \$23,303,000 |
| Souvenirs and shopping | Retail trade | \$3,741,000 | 1.6546 | \$6,190,000 |
| Transportation | Transportation | \$3,741,000 | 1.7690 | \$6,618,000 |
| Personal services | Personal and repair services | \$1,871,000 | 1.8207 | \$3,407,000 |
| Lodging and recreation | Hotels and other lodging places, etc | \$13,468,000 | 1.9315 | \$26,013,000 |
| Communication | Communication | \$748,000 | 1.6390 | \$1,226,000 |
| Subtotal Primary User Visitors | | \$37,411,000 | 1.7844 | \$66,757,000 |
| Student and Business Visitors | | | | |
| Food and beverage | Eating and drinking places | \$922,000 | 1.6835 | \$1,552,000 |
| Supplies, purchases | Retail trade | \$307,000 | 1.6546 | \$508,000 |
| Transportation | Transportation | \$215,000 | 1.7690 | \$380,000 |
| Personal services | Personal and repair services | \$184,000 | 1.8207 | \$335,000 |
| Lodging | Hotels and other lodging places, etc | \$1,076,000 | 1.9315 | \$2,078,000 |
| Recreation | Hotels and other lodging places, etc | \$307,000 | 1.9315 | \$593,000 |
| Utilities/communication | Communication | \$61,000 | 1.6390 | \$100,000 |
| Subtotal Student and Business Visitors | | \$3,072,000 | 1.8053 | \$5,546,000 |
| Property Taxes | Local government | \$1,219,000 | 1.9822 | \$2,416,000 |
| Construction | Construction | \$1,800,000 | 1.7756 | \$3,196,000 |
| GRAND TOTAL | | \$71,826,000 | 1.6031 | \$115,145,000 |

Source: Bureau of Economic Analysis, Economics Research Associates.

**Table VI-8
TOTAL EMPLOYMENT IMPACT OF CONTRA COSTA COUNTY AIRPORTS
FUTURE GROWTH SCENARIO**

| Category | Sector | Change in Final Demand | Final Demand Employment Multiplier | Total Jobs |
|---|--------------------------------------|------------------------|------------------------------------|--------------|
| Airport Businesses | | | | |
| Wages and Salaries | Private households | \$16,886,000 | 8.2 | 129 |
| Benefits | Health services | \$793,000 | 15.5 | 11 |
| Subcontractors | Personal and repair services | \$1,793,000 | 27.7 | 46 |
| Insurance | Insurance | \$182,000 | 14.7 | 2 |
| Cost of goods and fuel | Wholesale trade, transportation | \$720,000 | 10.7 | 7 |
| Services and supplies | Wholesale trade, business services | \$5,334,000 | 12.0 | 60 |
| Miscellaneous | Miscellaneous services | \$990,000 | 16.8 | 16 |
| Subtotal Airport Businesses | | \$26,698,000 | | 272 |
| Airport Operations | | | | |
| Wages and salaries | Private households | \$925,000 | 8.2 | 7 |
| Benefits | Health services | \$185,000 | 15.5 | 3 |
| Subcontractors | Personal and repair services | \$43,000 | 27.7 | 1 |
| Insurance | Insurance | \$3,000 | 14.7 | 0 |
| Services and supplies | Retail trade, business services | \$362,000 | 10.7 | 4 |
| Miscellaneous | Miscellaneous services | \$107,000 | 12.0 | 1 |
| Subtotal Airport Operations | | \$1,625,000 | 16.8 | 16 |
| Primary User Visitors | | | | |
| Food and beverage | Eating and drinking places | \$13,842,000 | 23.5 | 304 |
| Souvenirs and shopping | Retail trade | \$3,741,000 | 17.8 | 62 |
| Transportation | Transportation | \$3,741,000 | 11.0 | 38 |
| Personal services | Personal and repair services | \$1,871,000 | 27.7 | 48 |
| Lodging and recreation | Hotels and other lodging places, etc | \$13,468,000 | 18.4 | 231 |
| Communication | Communication | \$748,000 | 5.9 | 4 |
| Subtotal Primary User Visitors | | \$37,411,000 | | 688 |
| Student and Business Visitors | | | | |
| Food and beverage | Eating and drinking places | \$922,000 | 23.5 | 20 |
| Supplies, purchases | Retail trade | \$307,000 | 17.8 | 5 |
| Transportation | Transportation | \$215,000 | 11.0 | 2 |
| Personal services | Personal and repair services | \$184,000 | 27.7 | 5 |
| Lodging | Hotels and other lodging places, etc | \$1,076,000 | 18.4 | 18 |
| Recreation | Hotels and other lodging places, etc | \$307,000 | 18.4 | 5 |
| Utilities/communication | Communication | \$61,000 | 5.9 | 0 |
| Subtotal Student and Business Visitors | | \$3,072,000 | | 56 |
| Property Taxes | Local government | \$1,219,000 | 9.8 | 11 |
| Construction | Construction | \$1,800,000 | 12.9 | 22 |
| GRAND TOTAL | | \$71,826,000 | | 1,065 |

Source: Bureau of Economic Analysis, Economics Research Associates.

Table VI-9

DIRECT ADDITIONAL ECONOMIC IMPACT OF COMMERCIAL AIRLINE SERVICE

Passenger and Crew Visitor Expenditures

| | |
|---|---------------------|
| Projected Airline Service Total Operations | 20,000 |
| % Arrivals | 50% |
| % Non-Local Arrival | 35% |
| % who would not visit if no airport | 25% |
| Average length of stay (days) | 2.5 |
| Average capacity | 70 |
| Average occupancy | 60% |
| Avg. Daily spending | \$200 |
| Estimated Visitors Days | 91,875 |
| Subtotal Additional Visitor Expenditures | \$18,375,000 |

Commercial Airline Expenditures

| | |
|---|---------------------|
| Wages and Salaries | \$8,400,000 |
| Benefits | \$700,000 |
| Subcontractors | \$1,400,000 |
| Insurance | \$280,000 |
| Cost of goods and fuel | \$280,000 |
| Services and supplies | \$2,520,000 |
| Miscellaneous | \$420,000 |
| Subtotal Commercial Airline Expenditures | \$14,000,000 |

Increase in Other Expenditures

| | |
|--|--------------------|
| Airport Business Expenditures | \$1,869,000 |
| County Expenditures on Airport Operations | \$114,000 |
| Increase in Construction Expenditures | \$500,000 |
| Increase in Property Taxes | \$303,000 |
| Subtotal Increase in Other Airport Expenditures | \$2,483,000 |

**TOTAL ADDITIONAL DIRECT ECONOMIC
IMPACT OF COMMERCIAL AIRLINE SERVICE**

\$34,858,000

Table VI-10
SUMMARY OF DIRECT ECONOMIC IMPACT OF CONTRA COSTA COUNTY AIRPORTS
FUTURE SCENARIO: GROWTH AND COMMERCIAL AIRLINE SERVICE

| Category | 1999 | Future Scenarios | |
|-------------------------------------|---------------------|---------------------|---------------------------------------|
| | | Growth | Growth and Commercial Airline Service |
| Airport businesses | \$14,842,000 | \$26,698,000 | \$42,567,000 |
| Airport operations | \$1,016,000 | \$1,625,000 | \$1,739,000 |
| Visitors | \$26,414,000 | \$40,484,000 | \$58,859,000 |
| Property Taxes | \$583,000 | \$1,219,000 | \$1,522,000 |
| Construction | \$1,000,000 | \$1,800,000 | \$2,300,000 |
| Total Direct Economic Impact | \$44,438,000 | \$71,826,000 | \$106,987,000 |

Source: Economics Research Associates.

Table VI-11
TOTAL ECONOMIC IMPACT OF CONTRA COSTA COUNTY AIRPORTS
FUTURE GROWTH WITH COMMERCIAL AIRLINE SERVICE SCENARIO

| Category | Sector | Change in Final Demand | Final Demand Output Multiplier | Total Output |
|---|--------------------------------------|------------------------|--------------------------------|----------------------|
| Airport Businesses | | | | |
| Wages and Salaries | Private households | \$26,468,000 | 1.0567 | \$27,969,000 |
| Benefits | Health services | \$1,549,000 | 1.8310 | \$2,836,000 |
| Subcontractors | Personal and repair services | \$3,319,000 | 1.8207 | \$6,043,000 |
| Insurance | Insurance | \$475,000 | 2.2244 | \$1,057,000 |
| Cost of goods and fuel | Wholesale trade, transportation | \$1,050,000 | 1.7055 | \$1,791,000 |
| Services and supplies | Wholesale trade, business services | \$8,227,000 | 1.6888 | \$13,894,000 |
| Miscellaneous | Miscellaneous services | \$1,479,000 | 1.8385 | \$2,719,000 |
| Subtotal Airport Businesses | | \$42,567,000 | 1.3228 | \$56,309,000 |
| Airport Operations | | | | |
| Wages and salaries | Private households | \$990,000 | 1.0567 | \$1,046,000 |
| Benefits | Health services | \$198,000 | 1.8310 | \$363,000 |
| Subcontractors | Personal and repair services | \$46,000 | 1.8207 | \$84,000 |
| Insurance | Insurance | \$3,000 | 2.2244 | \$7,000 |
| Services and supplies | Retail trade, business services | \$387,000 | 1.6888 | \$654,000 |
| Miscellaneous | Miscellaneous services | \$114,000 | 1.8385 | \$210,000 |
| Subtotal Airport Operations | | \$1,739,000 | 1.3594 | \$2,364,000 |
| Primary User Visitors | | | | |
| Food and beverage | Eating and drinking places | \$20,640,000 | 1.6835 | \$34,747,000 |
| Souvenirs and shopping | Retail trade | \$5,579,000 | 1.6546 | \$9,231,000 |
| Transportation | Transportation | \$5,579,000 | 1.7690 | \$9,869,000 |
| Personal services | Personal and repair services | \$2,789,000 | 1.8207 | \$5,078,000 |
| Lodging and recreation | Hotels and other lodging places, etc | \$20,083,000 | 1.9315 | \$38,790,000 |
| Communication | Communication | \$1,116,000 | 1.6390 | \$1,829,000 |
| Subtotal Primary User Visitors | | \$55,786,000 | 1.7844 | \$99,544,000 |
| Student and Business Visitors | | | | |
| Food and beverage | Eating and drinking places | \$922,000 | 1.6835 | \$1,552,000 |
| Supplies, purchases | Retail trade | \$307,000 | 1.6546 | \$508,000 |
| Transportation | Transportation | \$215,000 | 1.7690 | \$380,000 |
| Personal services | Personal and repair services | \$184,000 | 1.8207 | \$335,000 |
| Lodging | Hotels and other lodging places, etc | \$1,076,000 | 1.9315 | \$2,078,000 |
| Recreation | Hotels and other lodging places, etc | \$307,000 | 1.9315 | \$593,000 |
| Utilities/communication | Communication | \$61,000 | 1.6390 | \$100,000 |
| Subtotal Student and Business Visitors | | \$3,072,000 | 1.8053 | \$5,546,000 |
| Property Taxes | Local government | \$1,522,000 | 1.9822 | \$3,017,000 |
| Construction | Construction | \$2,300,000 | 1.7756 | \$4,084,000 |
| GRAND TOTAL | | \$106,987,000 | 1.5971 | \$170,864,000 |

Source: Bureau of Economic Analysis, Economics Research Associates.

Table VI-12

**TOTAL EMPLOYMENT IMPACT OF CONTRA COSTA COUNTY AIRPORTS
FUTURE GROWTH WITH COMMERCIAL AIRLINE SERVICE SCENARIO**

| Category | Sector | Change in Final Demand | Final Demand Employment Multiplier | Total Jobs |
|---|--------------------------------------|------------------------|------------------------------------|--------------|
| Airport Businesses | | | | |
| Wages and Salaries | Private households | \$26,468,000 | 8.2 | 203 |
| Benefits | Health services | \$1,549,000 | 15.5 | 22 |
| Subcontractors | Personal and repair services | \$3,319,000 | 27.7 | 86 |
| Insurance | Insurance | \$475,000 | 14.7 | 7 |
| Cost of goods and fuel | Wholesale trade, transportation | \$1,050,000 | 10.7 | 10 |
| Services and supplies | Wholesale trade, business services | \$8,227,000 | 12.0 | 92 |
| Miscellaneous | Miscellaneous services | \$1,479,000 | 16.8 | 23 |
| Subtotal Airport Businesses | | \$42,567,000 | | 443 |
| Airport Operations | | | | |
| Wages and salaries | Private households | \$990,000 | 8.2 | 8 |
| Benefits | Health services | \$198,000 | 15.5 | 3 |
| Subcontractors | Personal and repair services | \$46,000 | 27.7 | 1 |
| Insurance | Insurance | \$3,000 | 14.7 | 0 |
| Services and supplies | Retail trade, business services | \$387,000 | 10.7 | 4 |
| Miscellaneous | Miscellaneous services | \$114,000 | 12.0 | 1 |
| Subtotal Airport Operations | | \$1,738,000 | 16.8 | 17 |
| Primary User Visitors | | | | |
| Food and beverage | Eating and drinking places | \$20,640,000 | 23.5 | 453 |
| Souvenirs and shopping | Retail trade | \$5,579,000 | 17.8 | 93 |
| Transportation | Transportation | \$5,579,000 | 11.0 | 57 |
| Personal services | Personal and repair services | \$2,789,000 | 27.7 | 72 |
| Lodging and recreation | Hotels and other lodging places, etc | \$20,083,000 | 18.4 | 345 |
| Communication | Communication | \$1,116,000 | 5.9 | 6 |
| Subtotal Primary User Visitors | | \$55,786,000 | | 1,026 |
| Student and Business Visitors | | | | |
| Food and beverage | Eating and drinking places | \$922,000 | 23.5 | 20 |
| Supplies, purchases | Retail trade | \$307,000 | 17.8 | 5 |
| Transportation | Transportation | \$215,000 | 11.0 | 2 |
| Personal services | Personal and repair services | \$184,000 | 27.7 | 5 |
| Lodging | Hotels and other lodging places, etc | \$1,076,000 | 18.4 | 18 |
| Recreation | Hotels and other lodging places, etc | \$307,000 | 18.4 | 5 |
| Utilities/communication | Communication | \$61,000 | 5.9 | 0 |
| Subtotal Student and Business Visitors | | \$3,072,000 | | 56 |
| Property Taxes | Local government | \$1,522,000 | 9.8 | 14 |
| Construction | Construction | \$2,300,000 | 12.9 | 28 |
| GRAND TOTAL | | \$106,987,000 | | 1,584 |

Source: Bureau of Economic Analysis, Economics Research Associates.

Section VII

INDENTIFICATION OF BENEFITS AND COSTS

As part of this study, ERA has examined the benefits and costs of the Buchanan Field and Byron Airports. To determine these benefits and costs ERA, completed a thorough literature search of local, regional, and national sources on airports. Sources include: Federal Aviation Administration funded reports, other airports' reports, internet research, public workshops held by ERA at Concord and Byron, public comment through letters sent directly to ERA or found in the local media, surveys completed by airport businesses, and interviews of airport businesses. It should be noted that this list of benefits and costs is as comprehensive as possible, given the scope of this study, but additional costs or benefits may be identified by others in the future. In addition, not all benefits and costs apply to both Buchanan Field and Byron Airports.

| BENEFITS | COSTS |
|--|--|
| <ul style="list-style-type: none"> • Economic impact <ul style="list-style-type: none"> -Revenue to businesses -Job creation • Economic development tool <ul style="list-style-type: none"> -Business location decisions -Increased business revenue • Attraction of residents • Recreational benefits • Transportation benefits <ul style="list-style-type: none"> -Convenience -Decreased transportation times -Decreased ground traffic congestion • Community and emergency services • Fiscal benefit to County • Potential for commercial air service | <ul style="list-style-type: none"> • Aircraft noise <ul style="list-style-type: none"> -Annoyance -Potential speech interference -Potential sleep interference -Potential effect on learning -Potential hearing loss -Non-auditory health effects • Air quality / emissions • Risk of aircraft accidents • Potential property value impacts |

BENEFITS

The following section presents a summary of ERA's research related to the benefits created by airports.

Direct, Indirect, and Induced Economic Impact of Airports

Airports can generate significant business revenue and job creation for the local economy. Total economic and employment impacts for Buchanan Field and Byron Airports are analyzed thoroughly in Sections V and VI.

Airports as an Economic Development Tool

While difficult to quantify, the Contra Costa County airports play an important role in economic development for the County. The airports assist in economic development through two major mechanisms:

- **Business location decisions** – Proximity to an airport is typically one criteria that is used in business location decisions. The corporate aircraft is a powerful business tool, often providing the only air transportation to increasingly decentralized industrial locations. In addition to being a transportation link, the business aircraft is an effective tool for maximizing valuable executive time. Business aircraft are flexible where airline schedules are not; therefore many executives choose to have their businesses near GA airports. There are several examples of businesses that have decided to locate in Contra Costa County primarily due to the presence of the airports.
- **Increased business revenue** – As a result of being close to an airport, some businesses are able to increase their overall revenue generation. One example of this is a Contra Costa County based energy engineering consultant who uses the airport for traveling around to various remote California locations to do energy audits. Without the proximity of Buchanan Field, it is unlikely that this consultant would be able to accept many jobs due to the difficulty in reaching certain locations without an airport.

Attraction of Residents to Contra Costa County

The Contra Costa County airports attract residents to Contra Costa County. Flying enthusiasts and full-time pilots find it convenient to locate themselves near

airports. These residents, who generally have a high median income and net worth, pay taxes and spend money in the county.

Recreational Benefits

There is a recreational benefit derived from the Contra Costa County's airports. From dedicated flying enthusiasts who own and maintain their own hobby planes at Buchanan Field, to one time skydivers gaining a lifetime experience out of Byron Airport, the quality of life in Contra Costa County is enhanced by the presence of airport related recreation.

Transportation Benefits

There are three major categories of benefits created by airports as a transportation alternative:

- Convenience - With easy access from the East Bay via Interstate 680 or Highway 4 the Buchanan Field Airport provides a valuable alternative to those local travelers, pilots, or businesses who do not wish to travel to the Oakland Airport or the San Francisco Airport for their aviation needs.
- Decreased transportation times - Given the growing commute times in the Bay Area, decreased transportation time is an important benefit.
- Decreased ground traffic congestion - Increased transportation options can help decrease ground traffic congestion in urban environments and promote better air quality through fewer cars on the road.

Community and Emergency Services

A number of tenants based at Buchanan Field provide numerous community and emergency services throughout Contra Costa County:

- The California Shock Trauma Air Rescue and the REACH Air Ambulance services both provide emergency medical response (40 missions each every month) to Contra Costa County and beyond. If the airport did not exist these emergency services would have to locate themselves elsewhere thus increasing the response time of these services when helping Contra Costa residents.

- The Civil Air Patrol at Buchanan Field provides disaster relief to Contra Costa and surrounding counties by providing air and ground transportation and an extensive communications network. They also provide search and rescue for State of California and the US Air Force. Without Buchanan Field this division of the Civil Air Patrol would probably cease to exist.
- Numerous law enforcement agencies operate out of and stage aircraft at Buchanan Field. These include the Contra Costa Sheriff's Department and the Drug Enforcement Administration.
- The airport and businesses of Buchanan Field also provide emergency flight service availability in the event of a natural disaster, allowing emergency response agencies such as the California Division of Forestry, FEMA, and the Air National Guard to fly into the center of Contra Costa County. For instance, during the Loma Prieta earthquake of 1989 over 100 general aviation pilots flew more than 50,000 pounds of emergency supplies from Buchanan Field as part of an emergency airlift of food and supplies to earthquake stricken residents of Santa Cruz County.
- Los Medanos College provides law enforcement drivers training for Contra Costa County and California State law enforcement.

Fiscal Benefit to County

Several of the non-aviation land uses on airport property generate retail sales tax revenue that has a fiscal benefit to the County. Because these retail businesses are located on unincorporated County land, all of the retail sales tax generated goes directly to the Contra Costa County government.

Potential for Commercial Air Service

If commercial air service develops at Buchanan Field Airport, it is likely that all of the benefits previously listed would be enhanced, including the use of the airport as a economic development tool, reduced time delays for passengers, reduced congestion due to ground traffic, and increased fiscal benefits to the County government.

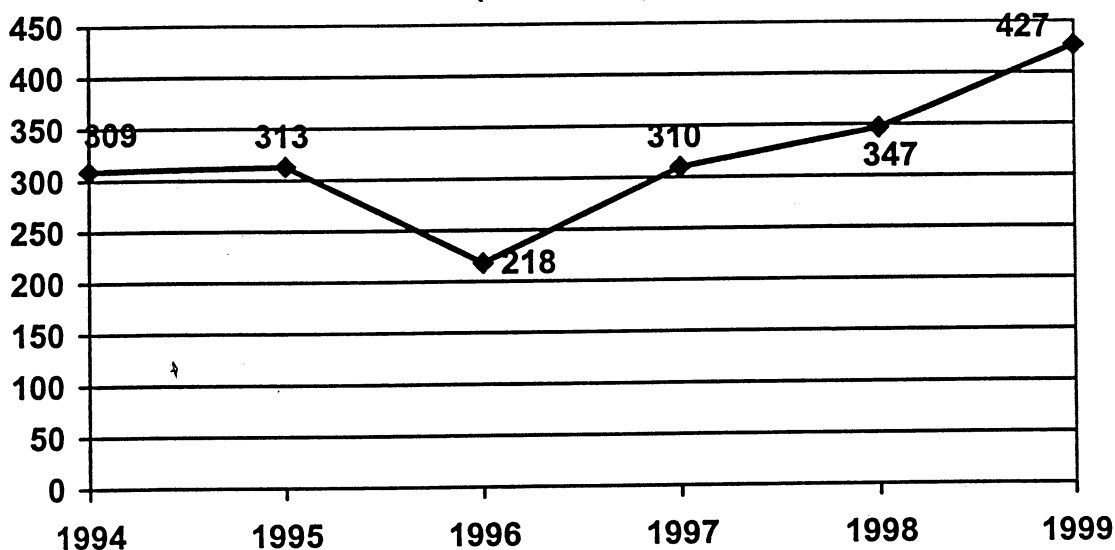
COSTS

During the public workshops held in conjunction with this study and through subsequent written and electronic correspondence, a number of potential costs associated with airports were identified. In the following section, ERA provides background research and analysis on a number of potential costs identified. Findings for each are presented, even though some possible cost effects were found to be insignificant.

Aircraft Noise

A number of costs generally associated with airports are a result of noise. A summary of complaints received for Buchanan Field Airport is presented below in Figure VII-1.

**Figure VII-1: Total Noise Complaints
Buchanan Field Airport
(1994-1999)**



Note: these numbers exclude noise complaints by one caller who has complained an average of 342 times per year from 1994-1999

Source: Buchanan Field Airport

As shown, from 1994-1999, there were a total of 1,924 noise complaints recorded by the Buchanan Field airport staff (See Figure 1). Helicopter noise complaints account for the majority of the increase of complaints from 1996-1999. For instance, in 1996 there were 218 noise complaints about the Contra Costa airports, 72 of those were helicopter noise complaints. In 1996 there were 310 noise complaints, 150 of those were

helicopter noise complaints. Therefore, 78 of the 92 complaint increase from 1996 to 1997 can be attributed to helicopter noise.

Aircraft Noise – Annoyance

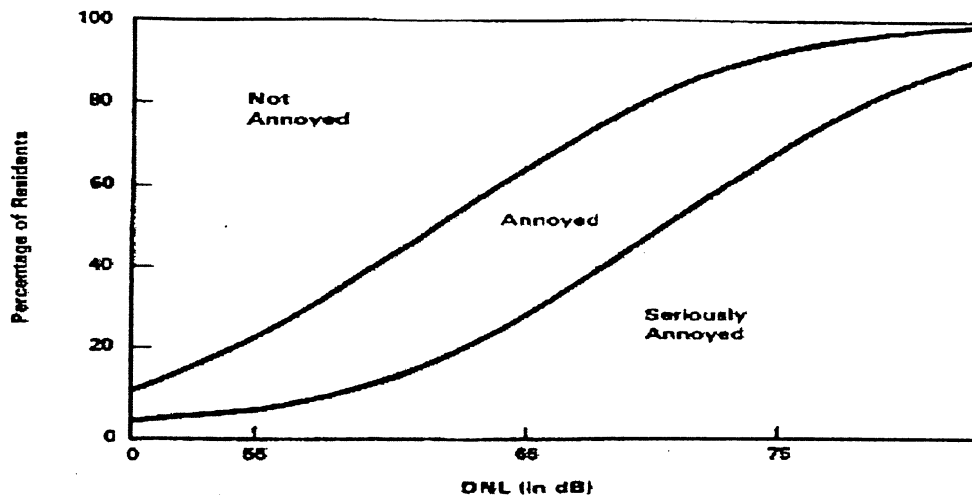
Annoyance is a primary consequence of excessive aircraft noise. The variability in the way individuals react to noise makes it impossible to accurately predict how any one individual will respond to a given noise. The preponderance of case histories and social surveys indicates that the response of a community to aircraft noise is affected not only by how loud the noise is, but also by how often loud noise occurs. The changing percentage of population within a given response category is the best indicator of noise annoyance impact (See Figures VII-2 and VII-3). In any community there is likely to be a given percentage of the population highly annoyed, a given percentage mildly annoyed and others who will not be annoyed at all. (FAA 1985) Speech interference and sleep interference are the most common reasons for noise annoyance.

Figure VII- 2
Comparative Noise Levels
 Typical Decibel (dBA) Values Encountered in Daily Life and Industry

| | |
|--|--------|
| Rustling leaves | 20 dBA |
| Room in a quiet dwelling at midnight | 32 |
| Men's clothing department of large store | 53 |
| Window air conditioner | 55 |
| Conversational speech | 60 |
| Household department of large store | 62 |
| Busy restaurant | 65 |
| Vacuum cleaner in private residence (at 10 feet) | 69 |
| Ringling alarm clock (at 2 feet) | 80 |
| Loudly reproduced orchestral music in large room | 82 |
| Beginning of hearing damage if prolonged exposure over 85 dBA | |
| Printing press plant | 86 |
| Heavy city traffic | 92 |
| Heavy diesel-propelled vehicle (about 25 feet away) | 92 |
| Air grinder | 95 |
| Cut-off saw | 97 |
| Home lawn mower | 98 |
| Turbine condenser | 98 |
| 150 cubic foot air compressor | 100 |
| Banging of steel plate | 104 |
| Air hammer | 107 |

Source: FAA, 1985.

Figure VII-3



Annoyance Caused by Aircraft Noise in Residential Communities Near Major Airports

Aircraft Noise – Potential Speech Interference

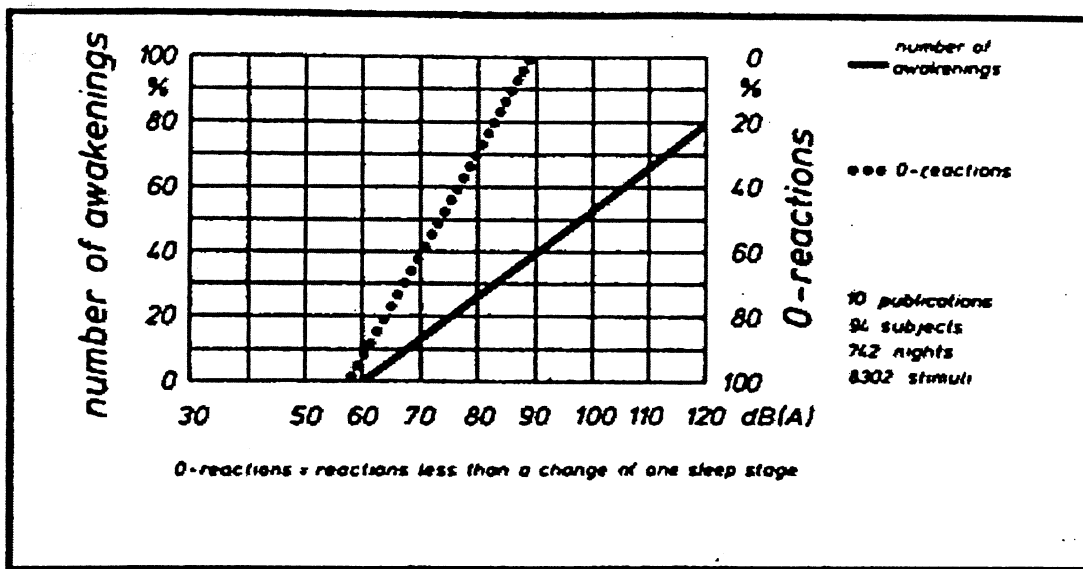
Speech interference associated with aircraft noise is a primary source of annoyance to individuals on the ground. The disruption of leisure activities such as listening to the radio, television, music and conversation gives rise to frustration and irritation. Quality speech communication is obviously also important in the classroom, office and industrial settings. In one 1963 study, sponsored by the British government, researchers found that aircraft noise of 75 dB annoyed the highest percentage of the population when it interfered with the television sound. Eighty percent of the test population reported being annoyed. Also high on the list of annoyances for the surveyed population was flickering of the television picture and interference with casual conversation by aircraft noise.

Aircraft Noise – Potential Sleep Interference

Sleep interference is one of the main factors contributing to aircraft noise annoyance. Airport nighttime restrictions have been employed to minimize this

annoyance. In the case of nighttime operations a 72 dB maximum sound level is considered an acceptable sleep interference threshold for windows closed condition. The varied results of researchers arise because several factors affect how easily a person will be awakened from sleep. (FAA, 1985) As shown in Figure VII-4, increased noise results in increased sleep disturbance. Despite the fact that excess noise is strongly associated with sleep disturbance, based on a 1989 Air Force sponsored study of sleep disturbance (Pearsons et al. 1989), no specific adverse health effects have been clearly associated with sleep disturbance, either awakenings or sleep-state changes. (FICON, 1992)

Figure VII-4



Sleep disturbances by noise—number of reactions and noise level.

Source: FAA, 1985

Aircraft Noise – Potential Effect of Noise on Learning

No quantitative relationship has been established between speech interference and learning in school classrooms, and therefore no additional criteria have been developed for quantifying speech interference effects on learning by students. However, it is likely that if speech communication is degraded in a classroom, the learning process can be assumed to be degraded. This is especially true for classroom situations that demand a quiet background (e.g., foreign language and music classrooms). In addition, speech interference in classrooms can be a particular problem for students whose native language

is not English. Whenever intrusive noise exceeds approximately 60 decibels indoors, there will be interference with speech communication. This interference may result from masking of the speaker's words or by causing the speaker to pause. (FICON, 1992)

Aircraft Noise – No Evidence of Hearing Loss

It is well established that continuous exposure to high levels of noise will damage human hearing. Protection against hearing loss is a guiding consideration in protecting against the direct, potentially harmful effects of noise. Some sounds may produce longer-lasting changes in the threshold of hearing; the chances of these changes occurring increase with continuing exposure to loud noise. The three primary effects of exposure to loud noise are temporary reduction in hearing acuity, permanent hearing loss, and ringing in the ears.

There are three studies known to have specifically addressed the question of community hearing loss around airports. The first, a 1972 study funded by FAA, found there was no correlation between hearing acuity and length of residency near the airport. The second, 1974 laboratory study conducted near Los Angeles International Airport, concluded that there is no danger of permanent hearing loss from high levels of aircraft noise. The third study repeated the Los Angeles experiment in a Japanese laboratory, with the same conclusions found.

Aircraft Noise – Potential Nonauditory Health Effects

Alleged nonauditory health consequences of aircraft noise exposure which have been studied include birth defects, low birth weight, mental problems, cancer, stroke, hypertension, sudden cardiac death, myocardial infarction, and cardiac arrhythmia. Of these, hypertension is the most biologically plausible effect of noise exposure. Studies in residential areas exposed to aircraft noise have produced contradictory results that are difficult to interpret. Most studies which have controlled for multiple factors have shown no, or a very weak association between noise exposure and nonauditory health effects. This observation holds for studies of occupational and traffic noise as well as for aircraft noise exposure. (FICON, 1992)

Aircraft Noise – Effect on Property Values

Perhaps the most controversial and to many the most important cost of airports is the effect of aircraft noise on property values. A quantitative analysis of this significant cost item is presented in a separate discussion near the end of this Section.

Air Quality

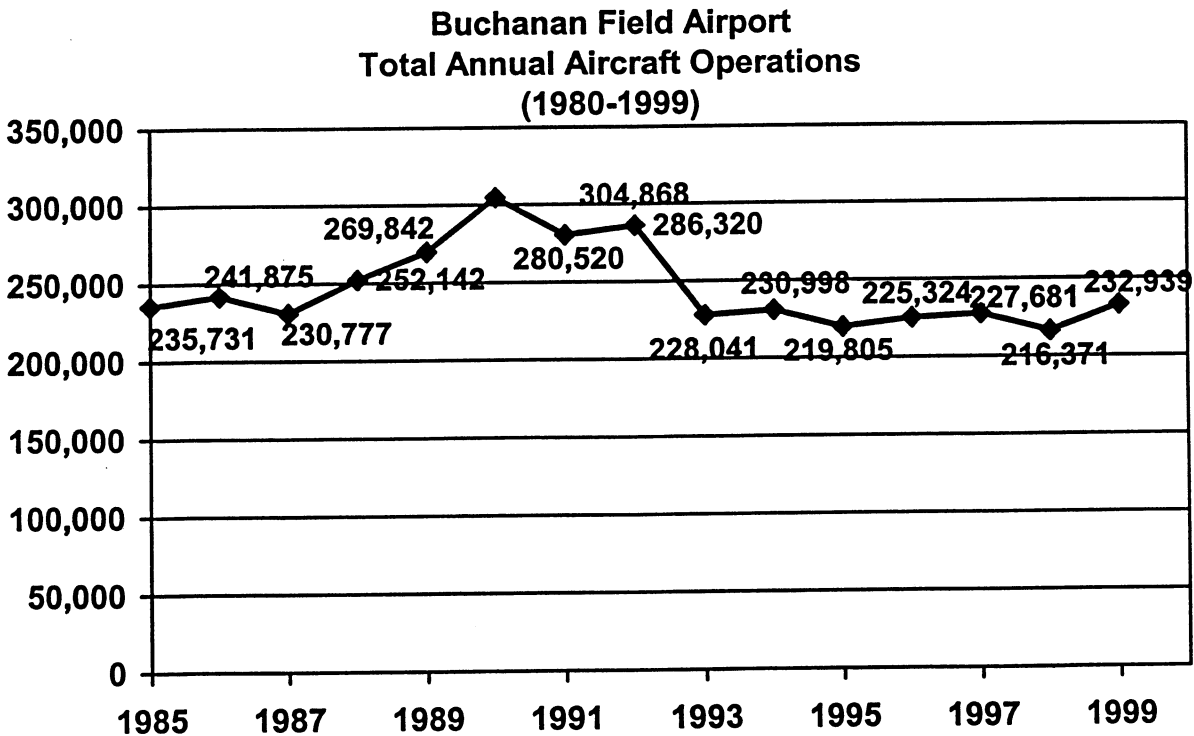
It can be assumed that airports contribute to the air quality problem in urban areas, but the extent to which they contribute to this problem is relatively unknown. A recent study for the Seattle Tacoma International Airport concluded that the airport probably contributes up to 5 percent of the total air pollutants in King County (including both the contributions of air craft and motor vehicles going to and from the airport), even though the area of the airport is less than 0.25% of the total area of King County. Despite these facts, the evidence linking the airport to increased levels of disease in the immediate area surrounding the Sea-Tac airport was not conclusive. Because people are exposed to so many potentially dangerous pollutants, it is often hard to know exactly which pollutants are responsible for causing sickness. Also, because a mixture of different pollutants can intensify sickness, it is often difficult to isolate those pollutants that are at fault.

- Increased air traffic is expected to increase all aircraft emissions (although it could also decrease emissions from ground vehicles). These emissions are similar to those emitted by cars and trucks. Increased levels of such pollutants may result in increased chances of: lung cancer, chronic obstructive pulmonary disease, asthma and other respiratory diseases, heart disease, increased chance of pneumonia for the elderly, low birth weight, among other problems. It should be noted that it is difficult to determine what the net increase in pollutants would be from additional planes and the resulting reduced cars and trucks.
- Other pollutants such as ozone, nitrogen oxides, and sulfur dioxide that airports emit can also have harmful effects on natural ecosystems.

Risk of Airplane and Helicopter Accidents

Paramount in the concern of many airport residents is the concern of an airline or helicopter crash/accident at or near Buchanan Field or Byron Airports. In general, the National Transportation Safety Board has defined an "aircraft accident" as "an occurrence associated with the operation of an aircraft between the time any person boards with the intent of flight until all persons disembark during which death, serious injury or substantial aircraft damage occurs." (Flight Safety Institute, 1986). Unfortunately, the definition of an aviation accident is very broad, it can involve events that range in severity from a flight attendant receiving a broken ankle as a result of an aircraft encounter with turbulence at altitude, to the catastrophic loss of one or more aircraft and hundreds of lives. Statistically, the higher the amount of general operations at Buchanan Field the more likely the chance there is of an accident. Aircraft operations at Buchanan Field airport have returned to the 1985 levels after reaching their peak in 1990 with over 300,000 operations (See Figure VII-5).

Figure VII-5



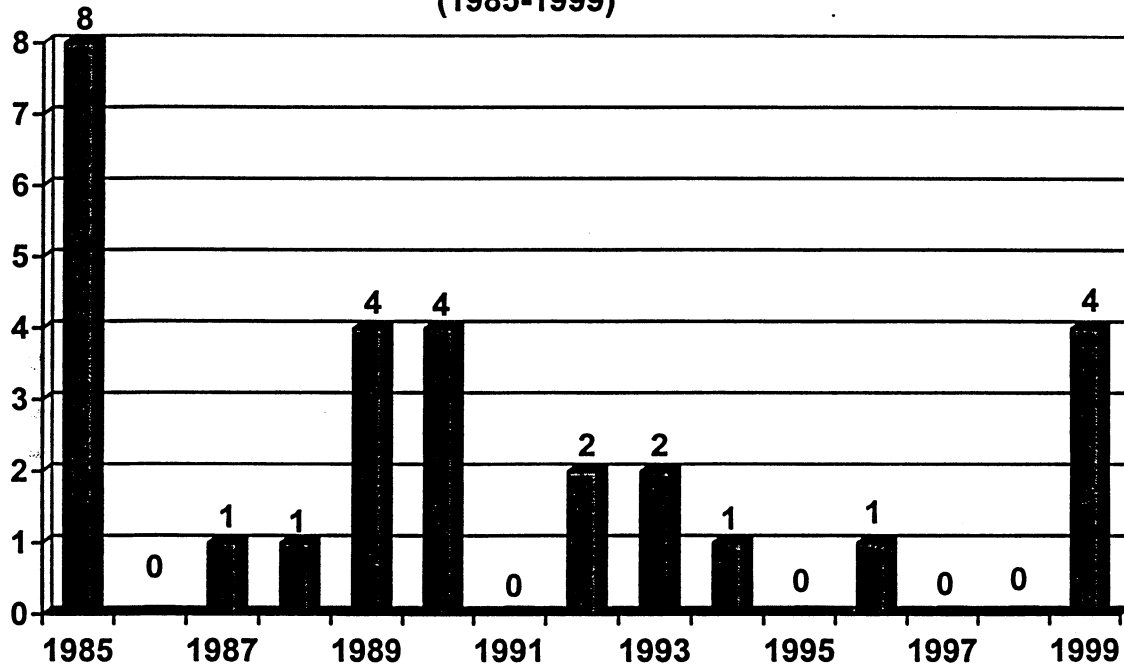
Source: Buchanan Field Airport

- During 1980-1986 sixteen aircraft accidents and fifteen incidents were identified in the FAA/NTSB records for Concord. These 31 mishaps include both airport and off-airport events. Twenty-five of the thirty-one reported mishaps (81 percent) at Buchanan Field were pilot-error related and thirteen of the aircraft accidents (81 percent) were pilot-error related. These findings are generally consistent with the NTSB study of aircraft accident data wherein the pilot was a cause or related factor in 82.7 percent of all general aviation accidents. (Flight Safety Institute, 1986)

From 1985-1999 there were 28 accidents, as defined by the NTSB, either at Buchanan field or within 2.6 miles of it (See Figure VII-6), five of which resulted in fatalities. 2 of these accidents involved helicopters and 26 involved airplanes.

Figure VII-6

**Buchanan Field
Accidents/Incidents
(1985-1999)**



Source: Buchanan Field Airport

POTENTIAL PROPERTY VALUE IMPACTS

ERA has reviewed an extensive literature extending back over more than 30 years regarding the relationship between aircraft noise and the value of residential property directly around airports. Unfortunately, extent of the effect of aircraft noise on property values is by no means simple and straightforward. Each community's response to aircraft noise is different, for instance studies have shown that in rural and high income neighborhoods aircraft noise usually depresses housing values by a higher percentage than in urban and low-income neighborhoods. Furthermore, many factors besides aircraft noise can affect real estate values in an area: the size of the houses, number of rooms per house, the repair of the houses, amenities such as swimming pools and garages, the distance from a business district, the number of lakes, parks, or other amenities in the surrounding area, the quality of schools, local property taxes, crime rates, extent of urbanization, quality of neighboring residential units, local traffic conditions, commuting distance, etc. Many studies, using a variety of techniques, have been commissioned by the FAA, local communities, and individual airports to try to estimate the extent of the effect of just one of these factors, airport noise, on property values. In this section ERA will review three such studies and will discuss the effect Buchanan Field has on surrounding residential property values.

“Aviation Noise Effects” FAA 1985

“Aviation Noise Effects,” is a FAA funded study that attempts to qualitatively and quantitatively measure the effect of aviation noise on communities. In the section titled “Effect of Aircraft Noise on Real Estate Values” the FAA reported that “all research conducted in this area found negative [property value] effects from aviation noise, with effects ranging from 0.6 to 2.3 percent decrease in property value per decibel increase of cumulative noise exposure.” The FAA reviewed nine airports, between 1960 and 1970, in the US and Canada comparing property values and noise exposure levels. Jon Nelson in “Economic Analysis of Transportation Noise Abatement” summarizes these studies. Below are the results of these studies:

| Study Area (Year) | Range of Decibel Levels | Best NDI-NEF Estimate /1 |
|--------------------------|--------------------------------|---------------------------------|
| New York (1960) | 55-75 | 1.9 % |
| Los Angeles (1960) | 55-75 | 1.8 % |
| Dallas (1960) | 55-75 | 2.3 % |
| All Areas (1960) | 55-75 | 2.0 % |
| Minneapolis (1967) | 55-85 | 0.6 % |
| San Francisco (1970) | 60-80 | 1.5 % |
| San Jose (1970) | 60-80 | 0.7 % |
| Boston (1970) | 60-80 | 0.6 % |
| Toronto (1969-1973) | 55-70 | 0.9 % |
| Dallas (1970) | 55-90 | 0.6 % |
| Washington, DC (1970) | 55-70 | 1.0 % |

1/ The NDI-NEF is the percentage decrease in a given property value per unit increase in DNL

Nelson noted that there seemed to be a decline in the noise depreciation index over time, from 1960-1970. He felt this could be due either to noise sensitive people being replaced by those less bothered by noise, or to the enhanced commercial value of land near airports. In this study the FAA concluded that noise has been shown to decrease property value only by a small amount, approximately one percent decrease per decibel. Nelson also ran a similar study in 1980 where he looked at 13 studies and produced a property value discount range of 0.4% to 1.1% for each additional decibel of aircraft noise.

“Sea-Tac International Airport Impact Mitigation Study” 1997

Section 9 of the “Sea-Tac International Airport Impact Mitigation Study” discusses impacts of noise associated with proposed Sea-Tac expansion on local government revenue, residential property values, property tax revenues, among other issues. The Sea-Tac study estimated the average loss in value of real estate located in close proximity to Sea-Tac International Airport by comparing a large sample of comparable single-family housing units in Northwest and Southwest King County holding constant the non-Airport factors that also influence real estate values. The study indicated that the ways that Sea-Tac operations negatively impacted property values were through noise pollution, visual pollution, possible air quality pollution, and a generally degraded environment for human habitat. The study found that “the average difference

of 10.1 percent in the assessed value of real estate when all other factors are adjusted for is attributable to the impact of low flying aircraft in the immediate vicinity of Sea-Tac International Airport.” Below are the measured effects in specific neighborhoods surrounding Sea-Tac.

| Community | Actual Average Assessed Value of Housing Unit | Estimated Assessed Value Without Airport | % Decrease In Value Because of Airport |
|------------------|--|---|---|
| Burien | \$ 129,000 | \$ 143,900 | 11.5 % |
| Des Moines | \$ 136,100 | \$ 149,800 | 10.0 % |
| Federal Way | \$ 142,900 | \$ 157,300 | 10.0 % |
| Normandy Park | \$ 173,600 | \$ 191,000 | 10.0 % |
| Tukwila | \$ 122,400 | \$ 134,800 | 10.1 % |

Note: All numbers in 1993 dollars and value

“Impact of Airport Noise on Housing Values: A Summary Report” FAA 1994

In 1994, the consulting firm Booz-Allen & Hamilton, Inc. prepared a report for the FAA attempting to quantify the impact of airport noise on property values. They picked two neighborhoods with similar characteristics; one exposed to higher noise levels than the other. Then they “normalized” the property values so that the housing traits were comparable and airport noise was the only apparent difference, therefore any difference in property value could be attributed to airport noise. The homes compared to each other had to have been sold recently (typically, within the past 12 months) and had to have similar housing characteristics and amenities such as age, number of rooms and bathrooms, square footage, etc. On one hand, Booz-Allen felt that past studies based on a purely statistical approach using regression modeling often gave disappointing result due to lack of adequate data. On the other hand, a straight appraisal approach (using real estate appraisers to estimate the decrease in value) also left something to be desired because the appraisers could be biased toward the airport and/or the communities. Therefore Booz-Allen choose to use a hybrid approach, a combination of the two approaches. Following is a summary of their results.

Using Los Angeles International Airport (LAX) as a study area because of its wide range in housing values. Booz-Allen found that in moderately-priced areas the quiet neighborhoods averaged \$60,873 (18.6 percent) higher property values than the noisy

neighborhoods, or \$4,348 (1.33 percent) per dB of “additional quiet.” The results in the low-priced areas were much more modest – a \$1,267 (0.8 percent) higher property value in the quiet neighborhood. Despite finding a rather concrete number for the effect of property level per decibel Booz-Allen did issue this disclaimer about their results “the magnitude of the impact of airport noise on housing values cannot be estimated at the national level at this time, since the impact results varied across a wide range, and only a small sample of airports was considered.” Even so, Booz-Allen’s finding of 1.33 percent housing impact per dB has been widely quoted in the recent literature as the most accurate estimate of property value impacts.

Potential Impact on Property Values Around Buchanan Field

When estimating total lost property value because of aircraft noise ERA choose to use Booz-Allen’s 1994 estimate of 1.33 percent increased property value for each decibel of additional quiet for moderately priced homes for the following reasons. The Booz-Allen study is the most recent and comprehensive FAA funded study to date. The Booz-Allen study is one of the few recent studies to estimate decreased property value by an increase in decibel level. The Booz-Allen study used a combination of both regression and appraisal techniques to estimate the loss of property value. The use of a moderate value housing study is useful when comparing to Buchanan Field because it is unknown whether housing values around Buchanan Field are more or less effected by noise than normal.

As far as ERA knows no study has been done to estimate the decibel level of communities around Buchanan Field without the presence of the airport. Since the area surrounding Buchanan Field is also surrounded by three major freeways (I-680, Highway 4, and Highway 242) ERA assumes that this average decibel level is not below 55 decibels, or the normal suburban residential decibel level defined by the EPA (See **Figure VII-7**). The decibel level could be higher than this, averaging 60 or 65 decibels, and therefore ERA presents a range of total property value impacts.

Figure VII-7

| Description | Typical Range DNL in dB | Average DNL in dB | Population Density People/Sq. Mile |
|---------------------------------|------------------------------------|------------------------------|---|
| Quite Suburban Residential | 48-52 | 50 | 630 |
| Normal Suburban Residential | 53-57 | 55 | 2,000 |
| Urban Residential | 58-62 | 60 | 6,300 |
| Noisy Urban Residential | 63-67 | 65 | 20,000 |
| Very Noisy Urban Residential | 68-72 | 70 | 63,000 |

Source: US EPA 1974

To determine which households were affected by Buchanan Field noise, ERA used Shutt Moen Associates (April 2000) estimated “Current Noise Contours” map for Buchanan Field. (Note: due to quieter airplanes envisioned for the future, Shutt Moen’s estimated noise contours for a 15 to 50-year buildout scenario, including commercial air service, are almost identical to the current noise contours.) Using this map and Shutt Moen’s contours ERA employed Claritas Inc., the nation’s leading provider of geodemographic market research, to estimate the number of houses and the median property value inside these contours. In the 60-65 decibel contour Claritas found only 3 houses. In the 55-60 decibel contour and higher Claritas estimates there are 660 homes. Median property values of these homes were estimated by Claritas to be approximately \$230,000.

The size of the impact thus depends not only on the number and value of the homes within the noise contours, but also on the ambient noise level in the neighborhood independent of the airport noise. If the ambient noise is at 55 decibels (normal suburban residential), then 600 to 700 homes could experience property value increases of approximately 3 percent if the airport noise were removed, with an additional three homes experiencing a 10 percent increase in value. If the ambient noise is already at 60 decibels due to the freeways and other neighborhood traffic (urban residential), then only a handful of homes would be affected, with potential property value impacts of

approximately 3 percent. Finally if the average decibel level in the communities surrounding the airport is 65 (noisy urban residential) there would be no impact at all.

APPENDIX A

**LIST OF CONTRA COSTA COUNTY AIRPORT BUSINESSES
AND/OR TENANTS**

Appendix A
LIST OF CONTRA COSTA COUNTY AIRPORT
BUSINESSES AND/OR TENANTS

Buchanan Field

Aerosmith Aviation
American Air-lites
Avis Rent-A-Car
BFA Executive Hangars
Browning Aero Corporation
Buchanan Airport Hangar Company
Buchanan Aviation Services
Buchanan Corporate Properties
Buchanan East Hangar Company
Buchanan Fields Golf Course
Budget Car Sales
Budget Rent-A-Car
Caffino - EXS
CALSTAR
Civil Air Patrol
Concord Aviation (APRI)
Concord Flight International
Concord Jet Service
Concord Mitsubishi
County Sheriff's Department
Diablo Aviation Services
Enterprise Rent-A-Car
FAA Control Tower
Helicopter Adventures
HG Limited
LCA, Inc.
Lekas Industrial Complex
Lithia Sun Valley Ford
Los Medanos College
Mediplane (REACH)
Milan Haven
Mt. Diablo Pilots Association
National Rent-A-Car
Navajo Aviation
Pacific States Aviation

(Buchanan cont.)

Port-a-Port
Reynolds & Brown
San Francisco Welding Company
Sheraton Hotel
Solano Way Partnership (Dodge)
Sterling Avionics
Wells Fargo, N.A.

Byron

Aerosports Aviation (Bay Area Skydiving)
Borges Angus Ranch
Byron Aviation Services Ltd.
Mark & Terri Grosenheider
Gary & Delores Kuhn
Northern California Soaring
Stacy Silva
Skydive Byron
Jacqueline Stewart

APPENDIX B

SAMPLE AIRPORT BUSINESS SURVEY

2425 Bisso Lane, Suite 110
Concord, California 94520-4817



Contra Costa County
Board of Supervisors

(925) 646-5763
(925) 646-5767 (FAX)
dist4@bos.co.contra-costa.ca.us

Mark DeSaulnier
Supervisor, District IV

Clayton, Clyde, Concord, Pacheco, Pleasant Hill

April 27, 2000


Dear Airport Business:

Contra Costa County has retained Economics Research Associates (ERA) to analyze the economic impact of the Contra Costa County Airports. As part of this study, ERA is conducting a written survey of airport businesses. In addition, ERA will be following up on the phone or in person with some of the airport businesses for additional information.

We would appreciate it if you would take the time to answer the attached questionnaire. Your willingness to provide specific financial information is extremely important to accurately measuring the economic impact of the airports. **Your survey answers will be completely confidential and will not be used for purposes other than this study. Individual responses will be kept by ERA and reported to the County and public ONLY as part of aggregate totals including multiple businesses.**

Please return the survey to ERA in the self-addressed, stamped envelope by May 10, 2000. If you have any questions regarding how to fill out the survey, please call Linda Cheu with ERA at (415) 956-8152. You can also fax your completed survey to ERA at (415) 956-5274.

Sincerely,


Mark DeSaulnier
Supervisor


Joe Canciamilla
Supervisor

**AIRPORT BUSINESS SURVEY FOR
CONTRA COSTA COUNTY AIRPORTS ECONOMIC IMPACT ANALYSIS**

| | |
|-------------------------|--------------|
| Name of Business: _____ | |
| Address: _____ | Phone: _____ |
| Respondent: _____ | Title: _____ |

1. Please indicate what type of business you operate at the airport (i.e. FBO, car rental, flight school, etc.)

2. Please indicate which services your business provides:

___ Fueling

___ Hangar rental

___ Aircraft maintenance and repair

___ Flight charter

___ Flight instruction

___ Corporate jet services

___ Airport Services (please specify)

___ Other (please specify)

3. Are you a sub-contractor or do you have lease arrangements with an airport tenant? If so, what business holds the lease arrangement with the airport?

4. Are you an airport tenant that has subcontractors or business that have subleases with you? If so, please list these businesses:

FINANCIAL INFORMATION

Please provide the following information for the most recent fiscal or calendar year. This information will only be used by ERA for purposes of analysis – it will be treated as highly confidential and will not be shared outside ERA. We are not looking for detailed, audited accounting statements – your best estimates are fine.

5. Total Annual Revenue \$ _____
 (If you don't have the exact amount, please provide us with a reasonable range)

What percentage of gross revenue consists of taxable sales? _____%

What are your annual gross fuel sales? \$ _____

6. Total Annual Expenditures \$ _____
 (If you don't have the exact amount, please provide us with a reasonable range)

7. Distribution of Expenditures by Type:

Wages and salaries _____%

Employee benefits _____%

Subcontractors _____%

Occupancy costs (rent, lease payments, etc.) _____%

Insurance _____%

Cost of Goods sold

Fuel _____%

All other goods sold _____%

Services and Supplies _____%

Taxes (please specify type)

_____ %

_____ %

_____ %

Other (please specify)

Property Taxes (secured & unsecured) _____%

_____ %

_____ %

Total 100%

| | | | | |
|----|--|------------------|------------------|--|
| 8. | Please indicate number of employees by activity: | | | For Part-Time, Average Number of Hours Worked Per Week |
| | | <u>Full-Time</u> | <u>Part-Time</u> | |
| | Administration | _____ | _____ | _____ |
| | Flight School | _____ | _____ | _____ |
| | Maintenance | _____ | _____ | _____ |
| | Operations | _____ | _____ | _____ |
| | Other (specify) | _____ | _____ | _____ |

9. What percentage of your employees live in Contra Costa County? _____

10. How many business owners are there? _____

11. What percentage of the business owners live in Contra Costa County? _____

12. Please list annual revenues and expenditures for the past five years. Again, your best estimate is fine:

| | | |
|------|-----------------|---------------------|
| | <u>Revenues</u> | <u>Expenditures</u> |
| 1994 | _____ | _____ |
| 1995 | _____ | _____ |
| 1996 | _____ | _____ |
| 1997 | _____ | _____ |
| 1998 | _____ | _____ |

13. Are there any factors that you feel will increase or decrease your business growth in the next five to ten years?

14. Have you made any capital improvements on airport grounds over the past 5 years, or you have plans for any capital improvements on airport property over the next five years?

15. One means of measuring the importance of the aviation facilities to you is to ask how your business would be affected if these facilities did not exist. Check one:

- ___ No effect
- ___ Some disadvantage, but would not impact our operation
- ___ Our operations would have to be reduced (Percentage reduction: _____%)
- ___ We would have to cease operations here or would certainly not have located here without the airport

16. Please describe any community services provided as a result of your business.

17. Does your business attract visitors of any type (i.e. pilots, flight students, corporate visitors. etc.)?
_____ Yes _____ No

If so, please estimate how many person visits were made during the past fiscal year as a result of your business _____

Please describe the purpose, length of stay, and any other information you can about the visitors and their expenditures in Contra Costa County:

18. Is there anything else you would like us to consider related to the economic impact of the airports?

19. For businesses located at Buchanan Field:
How would commercial air service impact your businesses? Please be as specific and detailed as possible.

20. For businesses located at Byron Airport:
What are the major factors that could enhance or reduce your growth potential for the future?

APPENDIX C
BIBLIOGRAPHY

